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MP144-6.5M-1-2019RV

The information given herein is supplied with the understanding that no discrimination is intended and no endorsement by the University of Arkansas System Division of Agriculture is implied. The agrichemical recommendations herein are consistent with current federal and state pesticide labeling as of the date of publication. Revisions in labels can occur at any time. For your safety before using any recommended pesticide, always read the product label.
INTRODUCTION

Recommendations and products listed in this publication are reviewed annually by the contributing authors. Research on chemical control of insect pests is ongoing as new products are developed and registered for use in the crops and situations presented. The information presented in this publication is taken from tests conducted and recommendations developed in Arkansas and is supplemented by published information from surrounding states. The use of any chemical suggested in this guide should always be preceded by a careful examination of the container label for directions and precautions. Many insecticides have registrations for uses not listed in this publication. They are not included here because of either a lack of space in the publication, their lack of availability for purchase in the state, their inefficiency for the purpose intended or their extremely hazardous nature when a less hazardous chemical will do the job just as well. Rates of insecticides in this publication are presented as recommended rate ranges to provide a flexible guide for product use. Insecticide performance charts in this guide are intended to indicate relative performance of products and not percent control.

Edited by Glenn Studebaker, Professor/Extension
Entomologist - Row Crops/IPM Coordinator

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# Pesticide Dilution Table
(Amount of pesticide formulation for each one gallon of water)

<table>
<thead>
<tr>
<th>Pesticide Formulation</th>
<th>Percentage of Actual Chemical Wanted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.0313% 0.0625% 0.125% 0.25% 0.5%</td>
</tr>
<tr>
<td><strong>Wettable Powder (WP)</strong></td>
<td></td>
</tr>
<tr>
<td>15% WP</td>
<td>2 1/2 t 5 t 10 t 7 T 1 cup 2 cups</td>
</tr>
<tr>
<td>25% WP</td>
<td>1 1/2 t 1 T 2 T 3 T 8 T 1 cup 2 cups</td>
</tr>
<tr>
<td>40% WP</td>
<td>1 t 2 t 4 t 8 t 5 T 10 T 1 1/4 cups</td>
</tr>
<tr>
<td>50% WP</td>
<td>3/4 t 1 1/2 t 1 T 2 T 4 T 8 T 1 cup</td>
</tr>
<tr>
<td>75% WP</td>
<td>1/2 t 1 t 2 t 4 t 8 t 5 t 10 T 1 cup</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Emulsifiable Concentrate (EC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10%-12% EC 1 lb actual/gal</td>
</tr>
<tr>
<td>15%-20% EC 1.5 lb actual/gal</td>
</tr>
<tr>
<td>25% EC 2 lb actual/gal</td>
</tr>
<tr>
<td>33%-35% EC 3 lb actual/gal</td>
</tr>
<tr>
<td>40%-50% EC 4 lb actual/gal</td>
</tr>
<tr>
<td>57% EC 5 lb actual/gal</td>
</tr>
<tr>
<td>60%-65% EC 6 lb actual/gal</td>
</tr>
<tr>
<td>70%-75% EC 8 lb actual/gal</td>
</tr>
</tbody>
</table>

gal = gallon; lb = pound; pt = pint; T = tablespoon; t = teaspoon;
3 level teaspoons = 1 level tablespoon; 2 tablespoons = 1 fluid ounce;
8 fluid ounces or 16 tablespoons = 1 cup; 2 cups = 1 pint; 1 quart = 2 pints or 32 fluid ounces;
1 gallon = 4 quarts or 128 fluid ounces.
POISON CONTROL CENTERS IN ARKANSAS

The United States Environmental Protection Agency has established a Poison Control System throughout the nation. Participating hospitals function on a voluntary basis to provide special emergency aid in case of chemical intoxication. Each Poison Control Center has the capability to determine the toxic constituent of commercial products, respond to calls from physicians or individuals and provide supportive or antidotal treatment.

In a pesticide or poisoning emergency, call 1-800-222-1222. Your call will be directed to the nearest Poison Control Center.

INSECTICIDE APPLICATION

The success of any insecticide treatment depends upon proper application. There are several variables that impact proper application. This material briefly discusses application guidelines such as calibration, tank mixing, agitation, spray volume, drift control and nozzle selection. For more detailed information on most aspects of spray application, contact your county Extension office.

Checklist for Proper Spray Application

If you cannot check all the following (where applicable), perhaps you have a weakness in your sprayer program that can be corrected.

☑ Sprayer is calibrated accurately. (Pages 5 and 6)
☑ Band width is accurately measured and broadcast rates are changed for banding applications. (Page 6)
☑ Use a minimum screen size of 50 mesh for wettable powders or flowables.
☑ Have proper agitation (not just bypass) for powders and flowables. (Page 9)
☑ Refer to label and precautions in this publication to choose proper spray volume and pressure for insecticide used. (Page 9)
☑ Use the appropriate style nozzle designed to balance drift control and coverage. (Pages 7 and 8)
☑ Use nozzles designed to resist wear when applying wettable powders or flowables. (Page 7)
☑ Properly clean application equipment when switching pesticides and at the end of day. (Page 10)

Sprayer Calibration

No single aspect of spray application is as important and as abused as sprayer calibration. There is no way to accurately apply an insecticide without accurately calibrating the sprayer and figuring the tank mix. Using the following method and examples, you can calibrate quickly and easily.

Measuring Travel Speed

Measure a test course in the area to be sprayed or in an area with similar surface conditions. Minimum lengths of 100 and 200 feet are recommended for measuring speeds up to 5 and 10 mph, respectively. Determine the time required to travel the test course. To help ensure accuracy, conduct the speed check with a loaded sprayer and select the engine throttle setting and gear that will be used when spraying. Repeat the above process and average the times that were measured. Use the following equation or the table below to determine ground speed.

\[
\text{Speed (mph)} = \frac{\text{Distance (ft) \times 60}}{\text{Time (seconds) \times 88}}
\]

Determining Gallons Per Acre (Ounce Method)

1. Check the table below for the proper distance related to the row or nozzle spacing on your sprayer. For broadcast, use nozzle spacing; for band application such as post directed or band behind press wheel, use row spacing. Mark off this distance in the field you will be spraying.

<table>
<thead>
<tr>
<th>Row or Nozzle Spacing (inches)</th>
<th>Calibration Distance (feet)</th>
<th>Row or Nozzle Spacing (inches)</th>
<th>Calibration Distance (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>102</td>
<td>28</td>
<td>146</td>
</tr>
<tr>
<td>38</td>
<td>107</td>
<td>26</td>
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<td>36</td>
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</tr>
<tr>
<td>30</td>
<td>136</td>
<td>18</td>
<td>227</td>
</tr>
</tbody>
</table>

For row or nozzle spacing’s and calibration distances not shown here — any calibration distance (feet) may be determined by the following equation:

\[
4080/\text{average row or nozzle spacing (in inches)}
\]

All rates are given as broadcast rates. For band application, you must adjust the rate by the following formula:

\[
\frac{\text{Band Width}}{\text{Row Width}} \times \text{Broadcast Rate} = \text{Band Rate}
\]
2. Attach row conditioner, Triple-K, planter or whatever tool is to be pulled by the tractor when spraying. Engage the tool to the proper depth and use the throttle setting and gear that will be used for spraying. Note the time in seconds on a stopwatch that it takes to drive the calibration distance measured.

3. Catch the nozzle discharge for the noted time in Step 2 in a container graduated in ounces (plastic measuring cup, baby bottle, etc.). If you are using a broadcast boom with nozzles spaced evenly, catch the output from one nozzle for the time measured in Step 2. If more than one nozzle per row is used (directed, insecticide or fungicide rig), catch the spray from each nozzle for the time noted in Step 2. Then combine the amount from all nozzles spraying on a single row.

4. The total discharge measured in ounces is equal to the gallons per acre applied. With a broadcast boom, this is the amount caught from one nozzle. Where you have used row spacing in Step 1, all nozzles directed to that row must be measured to determine the gallons per acre.

5. Check each nozzle to ensure equal spray distribution across the width of the sprayer. Repeat Steps 3 and 4 to ensure that nozzles do not vary more than 10 percent across the width of the sprayer.

**Determining Tank Mix**

Divide tank refill capacity by the calibrated gallons per acre (determined in Step 4). This is the number of acres the sprayer will cover per refill. Multiply the broadcast rate of insecticide (or band rate) times the acreage per refill to get the amount of insecticide (commercial product) to be put in the tank.

**Example 1 – Broadcast Application**

A grower will apply Anychem 1 with a broadcast boom having nozzles spaced 20 inches apart while pulling a disk for incorporation.

1. The distance to travel for 20-inch nozzle spacing is 204 feet. Next, measure and flag off 204 feet in the field to be sprayed.
2. Select the desired gear and throttle setting with the disk down. Let’s say it takes 20 seconds to cover the 204 feet.
3. Set the pressure to be used and catch the output from one nozzle for 20 seconds (the time required to travel the 204 feet).
4. The output in ounces is the amount applied in gallons per acre. If the nozzle output was 15 ounces in 20 seconds, the sprayer applies 15 gpa.
5. Repeat Step 4 checking each nozzle.

Let’s assume you have a 200-gallon tank and wish to apply one pint of Anychem 1 per acre.

\[ \frac{200 \text{ gal/refill}}{15 \text{ gpa}} = 13.3 \text{ acres covered per tank (or refill)} \]

Since you wish to use 1 pt/A, you would use 13.3 pints of Anychem 1 per refill; i.e., 1 pt/A \( \times \) 13.3 acres = 13.3 pints. [See Note in Example 2.]

**Example 2 – Band Behind Planter**

A grower will apply Anychem 2 behind his planter with a 14-inch spray band on a 38-inch row.

1. The distance to travel for a 38-inch row is 107 feet.
2. Select the planting speed and travel the measured 107 feet with planter down. Let’s say it takes 18 seconds in this example.
3. Set the pressure and catch the output from one nozzle for 18 seconds (the time required to travel 107 feet).
4. The output in ounces is the amount applied in gallons per acre. If the nozzle output was 10 ounces in 18 seconds, the sprayer applies 10 gpa. (This is all on a band.)
5. Repeat Step 4 checking each nozzle.

Let’s assume a 400-gallon tank (two 200-gallon saddle tanks) refill capacity and the rate of Anychem 2 50W for your soil is 1 pound/A broadcast. Reduce this rate to a 14-inch band.

**NOTE:** Plan on the amount of water required to refill the tank, not the capacity of the tank itself. For example, if you have the above 200-gallon saddle tanks but you have 50 gallons of spray left in each when you refill, it only takes 300 gallons to refill them.
Therefore:
\[
\frac{300 \text{ gal/refill}}{10 \text{ gpa}} = 30 \text{ acres per refill}
\]
\[
30 \text{ A/refill} \times 0.37 \text{ lb/A} = 11 \text{ lb of Anychem 2 50W per refill}
\]
(5.5 pounds in each of the two tanks)

**Example 3 – Directed Spray**

A grower will apply Anychem 3 + Anychem 4 on a 16-inch band on a 32-inch row using 2 OC-02 nozzles per row (one on each side). **[Step 1]** The distance to travel for a 32-inch row is 127 feet. **[Step 2]** Select speed and drive the 127 feet. Assume it takes 15 seconds. **[Step 3]** Set the pressure and catch each of the two nozzles per row for 15 seconds or time determined in Step 2. **[Step 4]** Add the quantity from the two tips. The amount in ounces is the gallons per acre. Assume 5 ounces per tip for a total of 10; therefore, a 10 gpa output. **[Step 5]** Repeat Step 4 checking the nozzles on each row.

Let's assume two 200-gallon saddle tanks and the broadcast rate is 1 pound Anychem 3 50W + 1 pint Anychem 4 per acre. Reduce the rates for the 16-inch band.

\[
\frac{16}{32} \times 1 \text{ lb} = 1/2 \text{ lb Anychem 3} \quad \frac{16}{32} \times 1 \text{ pt} = 1/2 \text{ pt Anychem 4/A}
\]
\[\text{400 gal tank capacity} \quad \frac{10 \text{ gpa}}{10 \text{ gpa}} = 40 \text{ acres per refill}\]
\[40 \text{ acres} \times 1/2 \text{ lb Anychem 3} = 20 \text{ lb Anychem 3}\]
\[40 \text{ acres} \times 1/2 \text{ pt Anychem 4} = 20 \text{ pt Anychem 4}\]

Put 1/2 this amount (10 lb Anychem 3 + 10 pt Anychem 4) in each tank.

**Nozzle Selection**

Insecticides are best applied with the proper nozzle tip design. A balance must be struck for each application between responsible drift control and acceptable coverage. This balance will change depending on controllable factors like the pesticide formulation, pressure, rate and equipment speed. Nozzle manufacturers have made much advancement in spray technology recently. These advancements have set producers up to be more effective, more efficient and more responsible applicators. Next to calibration and proper tank mixing, nozzle selection is key to proper application.

**Nozzle Nomenclature**

In addition to a company’s name, most nozzle tips are coded with important information – often starting with an abbreviation of a nozzle type, next is usually fan angle, then flow rate and finally the tip material composition.

Example – TeeJet AIXR11002 VS is an air induction (AI), extended range (XR), 110° flat fan, size number 02 (0.2 GPM), color coded (V - ISO color coding system) and stainless steel nozzle (S) that is made by Spray Systems Company.

**Tip Materials and Durability**

Tips are available in a number of materials. Stainless steel, hardened stainless steel, nylon and ceramics offer the best wear characteristics and are often worth the additional cost, especially when using abrasive products like wettable powders. Plastic tips are now available that are imbedded with more durable materials in key locations. These tips offer the durability of stainless steel or ceramic nozzles at a fraction of the cost.

**Common Nozzle Spray Patterns**

- **Standard Flat-Fan** – common broadcast nozzle, poor drift control and narrow recommended pressure range. 30-60 psi
- **Extended Range Flat** – better spray distribution over wider pressure range. Provides some drift control at low pressures (<30 psi). 15-60 psi
- **Even Flat-Fan** – used to band rows uniformly. Not a broadcast tip. 20-60 psi
- **Off-Center Flat** – used on boom ends to increase uniformity and width of spray swath. Also used for banding under foliage. 30-115 psi
- **Twin Orifice Flat** – produces one fan tilted forward and one tilted backward. Improves coverage of contact pesticides but highly drift prone. 30-60 psi
- **Hollow Cone** – common in directed contact pesticides because of fine spray pattern and excellent coverage. Very drift prone. 40-100 psi

Many of the listed spray patterns offer excellent coverage of both contact and systemic pesticides. Excellent coverage can come with very small spray droplets known as driftable fines. Nozzle manufacturers have worked hard to maintain desired levels of coverage while reducing economic and environmental damage caused by pesticide drift. This work has produced many options of common spray patterns with added drift control technology from which applicators can select. Applicators should select nozzle options carefully to ensure proper coverage while responsibly controlling driftable fines.
Tips for Balancing Drift Control and Coverage

When wind velocity is too high to be practical, the best solution is to park the sprayer. However, there are approaches to compensate for some wind. Spray droplets should always be as large as possible while still obtaining appropriate coverage. This is particularly true in a high drift potential application. One solution is to change tips. Use a larger tip (i.e., an 8005 instead of an 8003), and lower the spray pressure (i.e., go up on the nozzle size and down on the pressure). Also, consider a wider angle tip such as a 11003 instead of an 8003. This allows the nozzle to be adjusted closer to the ground without changing the width of the spray pattern where it contacts the ground. A more recent option is to change your tip design, such as adding tips with air induction, pre-orifice and/or turbulence chamber technology. Coverage can be improved with drift reduction tips by using tips with multiple nozzles facing different angles across the boom.

Air induction style nozzles emit fewer fines and can be a very good tool to avoid drift potential. Air induction tips are typically not as sensitive to droplet size changes as operating pressures increase. This helps avoid small droplet formations when the sprayer is operating at higher speeds and the flow control is increasing pressure to ensure the correct dosage. Some examples of tips that have air induction capabilities are Greenleaf Technologies Air Mix and TurboDrop series; Hypro’s Ultra Low Drift (ULD) and Guardian Air (GA) series; and TeeJet Technologies Air Induction (AI) and Turbo Tee Induction (TTI) series.

Pre-orifices meter the flow of pesticide before it reaches the spray orifice. This produces a larger droplet spectrum and helps to reduce the number of drift-prone fines. Examples of tips using pre-orifice technology include Wilger Industries Small Range (SR), Medium Range (MR) and Drift Reduction (DR) tips; TeeJet Technologies Drift Guard (DG), Air Induction (AI), Turbo Tee (TT), Turbo Tee Induction (TTI) and Air Induction Extended Range (AIXR) series; Hypro’s Guardian (GRD) and Guardian Air (GA) series; and Greenleaf Technologies Turbo Drop XL (TDXL) series.

Nozzles that use turbulence chambers go one step further. This design uses a pre-orifice to meter the pesticide into the turbulence chamber and then out of the final orifice (often a smaller size). These nozzles are designed to produce a larger droplet with more uniform coverage along the boom. Examples of tips using turbulence chamber technology include Hypro’s Guardian (GRD) and Guardian Air (GA) series; TeeJet Technologies Drift Guard (DG) and Turbo Tee (TT) series; and Wilger Industries Small Range (SR), Medium Range (MR), and Drift Reduction (DR) tips.

Twin or duo nozzles facing forward and backward across the boom can increase coverage when using drift control tips. Depending on the manufacturer, these will be two nozzles molded into one body or two separate nozzles plumbed together. If used properly, twin nozzle configuration can improve foliar penetration and coverage while using drift control tips. Examples of twin or duo nozzles are TeeJet Technologies Turbo TeeJet Duo Dual Polymer Nozzle and Greenleaf Technologies TurboDrop Asymmetric DualFan Nozzle.

Quick Reference Guide to Selecting a Nozzle

1. Read the pesticide label to find the following information. Some information may not be on the label and should be determined by University of Arkansas Systems Division of Agriculture recommendations or equipment capabilities.
   a. Spray volume (GPA) ___________
   b. Droplet classification (for example, coarse) ___________
   c. Nozzle type (if listed) ___________
   d. Select an appropriate travel speed (mph) ___________
   e. Determine boom spacing in inches (W)* ___________

2. Calculate needed nozzle discharge using the following formula.

\[
GPM \text{ (per nozzle)} = \frac{\text{GPA} \times \text{mph} \times \text{W}}{5,940}
\]

*W – Spray width (inch) for single nozzle, band spraying or boomless spraying.
   – For directed spraying, divide row spacing (inch) by the number of nozzles per row.
   – If the “W” term is the width of the band, do not worry about converting for bandwidth, it is inclusive.

3. Consult a nozzle catalog or website to select a nozzle. Nozzle catalogs will be organized by nozzle type first. Use the information described in this section and the information from the catalog to select a nozzle type. Next, use the recommended droplet classification from the label and the nozzle discharge rate calculated from Step 2 to determine the proper tip size.

Many nozzles may fit your qualifications. Try to find a nozzle that operates at a lower pressure and allows you to operate comfortably in your droplet classification.

4. Once nozzles are installed, do not forget to recalibrate your sprayer.

Another way to quickly and easily obtain a nozzle recommendation is to visit a nozzle manufacturer’s website and locate their nozzle selection tool. Simply type in the information that has been identified from Step 1 and the website will generate a list of appropriate nozzles from which you may select. Nozzle manufacturer URLs and their Nozzle Selection Tools URLs are listed on page 9.

Nozzle Resources

Manufacturers of spray nozzles provide a wealth of information about the selection, setup and use of their products in their catalogs. These include such things as hose flow information and nozzle selection guides. Typically, the guides will show setup criteria and give recommendations for contact and systemic differences. It would be impractical to reprint all of that information here. Manuals or catalogs for the specific product you are using can be obtained from dealers. If you cannot locate a personal copy, each county Extension office usually keeps at least one copy of popular brand item catalogs. The more common way is to access this information over the Internet. Several URL listings are included for some of the more popular manufacturers on page 9.
Sprayer Tank Agitation
The type of pesticide formulation dictates the need for agitation. Soluble liquids, soluble powders and emulsifiable concentrates require little agitation. Usually the flow from the bypass hose maintains a uniform mixture.

Wettable powders and flowable formulations are only in suspension, and they require vigorous agitation to prevent settling out. Many instances can be cited where insufficient agitation has resulted in undesirable responses. Consider the following when examining the need for agitation in application equipment:

- Insufficient agitation can cost more than the entire sprayer costs.
- Running a bypass hose into the tank is not agitation.
- Agitation can be expected to use more pump capacity than the nozzles require.
- Pre-mixing wettable powders will get pesticides into suspension; insufficient agitation allows them to drop out. Continue agitation until all the spray is distributed.

Spray Volumes
In general, spray volumes should be in the 10 to 20 GPA range for most insecticides. For band applications, a volume equivalent to 1/2 gallon per inch of band is sufficient (i.e., 10 GPA on a 20-inch band). Refer to the comments on each insecticide to note any specific application instructions.

Tips for Proper Mixing
1. See that equipment is clean and in good running condition, free of oil, grease or residue.
2. Be sure to have a shut-off valve installed in the bottom of each tank.
3. Use a 16-mesh suction screen to allow chemicals to circulate through the pump.
4. If there is any question about chemical compatibility, do a jar test first.
5. Always follow label instructions about mixtures. In absence of instructions, use the WALE method.
6. Add chemicals in the W-A-L-E sequence.
   - Wettable powders or water dispersible granules
   - Agitation
   - Liquids (flowable liquids)
   - Emulsifiable concentrates
   - Surfactants and solutions
7. Begin with tank 1/4 full of carrier and start agitation until solution is rolling.
8. W – Add all W and WDG chemicals to solution.
9. A – Get good, strong agitation with a rolling effect on the surface of the carrier. Allow time for good dispersal.
10. L – Next add all L or F while continuing to agitate.
11. E – Finally, add all E or EC.
12. Empty the tank as much as possible before mixing a new batch.
Compatibility Test

Since liquid fertilizers can vary, even within the same analysis, always check compatibility with insecticide(s) each time before use. Be especially careful when using complete suspension or fluid fertilizers, as serious compatibility problems are more likely to occur. Commercial application equipment may improve compatibility in some instances. The following test assumes a spray volume of 25 gallons per acre. For other spray volumes, make appropriate changes in the ingredients. Check compatibility using this procedure:

1. Add 1 pint of fertilizer to each of two 1-quart jars with tight lids.
2. To one of the jars, add 1/4 tsp or 1.2 milliliters of a compatibility agent approved for this use, such as Compex or Unite (1/4 tsp is equivalent to 2 pt per 100 gal spray). Shake or stir gently to mix.
3. To both jars, add the appropriate amount of insecticide(s). If more than one insecticide is used, add them separately with dry insecticides first, flowables next and emulsifiable concentrate last. After each addition, shake or stir gently to thoroughly mix. The appropriate amount of insecticides for this test follows.
4. Dry Insecticides: For each pound to be applied per acre, add 1.5 level teaspoons to each jar. Liquid Insecticides: For each pint to be applied per acre, add 0.5 teaspoon or 2.5 milliliters to each jar.
5. After adding all ingredients, put lids on and tighten. Invert each jar ten times to mix. Let the mixtures stand 15 minutes and then look for separation, large flakes, precipitates, gels, heavy oily film on the jar or other signs of incompatibility. Determine if the compatibility agent is needed in the spray mixture by comparing the two jars. If either mixture separates but can be remixed readily, the mixture can be sprayed as long as good agitation is used. If the mixtures are incompatible, test the following methods of improving compatibility: (A) slurry the dry insecticide(s) in water before addition or (B) add one-half of the compatibility agent to the fertilizer and the other one-half to the emulsifiable concentrate or flowable insecticide before addition to the mixture.

Application Equipment Cleanout

Equipment cleanout is essential to avoid crop injury from a contaminated sprayer. It is particularly important when changing from wettable powders that are more prone to collect in filters, boom and nozzle bodies. Ensure proper clean-out by disassembling, inspecting and cleaning trouble areas when using these products. Also, many growth regulating herbicides can be particularly destructive to sensitive crops even in extremely small concentrations. Ensure proper cleanout by using proper soaking procedures and always refer to product labels for any clarification.

Following the procedures specified on the pesticide or commercial cleaner label is critical to removing pesticide residue from the sprayer system. Consult labels of the products that were previously in the tank and for the products that will be used for the next application for specific cleaning and mixing/loading instructions.

The University of Arkansas System Division of Agriculture recommends a minimum triple rinse for cleanout of all pesticides regardless of label recommendations.

FORMULATIONS AND CONCENTRATIONS

Aerosols (A) – solid or liquid air suspensions of ultramicroscopic size which remain suspended for long periods.

Baits (B) – a poison or poisons plus some substance which will attract the insect.

Dusts (D) – diluted toxicant with finely ground, dried plant materials or minerals. These include wheat, soybean, walnut shells, t alc, clay or sulfur.

Emulsifiable Concentrates (E or EC) – insecticide and an emulsifying agent in a suitable solvent. These are diluted with water to form an emulsion and applied as sprays.

Flowable (F)/Liquid (L) – viscous concentrate of suspended pesticide in water.

Fumigant – substance or mixture of substances which produce gas, vapor, fume or smoke intended to destroy insects, bacteria, rodents or other organisms.

Granules (G) – insecticide attached to an inert carrier of 30- to 60-mesh particle size.

Low Volume (LV)/Concentrated Low Volume (CLV)/Ultra Low Volume (ULV) – formulation containing higher concentration of active ingredient per gallon of formulation that results in a lower volume of formulation per unit area.

Pellet (P or PS) – granular formulation where all of the particles are of the same weight and size.

Ready To Use (RTU) – formulation in a form that requires no mixing before use.

Soluble Powder (SP)/Water Soluble Powders (WSP) – powder formulation that dissolves in water.

Solutions (S) – liquid forms of insecticides that are dissolved in suitable solvents such as petroleum distillates or liquid gas. Oil-based cattle sprays, household sprays and gas-propelled aerosols are examples of insecticide solutions.

Suspension Concentrates (SC) or Capsule Suspensions (CS) – particles in suspension.

Water-Dispersible Granules (WDG)/Dry Flowables (DF) – granules of a pesticide formulation that disperse in water to form a spray solution.

Wettable Powders (WP) – dry forms of insecticides in which the toxicant is impregnated or absorbed on powders that can be readily mixed with water because a wetting agent has been added. These form a suspension-type spray that must be kept agitated in a sprayer tank.
### TABLE OF WEIGHTS, MEASURES AND DILUTIONS

#### Weights

- 28.35 grams = 1 ounce
- 16 ounces = 1 pound = 453.6 grams
- 1 gallon water = 8.34 pounds
- 1 cubic foot water = 62.4 pounds
- 1 gallon No. 2 fuel oil = 7 pounds
- 1 gallon kerosene = 6.7 pounds

#### Volume and Liquid Measure

- 16 1/2 feet = 5 1/2 yards = 1 rod
- 66 feet = 4 rods = 1 chain
- 272 1/4 square feet = 30 1/4 square yards = 1 square rod
- 4356 square feet = 16 square rods = 1 square chain
- 43560 square feet = 160 square rods = 1 acre
- 43560 square feet = 10 square chains = 1 acre

#### Length of Row Required for One Acre

<table>
<thead>
<tr>
<th>Row Spacing</th>
<th>Length or Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 inch</td>
<td>7,260 yards = 21,780 feet</td>
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<tr>
<td>30 inch</td>
<td>5,808 yards = 17,424 feet</td>
</tr>
<tr>
<td>36 inch</td>
<td>4,840 yards = 14,520 feet</td>
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<tr>
<td>38 inch</td>
<td>4,585 yards = 13,756 feet</td>
</tr>
<tr>
<td>40 inch</td>
<td>4,356 yards = 13,068 feet</td>
</tr>
<tr>
<td>42 inch</td>
<td>4,149 yards = 12,446 feet</td>
</tr>
<tr>
<td>48 inch</td>
<td>3,630 yards = 10,890 feet</td>
</tr>
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</table>

#### Determining Contents — Standard 55-Gallon Drum

<table>
<thead>
<tr>
<th>Depth of Liquid in Inches</th>
<th>Volume in Gallons</th>
<th>Depth of Liquid in Inches</th>
<th>Volume in Gallons</th>
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<td>6.7</td>
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<td></td>
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<td>30</td>
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<tr>
<td></td>
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<td>30.19</td>
<td>52.0</td>
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### Travel Speed Chart

<table>
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<tr>
<th>Miles per Hour</th>
<th>100 Ft</th>
<th>200 Ft</th>
<th>300 Ft</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>68</td>
<td>136</td>
<td>205</td>
</tr>
<tr>
<td>2</td>
<td>34</td>
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<td>23</td>
<td>34</td>
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<tr>
<td>10</td>
<td>7</td>
<td>14</td>
<td>21</td>
</tr>
</tbody>
</table>

1 MPH = 88 feet per minute
1 MPH = 1.466 feet per second

Speed in MPH = Distance (ft) × 60
Time (seconds) × 88

---

### Tables of Dilutions for Liquids and Dusts

#### 1. Equivalent Quantities of Liquid Materials When Mixed by Parts.

<table>
<thead>
<tr>
<th>Water</th>
<th>Amount of Insecticides for Different Dilutions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1-400</td>
</tr>
<tr>
<td>100 gals</td>
<td>1 qt</td>
</tr>
<tr>
<td>50 gals</td>
<td>1 pt</td>
</tr>
<tr>
<td>5 gals*</td>
<td>3 T</td>
</tr>
<tr>
<td>1 gal</td>
<td>2 t</td>
</tr>
</tbody>
</table>

*Example: If a recommendation calls for 1 part of the chemical to 800 parts of water, it would take 5 teaspoonfuls in 5 gallons of water to give 5 gallons of a mixture of 1-800.

#### 2. Equivalent Quantities of Dry Materials (Wettable Powders) for Various Quantities of Water.

<table>
<thead>
<tr>
<th>Water</th>
<th>Quantity of Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 gals</td>
<td>1 lb</td>
</tr>
<tr>
<td>50 gals</td>
<td>8 oz</td>
</tr>
<tr>
<td>5 gals*</td>
<td>3 T</td>
</tr>
<tr>
<td>1 gal</td>
<td>2 t</td>
</tr>
</tbody>
</table>

*Example: If a recommendation calls for a mixture of 4 pounds of a wettable powder to 100 gallons of water, it would take 31/4 ounces (approximately 6 1/2 teaspoons) to 5 gallons of water to give 5 gallons of spray mixture of the same strength.

**Note:** Wettable pesticide materials vary considerably in density. Therefore, the teaspoonful (t) and tablespoonful (T) measurements in this table are not exact dosages by weight but are within the bounds of safety and efficiency for mixing small amounts of spray.

### Tables of Dilutions for Liquids and Dusts

#### 3. Equivalent Quantities of Liquid Materials (Emulsion, Concentrates, etc.) for Various Quantities of Water.

<table>
<thead>
<tr>
<th>Water</th>
<th>Quantity of Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 gals</td>
<td>1/2 pt</td>
</tr>
<tr>
<td>50 gals</td>
<td>4 fl oz</td>
</tr>
<tr>
<td>5 gals</td>
<td>1 T</td>
</tr>
<tr>
<td>1 gal*</td>
<td>1/2 t</td>
</tr>
</tbody>
</table>

*Example: If 4 pints of a liquid concentrate is recommended to 100 gallons of water, 4 teaspoonfuls of the chemical to 1 gallon of water will give a mixture of the same strength.

#### 4. Table of Pounds of Active Ingredients per Gallon, Pounds per Pint of Liquid, and the Number of Pints for Various per Acre Rates.

<table>
<thead>
<tr>
<th>Pounds of active ingredients in one gallon of commercial product</th>
<th>Pounds of active ingredients per pint*</th>
<th>Pints of commercial product needed per acre to give the following pounds of active ingredient</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4 lb/A</td>
<td>0.25</td>
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<tr>
<td>2/5</td>
<td>0.33</td>
<td>3/4 lb/A</td>
</tr>
<tr>
<td>3/8</td>
<td>0.50</td>
<td>2 1/2 pt</td>
</tr>
<tr>
<td>1/2</td>
<td>0.25</td>
<td>1 pt</td>
</tr>
<tr>
<td>3/8</td>
<td>0.50</td>
<td>2 1/2 pt</td>
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<tr>
<td>2/5</td>
<td>0.75</td>
<td>1 1/2 pt</td>
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<td>0.75</td>
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</tr>
<tr>
<td>1/2</td>
<td>0.75</td>
<td>1 1/2 pt</td>
</tr>
</tbody>
</table>

*Example: 1 pint = 16 liquid ozs. Liquid ounces may be measured with a discarded prescription bottle, liquid measuring cup, or a baby bottle.

#### 5. Table of Available Commercial Materials in Pounds Active Ingredients per Gallon Necessary to Make Various Percentage Concentration Solutions.

<table>
<thead>
<tr>
<th>Pounds of active ingredients in one gallon of commercial product</th>
<th>Liquid ounces of commercial product per one gallon solution* to make</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2%</td>
<td>1 pt</td>
</tr>
<tr>
<td>1%</td>
<td>2 pts</td>
</tr>
<tr>
<td>2%</td>
<td>3 pts</td>
</tr>
<tr>
<td>5%</td>
<td>4 pts</td>
</tr>
<tr>
<td>10%</td>
<td>5 pts</td>
</tr>
</tbody>
</table>

*Example: If a recommendation calls for a mixture of 4 pounds of a wettable powder to 100 gallons of water, it would take 31/4 ounces (approximately 6 1/2 teaspoons) to 5 gallons of water to give 5 gallons of spray mixture of the same strength.

**Note:** Wettable pesticide materials vary considerably in density. Therefore, the teaspoonful (t) and tablespoonful (T) measurements in this table are not exact dosages by weight but are within the bounds of safety and efficiency for mixing small amounts of spray.

*Based on 8.4 pounds per gallon (weight of water)
### Field Re-Entry Times for Insecticides

<table>
<thead>
<tr>
<th>TRADE NAME</th>
<th>COMMON NAME</th>
<th>RE-ENTRY PERIOD-HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admire, Alias, Couraze, Trimax, Axcess, Senator, Concur, Wrangler</td>
<td>imidacloprid</td>
<td>12</td>
</tr>
<tr>
<td>AgLogic</td>
<td>aldicarb</td>
<td>48</td>
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<tr>
<td>Agri-Mek, Epi-Mek, Zoro, Abba</td>
<td>abamectin</td>
<td>12</td>
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<tr>
<td>Ambush, Pounce, Perm-Up</td>
<td>permethrin</td>
<td>12</td>
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<tr>
<td>Ammo</td>
<td>cypermethrin</td>
<td>12</td>
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<tr>
<td>Applaud, Centaur, Courier, Talus</td>
<td>buprofezin</td>
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<tr>
<td>Argyle</td>
<td>acetamiprid/bifenthrin</td>
<td>12</td>
</tr>
<tr>
<td>Asana XL, Adjourn</td>
<td>esfenvalerate</td>
<td>12</td>
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<tr>
<td>Azatrol, Azatin XL, Neemix</td>
<td>azadirachtin</td>
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<td>Aztec, Defcon</td>
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<tr>
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<td>beta-cyfluthrin</td>
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<tr>
<td>Belay, Poncho, Nipstil</td>
<td>clothianidin</td>
<td>12</td>
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<td>Belt, Synapse</td>
<td>flubendiamide</td>
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<td>6 days</td>
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<td>fonicamid</td>
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<td>Comite, Omite</td>
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</tr>
<tr>
<td></td>
<td>Chipco FireStar</td>
<td>Bayer Crop Science</td>
</tr>
<tr>
<td></td>
<td>MaxForce</td>
<td>Bayer Crop Science</td>
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<tr>
<td></td>
<td>DeltaDust</td>
<td>Bayer Crop Science</td>
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<tr>
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<td>DeltaGard, Suspend</td>
<td>Bayer Crop Science</td>
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<tr>
<td></td>
<td>Over ‘n Out!</td>
<td>Bayer Crop Science</td>
</tr>
<tr>
<td></td>
<td>Top Choice</td>
<td>Bayer Crop Science</td>
</tr>
<tr>
<td></td>
<td>Delta Gold</td>
<td>Bayer Crop Science</td>
</tr>
<tr>
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<td>Shooter</td>
<td>Bayer Crop Science</td>
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<tr>
<td></td>
<td>Chipco Choice</td>
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<tr>
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<td>Chipco FireStar</td>
<td>Bayer Crop Science</td>
</tr>
<tr>
<td></td>
<td>MaxForce</td>
<td>Bayer Crop Science</td>
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# COMMON AND TRADE NAMES OF SOME OF THE CHEMICALS MENTIONED IN THIS GUIDE

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Trade Name</th>
<th>Company</th>
<th>Spray Formulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diazinon</td>
<td>Spectracide</td>
<td>Syngenta</td>
<td>4 and 2 lb EC, 50% WP, 14 G</td>
</tr>
<tr>
<td>Dichlorvos</td>
<td>DDVP, Vapona</td>
<td>Fermenta Animal Health</td>
<td>4 lb EC, 1.6 lb EC</td>
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<tr>
<td>Dicofol</td>
<td>Dicofol, Kelthane</td>
<td>MANA, Dow AgroScience</td>
<td>4 lb EC, 50 WSP</td>
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<tr>
<td>Dicofol + bifenthrin</td>
<td>BidrinXP II</td>
<td>Amvac Chemical</td>
<td>8 lb EC</td>
</tr>
<tr>
<td>Diflubenzuron</td>
<td>Dimin</td>
<td>Chemtura Corporation</td>
<td>4 lb + 1 lb EC</td>
</tr>
<tr>
<td>Dithioleth�</td>
<td>Dimate</td>
<td>Agrilliance LLC</td>
<td>25 W, 2 L, 4 L</td>
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<tr>
<td>Dithioleth�</td>
<td>Dimethoate</td>
<td>Arysta LifeScience, Drexel, Helena, Loveland Products, Gowan, Britz</td>
<td>4 E</td>
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<tr>
<td>Dinofuran</td>
<td>Safari, Venom</td>
<td>Valent U.S.A. Corporation Professional Products</td>
<td>20% EC, 3 Put, 20% SG</td>
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<td>Disulfoton</td>
<td>Di-Syston</td>
<td>Mitsui Chemicals Agro</td>
<td>20% EC</td>
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<tr>
<td>Emamectin benzoate</td>
<td>Denim</td>
<td>Bayer Crop Science</td>
<td>8 lb EC, 15% G</td>
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<td>Endosulfan</td>
<td>Thiodan, Endosulfan</td>
<td>Syngenta</td>
<td>0.16 lb EC</td>
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<td>Ethiothion</td>
<td>Thionex</td>
<td>UCP, Drexel</td>
<td>3 lb EC</td>
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<tr>
<td>Esfenvalerate</td>
<td>Aesana XL</td>
<td>Makhteshim-Agan of North America</td>
<td>3 EC, 50 WP</td>
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<td>Fampheur</td>
<td>Famohos, Warbex</td>
<td>DuPont</td>
<td>1.9 lb EC, 0.66 lb EC</td>
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<td>Fenbutatin-oxide</td>
<td>Vendex</td>
<td>MANA</td>
<td>0.66 EC</td>
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<tr>
<td>Fenoxycarb</td>
<td>Award, Logic Fire Ant Bait</td>
<td>LG International</td>
<td>0.66 EC</td>
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<tr>
<td>Fenpropathrin</td>
<td>Tame</td>
<td>Bayer Crop Science</td>
<td>10, 15 and 20 G, 6 EC</td>
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<tr>
<td>Fenpropoxide</td>
<td>Portal, Fujimite</td>
<td>Valent U.S.A. Corporation Professional Products</td>
<td>5% WDG, 70 WSP</td>
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<tr>
<td>Fipronil</td>
<td>Regent</td>
<td>BASF</td>
<td>1% D, 13.2% ready-mix</td>
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<tr>
<td>Fluvaldene</td>
<td>Belt</td>
<td>DuPont</td>
<td>50% WP, 4 L</td>
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<tr>
<td>Flobutamide</td>
<td>Tourizmo, Vetica</td>
<td>Syngenta</td>
<td>1.0% granular bait</td>
</tr>
<tr>
<td>Flupyradifurone</td>
<td>Sivanto</td>
<td>Bayer Crop Science</td>
<td>4 SC</td>
</tr>
<tr>
<td>Gamma-cyhalothrin</td>
<td>Proaxis</td>
<td>BASF</td>
<td>4 SC</td>
</tr>
<tr>
<td>Fenoxycarb</td>
<td>Prolex</td>
<td>Bayer Crop Science</td>
<td>1.17 EC, 0.33 EC</td>
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<tr>
<td>Fenpropathrin</td>
<td>Declare</td>
<td>Nichino America</td>
<td>1.67 SL</td>
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<tr>
<td>Halofenozide</td>
<td>Mach 2</td>
<td>UAP-Loveland Products, Inc., TENKOZ, Inc.</td>
<td>0.5 lb</td>
</tr>
<tr>
<td>Hexythiazox</td>
<td>Hexygon</td>
<td>UAP-Loveland Products, Inc., TENKOZ, Inc.</td>
<td>1.5 lb</td>
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<tr>
<td>Hydramethylnon</td>
<td>Amdro, Amdro Pro Fire Ant Bait</td>
<td>Cheiminova</td>
<td>1.5 lb</td>
</tr>
<tr>
<td>Imidacloprid</td>
<td>Provado, Admire, Trimax Pro, Gaucho, Alias, Pasada</td>
<td>Dow AgroSciences LLC</td>
<td>1.5% G, 22.3% SC</td>
</tr>
<tr>
<td></td>
<td>Couraze</td>
<td>Gowan Company</td>
<td>50% DF</td>
</tr>
<tr>
<td></td>
<td>Prey, Sherpa, Widow, Wrangler</td>
<td>BASF</td>
<td>0.73% granular bait</td>
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<tr>
<td></td>
<td>Advise, Concur</td>
<td>Bayer Crop Science</td>
<td>1.6 F, 2 F, 4.44 F, 4 F</td>
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<tr>
<td></td>
<td></td>
<td>MANA</td>
<td>2 F, 4 F, 75 WSP</td>
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<td></td>
<td></td>
<td>Cheiminova</td>
<td>1.6 F, 2 F, 4 F</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loveland Products</td>
<td>1.6 F, 2 F, 4 F</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AgriSolutions</td>
<td>2 F, 4 F</td>
</tr>
<tr>
<td>Common Name</td>
<td>Trade Name</td>
<td>Company</td>
<td>Spray Formulations</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------------------------------</td>
<td>----------------------------------------------</td>
<td>--------------------------------------</td>
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<tr>
<td>imidacloprid</td>
<td>Imida</td>
<td>Eligra</td>
<td>1.6 F, 2 F, 4 F, 5 F</td>
</tr>
<tr>
<td></td>
<td>ImiGold</td>
<td>United Phosphorus, Inc.</td>
<td>0.5 G, 2 F, 70 DF</td>
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<tr>
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<td>Nuprid, Senator</td>
<td>NuFarm</td>
<td>1.6 F, 2 F, 4 F, 4 F, 5 F, 5 FS</td>
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<tr>
<td></td>
<td>Axxess</td>
<td>BASF</td>
<td>5 FS</td>
</tr>
<tr>
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<td>Steward, Avaunt</td>
<td>DuPont</td>
<td>1.25 lb SC, 30% DG</td>
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<tr>
<td></td>
<td>Advison, Provaunt</td>
<td>DuPont Professional Products</td>
<td>0.045% bait, 0.05% bait, 0.1% bait, 0.22% bait, 0.6% gel, 30% DG</td>
</tr>
<tr>
<td></td>
<td>Spectracide Fire Ant Killer Plus</td>
<td>Spectrum Brands, Inc.</td>
<td>0.016% bait</td>
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<tr>
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<td>Preventer Bait Once &amp; Done</td>
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<tr>
<td>indoxacarb</td>
<td>Steward</td>
<td>Lesco</td>
<td>9.7% EC</td>
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<tr>
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<td>Scimitar, Lamcap</td>
<td>Syngenta Professional Products</td>
<td>9.7% EC, 1 CS</td>
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<tr>
<td></td>
<td>Spectracide Triazicide Once &amp; Done</td>
<td>Spectrum Brands, Inc.</td>
<td>0.002% RTU, 0.1% G, 0.25% EC</td>
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<tr>
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<td>Jitzu</td>
<td>Fuzion Technologies, LLC</td>
<td>1 EC</td>
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<td>Karate Z, Warrior Z</td>
<td>Syngenta</td>
<td>2.08 CS, 1 CS</td>
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<td>Kendo</td>
<td>Helm Agro US</td>
<td>1 EC, 9.7 CS</td>
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<td>Grizzly Z, Taiga Z, Mystic Z</td>
<td>Agrisolutions</td>
<td>1 CS, 2.08 CS</td>
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<tr>
<td></td>
<td>Helena Lambda, Lambda-T</td>
<td>Helena</td>
<td>2.08 CS, 1 CS</td>
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<td>Kaiso, Lambda-Cyathlothin</td>
<td>NuFarm</td>
<td>24 WG, 1 EC</td>
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<td>LambdaStar</td>
<td>United Phosphorus, Inc.</td>
<td>1 EC</td>
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<td>Silencer, Paradigm</td>
<td>LG International</td>
<td>1 EC</td>
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<td></td>
<td></td>
<td>MANA</td>
<td>1 EC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Various (FDA regulated)</td>
<td>1% shampoo (by prescription only)</td>
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<td></td>
<td></td>
<td>Cheiminova, Helena, Gowan, Arysta</td>
<td>5 lb EC, 8 lb EC, 5% D, 6% D, 25% WP</td>
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<tr>
<td></td>
<td></td>
<td>Several companies</td>
<td>Snarol pellets, etc.</td>
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<td>Syngenta</td>
<td>2 lb EC</td>
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<td>Bayer Corporation</td>
<td>2% ready-to-use bait, 75% WP</td>
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<td>DuPont</td>
<td>1.8 lb EC, 90% WS powder, 2.4 LV</td>
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<td>Dow AgroSciences LLC</td>
<td>2.0 lb F</td>
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<td></td>
<td>Dow AgroSciences LLC</td>
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<td>OHP, Inc.</td>
<td>70%</td>
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<td>Chemtura Corporation</td>
<td>0.83 SC</td>
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<td></td>
<td>MANA</td>
<td>0.83 EC</td>
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<td></td>
<td></td>
<td>AgRItech, LLC</td>
<td>50% SC</td>
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<td>DuPont</td>
<td>2 EC, 3.77 EC</td>
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<td>Amvac Chemical</td>
<td>2 lb EC, 5.7% EC, 25 W</td>
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<td>FMC Corporation</td>
<td>36.8% EC, 3.2 EC, 25 WP, 1.5 G</td>
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<td>Cooper Chemical Company</td>
<td>11% EC, ear tag</td>
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<td>metaldehyde</td>
<td>Slug and snail bait, Deadline</td>
<td>Anchor Chemical Company</td>
<td>10% EC</td>
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<tr>
<td>methidathion</td>
<td>Supracide</td>
<td>Micro Flo Company</td>
<td>36.8% EC</td>
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<tr>
<td>methiocarb</td>
<td>Mesurol</td>
<td>United Phosphorus, Inc.</td>
<td>25% WP, 36.8% EC</td>
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<tr>
<td>methomyl</td>
<td>Lannate</td>
<td>AgriSolutions</td>
<td>3.2 EC</td>
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<tr>
<td>methoxyfenozide</td>
<td>Intrepid</td>
<td>BASF, AgriSolutions</td>
<td>15% G, 20% G</td>
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<tr>
<td>methoxyfenozide + spinetoram</td>
<td>Intrepid Edge</td>
<td>Gowan Corporation</td>
<td>50 WP, 4% pour on</td>
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<tr>
<td>neem oil</td>
<td>Triact</td>
<td>Syngenta</td>
<td>5 E</td>
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<tr>
<td>novaluron</td>
<td>Pedestal, Rimon</td>
<td>Uniroyal/Crompton Corporation</td>
<td>6.55 and 6.0 EC, 30% W</td>
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<tr>
<td>nucleopolyhedrovirus</td>
<td>Heligen</td>
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<tr>
<td>oxamyl</td>
<td>Vydate C, CLV</td>
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<td>permethrin</td>
<td>Ambush, Ectiban</td>
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<td>Astro, Pounce</td>
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<tr>
<td></td>
<td>Atroban</td>
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<tr>
<td></td>
<td>Permectrin II</td>
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<td>Permethrin Pro</td>
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<td>Perm-Up</td>
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<td>phorate</td>
<td>Thimet, Phorate</td>
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<td>Imidan, Prolate</td>
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<td>pirimiphos-methyl</td>
<td>Actellic</td>
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<tr>
<td>propargite</td>
<td>Comite, Omite</td>
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</tbody>
</table>
### COMMON AND TRADE NAMES OF SOME OF THE CHEMICALS MENTIONED IN THIS GUIDE

<table>
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<tr>
<th>Common Name</th>
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<th>Company</th>
<th>Spray Formulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>propoxur</td>
<td>Baygon</td>
<td>Bayer Crop Science</td>
<td>70% WP, 1.5 EC, 2 B</td>
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<tr>
<td>pymetrozine</td>
<td>Endeavor</td>
<td>Syngenta Professional Products</td>
<td>50% WDG</td>
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<tr>
<td>pyrethrins + rotenone</td>
<td>Pyrellin E.C.</td>
<td>Webb Wright Corporation</td>
<td>0.6% + 0.5% EC</td>
</tr>
<tr>
<td>pyriproxyfen</td>
<td>Distance, Esteem, Spectracide, Fire Ant Bait</td>
<td>Valent U.S.A. Corporation</td>
<td>0.5%, 0.5% and 0.05% granular bait</td>
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<tr>
<td>S-methoprene</td>
<td>Extinguish Fire Ant Bait</td>
<td>Zoecon</td>
<td>0.5% granular bait</td>
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<tr>
<td>spinetoram</td>
<td>Diacon</td>
<td>Wellmark International</td>
<td>0.8% D, 2.5 SC</td>
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<tr>
<td>spinetoram</td>
<td>Radiant</td>
<td>DowAgroSciences, LLC</td>
<td>1 SC</td>
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<tr>
<td>spinosad</td>
<td>Conserve</td>
<td>Dow AgroSciences, LLC</td>
<td>11.6% SC</td>
</tr>
<tr>
<td>spinosad</td>
<td>Contain, Sensat</td>
<td>Bayer CropScience</td>
<td>8.66%</td>
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<tr>
<td>spinosad</td>
<td>Tracer, Spintor, Blackhawk, Success, Entrust</td>
<td>Dow AgroSciences, LLC</td>
<td>4 L, 2 L</td>
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<tr>
<td>spinosad</td>
<td>Justice Fire Ant Bait</td>
<td>Dow AgroSciences, LLC</td>
<td>0.015% granular bait</td>
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<tr>
<td>spinosad</td>
<td>Eliminator Fire Ant Bait</td>
<td>Gro Tec, Inc.</td>
<td>0.1% granular bait</td>
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<td>spiromesifen</td>
<td>Oberon</td>
<td>Bayer Crop Science</td>
<td>2 SC, 4 SC</td>
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<td>spiromesifen</td>
<td>Judo</td>
<td>OHP, Inc.</td>
<td>45.2%</td>
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<tr>
<td>sulfoxaflor</td>
<td>Closer, Transform</td>
<td>Dow AgroSciences, LLC</td>
<td>2 SC, 50 WG</td>
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<tr>
<td>tebufenozide</td>
<td>Confirm</td>
<td>Dow AgroSciences, LLC</td>
<td>2 F</td>
</tr>
<tr>
<td>tebufenozide</td>
<td>Force</td>
<td>Syngenta, Amvac Chemical</td>
<td>3 G</td>
</tr>
<tr>
<td>temephos</td>
<td>Abate</td>
<td>BASF</td>
<td>4 lb EC, 5% CG, 2% CG, 1% SG, 15 G</td>
</tr>
<tr>
<td>terbufos</td>
<td></td>
<td>BASF, Amvac</td>
<td>20 G, 15 G</td>
</tr>
<tr>
<td>tetrachlorvinphos</td>
<td>Rabon, Ravap</td>
<td>Fermenta Animal Health Company</td>
<td>75% WP, 50% WP, 3% D, 23% EC</td>
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<tr>
<td>thiamethoxam</td>
<td>Centric, Actara, Meridian, Cruiser</td>
<td>Syngenta</td>
<td>25% WG, 40% WG, 0.33% G, 5 FS</td>
</tr>
<tr>
<td>thiamethoxam</td>
<td>Flagship, Optigard</td>
<td>Syngenta Professional Products</td>
<td>0.22% G, 25% WG, 0.01% gel, 2 SC</td>
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<tr>
<td>thiamethoxam + lambda-cyhalothrin</td>
<td>Warden CX</td>
<td>Winfield Solutions</td>
<td>1.9 FS</td>
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<tr>
<td>thiamethoxam + chlorantraniliprole</td>
<td>Voliam Flexi</td>
<td>Syngenta</td>
<td>40 WG</td>
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<tr>
<td>thiamethoxam + lambda-cyhalothrin</td>
<td>Endigo</td>
<td>Syngenta</td>
<td>2.06 ZC</td>
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<tr>
<td>thiodicarb</td>
<td>Larvin</td>
<td>Bayer Crop Science</td>
<td>3.2 lb F</td>
</tr>
<tr>
<td>trichlorfon</td>
<td>Dipterex, Dylox, Neguvon, Proxol</td>
<td>Bayer Crop Science</td>
<td>80% SP, 4 lb LS</td>
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<tr>
<td>zeta-cypermethrin</td>
<td>Mustang Maxx</td>
<td>FMC Corporation</td>
<td>0.8 EC</td>
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<td>zeta-cypermethrin</td>
<td>Respect</td>
<td>BASF</td>
<td>0.8 EC</td>
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<tr>
<td>zeta-cypermethrin + bifenthrin</td>
<td>Hero</td>
<td>FMC Corporation</td>
<td>1.24 EC</td>
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<tr>
<td>B = Bait</td>
<td>EC = Emulsifiable concentrate</td>
<td>S = Solution</td>
<td>WG = Water dispersible granules</td>
</tr>
<tr>
<td>CG = Concentrate granules</td>
<td>F = Flowable</td>
<td>SC = Suspension concentrate</td>
<td>WP = Wettable powder</td>
</tr>
<tr>
<td>CS = Capsule suspension</td>
<td>G = Granules</td>
<td>SG = Soluble granules</td>
<td>WSB = Water soluble bags</td>
</tr>
<tr>
<td>D = Dust</td>
<td>L = Liquid</td>
<td>SP = Soluble powder</td>
<td>WSG = Water soluble granules</td>
</tr>
<tr>
<td>DF = Dry flowable</td>
<td>LS = Liquid soluble</td>
<td>W = Wettable powder</td>
<td>WSP = Water soluble packet</td>
</tr>
<tr>
<td>DG = Water dispersible granules</td>
<td>LV = Low volatile</td>
<td>WDG = Wettable dispersible granules</td>
<td>ZC = Zeon capsule technology</td>
</tr>
<tr>
<td>E = Emulsifiable concentrate</td>
<td>RTU = Ready to use</td>
<td>WDL = Water dispersible liquid</td>
<td></td>
</tr>
</tbody>
</table>
NAMES, CLASSIFICATION, AND TOXICITY OF INSECTICIDES

The following chart will help you identify specific pesticides and give you an indication of their toxicities, as well as their mode of action (IRAC code).

Names — Each generally used name of each pesticide is listed alphabetically in the left-hand column of the chart. Synonyms in general usage are listed in the next column opposite each entry. Trade names are indicated by the superscript "*"; they should be capitalized. Other names are usually not capitalized.

Classes — Most insecticides are classified chemically as:

- **Car. = carbamate**
  - Acetylcholinesterase inhibitor
  - IRAC CODE 1A
- **OP = organophosphate**
  - Acetylcholinesterase inhibitor
  - IRAC CODE 1B
- **OC = organochlorines**
  - GABA-gated chloride channel antagonists
  - IRAC CODE 2A
- **PP = phenylpyrazoles**
  - GABA-gated chloride channel antagonists
  - IRAC CODE 2B
- **SyP = synthetic pyrethroids**
  - Sodium channel modulators
  - IRAC CODE 3A
- **NEO = neonicotinoids**
  - Nicotinic acetylcholine receptor
  - IRAC CODE 4A
- **SX = sulfoximes**
  - Nicotinic acetylcholine receptor agonist
  - IRAC CODE 4C
- **BU = butenolides**
  - Nicotinic acetylcholine receptor agonist
  - IRAC CODE 4D
- **SP = spinosyns**
  - Nicotinic acetylcholine receptor activator
  - IRAC CODE 5
- **AV = avermectins**
  - Chloride channel activators
  - IRAC CODE 6
- **JH = juvenile hormone**
  - Juvenile hormone mimic
  - IRAC CODE 7A
- **FL = flonicamid**
  - Feeding blockers
  - IRAC CODE 9C
- **ET = etoxazole**
  - Mite growth inhibitors
  - IRAC CODE 10B
- **B = bacterial origin**
  - Microbial disruptors
  - IRAC CODE 11A, 11B
- **PRO = propargite**
  - ATP synthase inhibitors
  - IRAC CODE 12C
- **IGR = insect growth regulator**
  - Chitin synthesis inhibitors
  - IRAC CODE 15, 16, 17, 18, 20A
- **MISC = chemistry unclear**
  - Uncertain mode of action
  - IRAC CODE UN
- **OX = oxadiazine**
  - Sodium channel blocker
  - IRAC CODE 22A
- **Phos. = phosphine**
  - Mitochondrial inhibitors
  - IRAC CODE 24A
- **DM = diamides**
  - Ryanodine receptor
  - IRAC CODE 28

Toxicity Categories and LD₉₀ Values — When registering pesticides, the Environmental Protection Agency uses acute LD₉₀ values to determine the toxicity category and words or symbols that must be placed on the label. For this purpose, the test animals are usually rats, mice, or rabbits, but other mammals are sometimes used.

<table>
<thead>
<tr>
<th>Toxicity Category</th>
<th>Signal Words Required On Label by EPA</th>
<th>ORAL LD₉₀ (mg/kg)</th>
<th>DERMAL LD₉₀ (mg/kg)</th>
<th>Probable Lethal Oral Dose For Adult Humans</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Highly Toxic</td>
<td>DANGER, POISON, Plus Skull &amp; Crossbones Symbol</td>
<td>0 to 50</td>
<td>0 to 200</td>
<td>A few drops to 1 t</td>
</tr>
<tr>
<td>II. Moderately Toxic</td>
<td>WARNING</td>
<td>50 to 500</td>
<td>50 to 2,000</td>
<td>1 t to 2 T</td>
</tr>
<tr>
<td>III. Slightly Toxic</td>
<td>CAUTION</td>
<td>500 to 5,000</td>
<td>2,000 to 20,000</td>
<td>1 oz to 1 pt (1 lb)</td>
</tr>
<tr>
<td>IV. Low Toxicity</td>
<td>CAUTION</td>
<td>5,000</td>
<td>20,000</td>
<td>1 pt (1 lb) or more</td>
</tr>
</tbody>
</table>

The LD₉₀ is the dosage of the chemical at which one-half of the test animals are killed. It is based on the bodyweight of the animal and is expressed in milligrams of the chemical per kilogram of animal (mg/kg). A mg/kg is equivalent to 1 ppm. The lower the LD₉₀ value, the higher the toxicity. Although most reported LD₉₀ values are for technical material or actual toxicant, they are based on formulated products in some instances. All of these in the charts are for the technical material unless otherwise indicated. The toxicity categories given in the following charts are based on available data and are not necessarily the toxicity categories that would be assigned by EPA for the specific pesticides. Formulated pesticides usually have a higher LD₉₀ than the technical material and may not fall in the same toxicity category as the technical material.

The usual ways of administering chemicals are oral (by mouth), dermal (applied to the skin), and inhalation. Inhalation toxicity is expressed as LC₅₀ (lethal concentration). It is not as generally used as the other two.

Toxicity may be either acute or chronic. Acute refers to rather quick action from a single exposure, while chronic refers to the toxic effect of many exposures over a period of time.
<table>
<thead>
<tr>
<th>Insecticide Names</th>
<th>Other Names</th>
<th>Class</th>
<th>Toxicity Category</th>
<th>IRAC CODE</th>
<th>Acute LD₅₀ Values for White Rats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abacus*</td>
<td>abamectin, Agri-Mek*, Abba*, AbamectinE*, Flora-Mek*, Reaper*, Temprano*, Zoro*, Clinch*</td>
<td>AV</td>
<td>II</td>
<td>6</td>
<td>300 mg/kg (oral) &gt;1800 mg/kg (dermal)</td>
</tr>
<tr>
<td>abamectin</td>
<td>Agri-Mek*, Abba*, Abacus*, AbamectinE*, Flora-Mek*, Reaper*, Temprano*, Zoro*, Clinch*</td>
<td>AV</td>
<td>II</td>
<td>6</td>
<td>300 mg/kg (oral) &gt;1800 mg/kg (dermal)</td>
</tr>
<tr>
<td>Abate*</td>
<td>temephos</td>
<td>OP</td>
<td>III</td>
<td>1B</td>
<td>8600-13000 mg/kg (oral) &gt;4000 mg/kg (dermal)</td>
</tr>
<tr>
<td>Abba*</td>
<td>abamectin, Agri-Mek*, Abba*, AbamectinE*, Flora-Mek*, Reaper*, Temprano*, Zoro*, Clinch*</td>
<td>AV</td>
<td>II</td>
<td>6</td>
<td>300 mg/kg (oral) &gt;1800 mg/kg (dermal)</td>
</tr>
<tr>
<td>acephate</td>
<td>Orthene*, Bracket*</td>
<td>OP</td>
<td>III</td>
<td>1B</td>
<td>866-945 mg/kg (oral) &gt;10,250 mg/kg (rabbit)</td>
</tr>
<tr>
<td>acetamiprid</td>
<td>Intruder*, Assail*, TriStar*, Strafer*, Anarchy*, ArVida*</td>
<td>NEO</td>
<td>III</td>
<td>4A</td>
<td>1,064 mg/kg (oral) &gt;2000 mg/kg (dermal)</td>
</tr>
<tr>
<td>Actara*</td>
<td>thiameethoxam, Cruiser*, Centric*, Flagship*, Meridian*, Platinum*</td>
<td>NEO</td>
<td>III</td>
<td>4A</td>
<td>&gt;5000 mg/kg (oral) &gt;2000 mg/kg (dermal)</td>
</tr>
<tr>
<td>Actellic*</td>
<td>pirimiphos-methyl, Actellifog*</td>
<td>OP</td>
<td>III</td>
<td>1B</td>
<td>&gt;2000 mg/kg (oral) &gt;4952 mg/kg (dermal)</td>
</tr>
<tr>
<td>Adjourn*</td>
<td>esfenvalerate, Asana XL*, S-FenvaloStar*, Zyrate*</td>
<td>SyP</td>
<td>III</td>
<td>3A</td>
<td>458 mg/kg (oral) &gt;2000 mg/kg (dermal)</td>
</tr>
<tr>
<td>Admire*</td>
<td>imidacloprid, Provado*, Merit*, Gaucho*, Advise*, Couraze*</td>
<td>NEO</td>
<td>III</td>
<td>4A</td>
<td>4350 mg/kg (oral) &gt;5050 mg/kg (rabbit)</td>
</tr>
<tr>
<td>Advantage*</td>
<td>imidacloprid</td>
<td>NEO</td>
<td>III</td>
<td>4A</td>
<td>1732-1943 mg/kg (oral) &gt;2000 mg/kg (dermal)</td>
</tr>
<tr>
<td>AgLogic</td>
<td>aldicarb</td>
<td>Car.</td>
<td>I</td>
<td>1A</td>
<td>0.93 mg/kg (oral) &lt;5.0 mg/kg (rabbit)</td>
</tr>
<tr>
<td>Agritol*</td>
<td>Bacillus thuringiensis</td>
<td>B</td>
<td>IV</td>
<td>11A</td>
<td>Non-toxic to mammals</td>
</tr>
<tr>
<td>aldicarb</td>
<td>AgLogic</td>
<td>Car.</td>
<td>I</td>
<td>1A</td>
<td>0.93 mg/kg (oral) &lt;5.0 mg/kg (rabbit)</td>
</tr>
<tr>
<td>alleythrin</td>
<td>Pynamin*</td>
<td>SyP</td>
<td>III</td>
<td>3A</td>
<td>680-1000 mg/kg (oral) &gt;11,200 mg/kg (dermal)</td>
</tr>
<tr>
<td>alpha-cypermethrin</td>
<td>Fastac*</td>
<td>SyP</td>
<td>III</td>
<td>3</td>
<td>210-1050 mg/kg (oral) &gt;5000 mg/kg (dermal)</td>
</tr>
<tr>
<td>Altacor*</td>
<td>chlorantraniliprole, Coragen*, Prevathon*, Dermacor*, GrubEx*, Acelepryn*, Altriset*</td>
<td>DM</td>
<td>II</td>
<td>28</td>
<td>98.11 mg/kg (oral) &gt;5000 mg/kg (dermal)</td>
</tr>
<tr>
<td>Altosid*</td>
<td>methoprene, Diacon*</td>
<td>JH</td>
<td>III</td>
<td>7A</td>
<td>&gt;34,600 mg/kg (oral) &gt;3,000 mg/kg (rabbit)</td>
</tr>
<tr>
<td>Aluminum Phosphide*</td>
<td>Phostoxin*, Gastrox*, Fumitoxin*, Weevil-Cide*, Killz-All*</td>
<td>Phos.</td>
<td>I</td>
<td>24A</td>
<td>20 mg/kg (oral) &gt;4000 mg/kg (dermal)</td>
</tr>
<tr>
<td>Ambush*</td>
<td>permethrin, Pounce*, Arctic*, Perm-Up*</td>
<td>SyP</td>
<td>II</td>
<td>3A</td>
<td>430-4000 mg/kg (oral) &gt;4000 mg/kg (dermal)</td>
</tr>
<tr>
<td>Amdro*</td>
<td>hydramethylnon</td>
<td>IGR</td>
<td>III</td>
<td>20A</td>
<td>&gt;5000 mg/kg (oral) &gt;2000 mg/kg (rabbit)</td>
</tr>
<tr>
<td>Ammo*</td>
<td>cypermethrin, Battery*, UP-Cycle*, Cyper G*, Holster*</td>
<td>SyP</td>
<td>II</td>
<td>3A</td>
<td>247 mg/kg (oral) &gt;2000 mg/kg (dermal)</td>
</tr>
<tr>
<td>Applaud*</td>
<td>buprofezin, Talus*, Centaur*, Courier*</td>
<td>IGR</td>
<td>III</td>
<td>16</td>
<td>&gt;5000 mg/kg (oral) &gt;2000 mg/kg (dermal)</td>
</tr>
<tr>
<td>Arctic*</td>
<td>permethrin, Pounce*, Ambush*, Perm-Up*</td>
<td>SyP</td>
<td>II</td>
<td>3A</td>
<td>430-4000 mg/kg (oral) &gt;4000 mg/kg (dermal)</td>
</tr>
<tr>
<td>arprocarb</td>
<td>Baygon*, propoxur</td>
<td>Car.</td>
<td>II</td>
<td>1A</td>
<td>128 mg/kg (oral) 800-1000 mg/kg (dermal)</td>
</tr>
<tr>
<td>Asana XL*</td>
<td>esfenvalerate, Adjourn*, S-FenvaloStar*, Zyrate*</td>
<td>SyP</td>
<td>II</td>
<td>3A</td>
<td>458 mg/kg (oral) &gt;2000 mg/kg (dermal)</td>
</tr>
<tr>
<td>Assaili*</td>
<td>acetamiprid, Intruder*, TriStar*, Strafer*, Anarchy*, ArVida*</td>
<td>NEO</td>
<td>III</td>
<td>4A</td>
<td>1064 mg/kg (oral) &gt;2000 mg/kg (dermal)</td>
</tr>
<tr>
<td>Atropaon*</td>
<td>permethrin</td>
<td>SyP</td>
<td>II</td>
<td>3A</td>
<td>&gt;4000 mg/kg (oral) &gt;4000 mg/kg (dermal)</td>
</tr>
<tr>
<td>azadirachtin</td>
<td>Azatrol*, Azatin XL*, Neemix*, Azahar*, Ecozin Plus*, Debug*, Ornizin*</td>
<td>MSC</td>
<td>IV</td>
<td>UN</td>
<td>&gt;5000 mg/kg (oral) &gt;2000 mg/kg (dermal)</td>
</tr>
<tr>
<td>Azahar*</td>
<td>azadirachtin, Azatrol*, Azatin*, Neemix*, Ecozin*, Debug*, Ornizin*</td>
<td>MSC</td>
<td>IV</td>
<td>UN</td>
<td>&gt;5000 mg/kg (oral) &gt;2000 mg/kg (dermal)</td>
</tr>
<tr>
<td>Azatrol*</td>
<td>azadirachtin, Azatrol*, Azatin*, Neemix*, Ecozin*, Debug*, Ornizin*</td>
<td>MSC</td>
<td>IV</td>
<td>UN</td>
<td>&gt;5000 mg/kg (oral) &gt;2000 mg/kg (dermal)</td>
</tr>
<tr>
<td>azinphos-methyl</td>
<td>Guthion*</td>
<td>OP</td>
<td>I</td>
<td>1B</td>
<td>5-20 mg/kg (oral) 220 mg/kg (dermal)</td>
</tr>
<tr>
<td>Aztec*</td>
<td>cyfluthrin + tebufentin, Defcon*</td>
<td>SyP + OP</td>
<td>I</td>
<td>3A + 1B</td>
<td>1.3 mg/kg (oral) 11A mg/kg (dermal)</td>
</tr>
<tr>
<td>Bacillus thuringiensis</td>
<td>Dipel*, Thuricide*, Agritol*, Sok-BT*, Bactur*, Biobit*, MVP II*, Foray*</td>
<td>B</td>
<td>IV</td>
<td>11A</td>
<td>Non-toxic to mammals</td>
</tr>
<tr>
<td>Bacillus thuringiensis var. israelensis</td>
<td>Agree*, Xentari*, Bit*, Bactomos*, Teknar*, Vectobac*, Gnatrol*</td>
<td>B</td>
<td>IV</td>
<td>11A</td>
<td>Non-toxic to mammals</td>
</tr>
<tr>
<td>Battalion*</td>
<td>deltamethrin, DeltaDust*, DeltaGard*, DeltaGold*, Shooter*, Decis*, Over 'n Out!, TopChoice*, Chipco Choice*, Maxforce*, Centynal*, Chipco Firestar*, Suspend*</td>
<td>SyP</td>
<td>I</td>
<td>3A</td>
<td>42.9 mg/kg (oral) &gt;2000 mg/kg (dermal)</td>
</tr>
<tr>
<td>Insecticide Names</td>
<td>Other Names</td>
<td>Class</td>
<td>Toxicity Category</td>
<td>IRAC CODE</td>
<td>Acute LD&lt;sub&gt;50&lt;/sub&gt; Values for White Rats</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------</td>
<td>-------</td>
<td>-------------------</td>
<td>-----------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>Baygon*</td>
<td>propoxur, arprocarb</td>
<td>Car.</td>
<td>II</td>
<td>1A</td>
<td>128</td>
</tr>
<tr>
<td>Baythroid XL*</td>
<td>beta-cyfluthrin, Tempo Ultra*</td>
<td>SyP</td>
<td>III</td>
<td>3A</td>
<td>647</td>
</tr>
<tr>
<td>Belay*</td>
<td>clothianidin, Poncho*, Nipsit Inside*, Crossfire*</td>
<td>NEO</td>
<td>III</td>
<td>4A</td>
<td>3044</td>
</tr>
<tr>
<td>Belay*</td>
<td>flonicamid, Carbine*, Aria*</td>
<td>FL</td>
<td>II</td>
<td>9C</td>
<td>&gt;2000</td>
</tr>
<tr>
<td>Belt*</td>
<td>flubendiamide, Synapxe*</td>
<td>DM</td>
<td>II</td>
<td>28</td>
<td>&lt;2000</td>
</tr>
<tr>
<td>Besiege*</td>
<td>chlorantraniliprole + lambda-cyhalothrin, Voliam Xpress*</td>
<td>DM + SyP</td>
<td>III</td>
<td>28 + 3A</td>
<td>180</td>
</tr>
<tr>
<td>beta-cyfluthrin</td>
<td>Baythroid XL*, Tempo Ultra*</td>
<td>SyP</td>
<td>I</td>
<td>3A</td>
<td>647</td>
</tr>
<tr>
<td>Bidrin*</td>
<td>dicrotophos, Inject-A-Cide B*, Dicromax*</td>
<td>OP</td>
<td>I</td>
<td>1B</td>
<td>17-22</td>
</tr>
<tr>
<td>Bidrin XP II*</td>
<td>dicrotophos + bifenthrin</td>
<td>OP + SyP</td>
<td>I</td>
<td>1B + 3A</td>
<td>17-22</td>
</tr>
<tr>
<td>Bracket*</td>
<td>acephate, Orthene*</td>
<td>OP</td>
<td>III</td>
<td>1B</td>
<td>866-945</td>
</tr>
<tr>
<td>Brigadier*</td>
<td>bifenthrin + imidacloprid</td>
<td>SyP + NEO</td>
<td>II</td>
<td>3A + 4A</td>
<td>175</td>
</tr>
<tr>
<td>Capture*</td>
<td>bifenthrin, Talstar*, Brigade*, Discipline*</td>
<td>SyP</td>
<td>II</td>
<td>3A</td>
<td>275</td>
</tr>
<tr>
<td>carbaryl</td>
<td>Sevin*</td>
<td>Car.</td>
<td>II</td>
<td>1A</td>
<td>246-283</td>
</tr>
<tr>
<td>Carbine*</td>
<td>flonicamid, Beleaf*, Aria*</td>
<td>FL</td>
<td>II</td>
<td>9C</td>
<td>&gt;2000</td>
</tr>
<tr>
<td>chlorantraniliprole</td>
<td>Altacor*, Coragen*, Prevathon*, Dermacor*, GrubEx*, DM</td>
<td>OP</td>
<td>IV</td>
<td>28</td>
<td>98.11</td>
</tr>
<tr>
<td>chlorpyrifos-methyl + deltamethrin</td>
<td>Storicide II*</td>
<td>OP + SyP</td>
<td>II</td>
<td>1B + 3A</td>
<td>150</td>
</tr>
<tr>
<td>Clinch*</td>
<td>abamectin, Agri-Mek*, Avid, Epi-Mek*, Zephyr*</td>
<td>AV</td>
<td>II</td>
<td>6</td>
<td>300</td>
</tr>
<tr>
<td>Closer</td>
<td>sulfoxaflor, Transform</td>
<td>SX</td>
<td>IV</td>
<td>4C</td>
<td>&gt;2000</td>
</tr>
<tr>
<td>clothianidin</td>
<td>Poncho*, Belay*, Nipsit Inside*, Arena*, Crossfire*</td>
<td>NEO</td>
<td>III</td>
<td>4A</td>
<td>3044</td>
</tr>
<tr>
<td>Cobalt*</td>
<td>chlorpyrifos + lambda-cyhalothrin</td>
<td>OP + SyP</td>
<td>II</td>
<td>1B + 3A</td>
<td>97-276</td>
</tr>
<tr>
<td>Comite*</td>
<td>propargite, Omite*</td>
<td>IGR</td>
<td>IV</td>
<td>18</td>
<td>5000</td>
</tr>
<tr>
<td>Confirm*</td>
<td>tebufenozide</td>
<td>IGR</td>
<td>IV</td>
<td>18</td>
<td>5000</td>
</tr>
<tr>
<td>Consero*</td>
<td>spinosad, Tracer*, Spintor*, Success*, Entrust*, Sensat*, Execute*, Blackhawk*, Contain*</td>
<td>SP</td>
<td>IV</td>
<td>5</td>
<td>5000</td>
</tr>
<tr>
<td>Contain*</td>
<td>spinosad, Tracer*, Spintor*, Success*, Entrust*, Sensat*, Execute*, Blackhawk*, Consero*</td>
<td>SP</td>
<td>IV</td>
<td>5</td>
<td>5000</td>
</tr>
<tr>
<td>Coragen*</td>
<td>chlorantraniliprole, Altacor*, Prevathon*, Dermacor*, GrubEx*, Acellepryn*, Altiset*</td>
<td>DM</td>
<td>II</td>
<td>28</td>
<td>98.11</td>
</tr>
<tr>
<td>Co-Ral*</td>
<td>coumaphos</td>
<td>OP</td>
<td>I</td>
<td>1B</td>
<td>15.5-41</td>
</tr>
<tr>
<td>Co-Ral*</td>
<td>coumaphos</td>
<td>OP</td>
<td>I</td>
<td>1B</td>
<td>15.5-41</td>
</tr>
<tr>
<td>Counter*</td>
<td>terbufos</td>
<td>OP</td>
<td>I</td>
<td>1B</td>
<td>4.5-9.0</td>
</tr>
<tr>
<td>Cruiser*</td>
<td>thiamethoxam, Centric*, Warden*, Seed Shield*, Adage*</td>
<td>NEO</td>
<td>III</td>
<td>4A</td>
<td>&gt;5000</td>
</tr>
<tr>
<td>Curacron*</td>
<td>profenofos</td>
<td>OP</td>
<td>I</td>
<td>1B</td>
<td>622</td>
</tr>
<tr>
<td>cyfluthrin + tebupirimfos</td>
<td>SyP + OP</td>
<td>I</td>
<td>3A + 1B</td>
<td>1.3</td>
<td>&gt;2000</td>
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<tr>
<td>Cymbush*</td>
<td>cypermethrin, Ammo*, Battery*, UP-Cyde*</td>
<td>SyP</td>
<td>I</td>
<td>3A</td>
<td>247</td>
</tr>
<tr>
<td>cyromazine</td>
<td>Larvadex*</td>
<td>IGR</td>
<td>IV</td>
<td>17</td>
<td>3387</td>
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### Insecticides

<table>
<thead>
<tr>
<th>Insecticide Names</th>
<th>Other Names</th>
<th>Class</th>
<th>Toxicity Category</th>
<th>IRAC CODE</th>
<th>Acute LD$_{50}$ Values for White Rats</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDVP*</td>
<td>dichlorvos, dichlorphos, Vapona*</td>
<td>OP</td>
<td>I</td>
<td>1B</td>
<td>56-80 mg/kg</td>
</tr>
<tr>
<td>Decathlon*</td>
<td>cyfluthrin, Tombstone*, Renounce*, Tempo*, Optashield*</td>
<td>SyP</td>
<td>I</td>
<td>3A</td>
<td>1015 mg/kg</td>
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<tr>
<td>Declare*</td>
<td>gamma-cyhalothrin, Proxex*, Prolex*</td>
<td>SyP</td>
<td>III</td>
<td>3A</td>
<td>2250-2646 mg/kg</td>
</tr>
<tr>
<td>Defcon*</td>
<td>cyfluthrin + tepupirimfos, Aztec*</td>
<td>SyP + OP</td>
<td>I</td>
<td>3A + 1B</td>
<td>1.3 mg/kg</td>
</tr>
<tr>
<td>Demon*</td>
<td>cypermethrin</td>
<td>SyP</td>
<td>I</td>
<td>3A</td>
<td>247 mg/kg</td>
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<tr>
<td>Denim*</td>
<td>emamectin benzoate</td>
<td>AV</td>
<td>I</td>
<td>6</td>
<td>2950 mg/kg</td>
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<td>Diacon*</td>
<td>S-methoprene*</td>
<td>IGR</td>
<td>III</td>
<td>7A</td>
<td>&gt;34,600 mg/kg</td>
</tr>
<tr>
<td>Diamond*</td>
<td>novaluron, Pedestal*, Rimon*</td>
<td>IGR</td>
<td>III</td>
<td>15</td>
<td>300-400 mg/kg</td>
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<tr>
<td>Diazinon*</td>
<td>Spectracide*, Dryzon*</td>
<td>OP</td>
<td>II, III</td>
<td>1B</td>
<td>300-400 mg/kg</td>
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<tr>
<td>Dibrom*</td>
<td>naled</td>
<td>OP</td>
<td>I</td>
<td>1B</td>
<td>430 mg/kg</td>
</tr>
<tr>
<td>dichlorvos</td>
<td>dichlorvos, Vapona*, DDV*</td>
<td>P</td>
<td>OP</td>
<td>1B</td>
<td>56-80 mg/kg, 75-107 mg/kg</td>
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<tr>
<td>dicofol</td>
<td>Dicofol*, Kelthane*</td>
<td>OC</td>
<td>II, III</td>
<td>UN</td>
<td>&gt;34,600 mg/kg</td>
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<tr>
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<td>Dicofol*, Kelthane*</td>
<td>OC</td>
<td>II, III</td>
<td>UN</td>
<td>&gt;34,600 mg/kg</td>
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<td>diflubenzuron</td>
<td>Dimilin*</td>
<td>IGR</td>
<td>III</td>
<td>15</td>
<td>4540 mg/kg</td>
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<tr>
<td>dimethoate</td>
<td>Dimate*, Dimethoate*</td>
<td>OP</td>
<td>II</td>
<td>1B</td>
<td>215 mg/kg</td>
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<td>Dimilin*</td>
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<td>4540 mg/kg</td>
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<td>Tenchu*</td>
<td>NEO</td>
<td>IV</td>
<td>4A</td>
<td>&gt;2000 mg/kg</td>
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<td>Dipel ESNT*</td>
<td>Bacillus thuringiensis</td>
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<td>11</td>
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<tr>
<td>Dylox*</td>
<td>Dylox*, trichlorfon, Neguvon*, Anthion*, Proxot*, GX-130*</td>
<td>OP</td>
<td>III</td>
<td>1B</td>
<td>560-630 mg/kg</td>
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<tr>
<td>disulfoton</td>
<td>Di-Syston*</td>
<td>OP</td>
<td>I</td>
<td>1B</td>
<td>2-10 mg/kg</td>
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<tr>
<td>Di-Syston*</td>
<td>disulfoton</td>
<td>OP</td>
<td>I</td>
<td>1B</td>
<td>2-10 mg/kg</td>
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<tr>
<td>Draget*</td>
<td>permethrin</td>
<td>SyP</td>
<td>I-III</td>
<td>3A</td>
<td>430-4000 mg/kg</td>
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<tr>
<td>Dursban*</td>
<td>chlorpyrifos, Lorsban*, Nufos*</td>
<td>OP</td>
<td>II</td>
<td>1B</td>
<td>97-276 mg/kg</td>
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<td>Dylox*</td>
<td>trichlorfon, Dylox*, Neguvon*, Proxot*</td>
<td>OP</td>
<td>I</td>
<td>1B</td>
<td>560-630 mg/kg</td>
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<td>Ectiban*</td>
<td>permethrin</td>
<td>SyP</td>
<td>II</td>
<td>3A</td>
<td>4000 mg/kg</td>
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<tr>
<td>Endigo*</td>
<td>thiamethoxam + lambda-cyhalothrin</td>
<td>SyP</td>
<td>II</td>
<td>4A + 3A</td>
<td>310.2 mg/kg</td>
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<tr>
<td>endosulfan</td>
<td>Thionex*</td>
<td>OC</td>
<td>II</td>
<td>2A</td>
<td>30-110 mg/kg</td>
</tr>
<tr>
<td>Entrust*</td>
<td>spinosad, Tracer*, Spintor*, Success*, Consero*, Sensat*, Execute*, Blackhawk*, Contain*</td>
<td>SP</td>
<td>IV</td>
<td>5</td>
<td>5000 mg/kg</td>
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<tr>
<td>esfenvalerate</td>
<td>Asana XL*, Adjourn*, S-FenvaloStar*</td>
<td>SyP</td>
<td>II</td>
<td>3A</td>
<td>458 mg/kg</td>
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<tr>
<td>Execute*</td>
<td>spinosad, Tracer*, Spintor*, Success*, Consero*, Sensat*, Entrust*, Blackhawk*, Contain*</td>
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<td>5000 mg/kg</td>
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<td>famphur</td>
<td>Warbex*</td>
<td>OP</td>
<td>I</td>
<td>1B</td>
<td>35-62 mg/kg, 1460-5039 mg/kg</td>
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<tr>
<td>Fastac*</td>
<td>alpha-cypermethrin</td>
<td>SyP</td>
<td>III</td>
<td>3</td>
<td>210-1050 mg/kg, &gt;5000 mg/kg</td>
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<tr>
<td>fenpyroximate</td>
<td>Portal*, Fujinite*</td>
<td>MISC.</td>
<td>III</td>
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<td>fipronil</td>
<td>Regent*, Termidor*</td>
<td>PP</td>
<td>II</td>
<td>2B</td>
<td>336 mg/kg, 382 (rabbit)</td>
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<tr>
<td>flonicamid</td>
<td>Carbine*, Beleaf*, Aria*</td>
<td>FL</td>
<td>II</td>
<td>9C</td>
<td>2000 mg/kg, &gt;2000 mg/kg</td>
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<td>flubendiamide</td>
<td>Belt*, Synapse*</td>
<td>DM</td>
<td>II</td>
<td>28</td>
<td>&lt;2000 mg/kg, &gt;4000 mg/kg</td>
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<td>flupyradifurone</td>
<td>Sivanto*</td>
<td>BU</td>
<td>III</td>
<td>4D</td>
<td>&gt;2000 mg/kg, &gt;2000 mg/kg</td>
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<td>Fumitoxin*</td>
<td>aluminum phosphide, Phostoxin*</td>
<td>Phos.</td>
<td>I</td>
<td>24A</td>
<td>20 mg/kg</td>
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<td>gamma-cyhalothrin</td>
<td>Proxex*, Prolex*, Declare*</td>
<td>SyP</td>
<td>III</td>
<td>3A</td>
<td>2250-2646 mg/kg, &gt;5000 mg/kg</td>
</tr>
<tr>
<td>Insecticide Names</td>
<td>Other Names</td>
<td>Class</td>
<td>Toxicity Category</td>
<td>IRAC CODE</td>
<td>Acute LD50 Values for White Rats</td>
</tr>
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<tr>
<td><strong>Gaucho</strong></td>
<td>imidacloprid</td>
<td>NEO</td>
<td>III</td>
<td>4A</td>
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<tr>
<td><strong>Govern</strong></td>
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<td>OP</td>
<td>II</td>
<td>1B</td>
<td>97-276</td>
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<tr>
<td><strong>Grizzly</strong></td>
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<td>SyP</td>
<td>II</td>
<td>3A</td>
<td>180</td>
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<tr>
<td><strong>Guthion</strong></td>
<td>azinphos-methyl</td>
<td>OP</td>
<td>I</td>
<td>1B</td>
<td>11-13</td>
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<tr>
<td><strong>halofenozide</strong></td>
<td>Mach II*</td>
<td>IGR</td>
<td>IV</td>
<td>18</td>
<td>2850</td>
</tr>
<tr>
<td><strong>Hatchet</strong></td>
<td>chlorpyrifos, Dursban*, Lorsban*, Whirlwind*, Warhawk*, Yuma*</td>
<td>OP</td>
<td>II</td>
<td>1B</td>
<td>97-276</td>
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<tr>
<td><strong>Heligen</strong></td>
<td>nucleopolyhedroivirus</td>
<td>Misc.</td>
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<td>Amdro*</td>
<td>NEC</td>
<td>III</td>
<td>20A</td>
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<td><strong>Imida</strong></td>
<td>imidacloprid, Provado*, Alias*, Couraze*</td>
<td>NEO</td>
<td>III</td>
<td>4A</td>
<td>4350</td>
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<tr>
<td><strong>Imidan</strong></td>
<td>phosmet</td>
<td>OP</td>
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<td>NEO</td>
<td>III</td>
<td>4A</td>
<td>4350</td>
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<tr>
<td><strong>indoxycarb</strong></td>
<td>Steward*</td>
<td>IGR</td>
<td>IV</td>
<td>18A</td>
<td>&gt;5000</td>
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<tr>
<td><strong>Intrepid</strong></td>
<td>IGR</td>
<td>IV</td>
<td>18A</td>
<td>&gt;5000</td>
<td>&gt;2000</td>
</tr>
<tr>
<td><strong>Intrepid Edge</strong></td>
<td>methoxyfenozide + spinetoram</td>
<td>IGR + SP</td>
<td>IV</td>
<td>18A + 5</td>
<td>&gt;5000</td>
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<tr>
<td><strong>Intruder</strong></td>
<td>acetamiprid, Assail*, Strafer*, Anarchy*, ArVida*</td>
<td>NEO</td>
<td>III</td>
<td>4A</td>
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<td><strong>Ivermectin</strong></td>
<td>Ivermectin*</td>
<td>AV</td>
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<tr>
<td><strong>Javelin</strong></td>
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<tr>
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<td>3A</td>
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<td>3A</td>
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<td>*<em>Lannate</em></td>
<td>methot hern</td>
<td>Car.</td>
<td>I</td>
<td>1A</td>
<td>17-24</td>
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<tr>
<td><strong>Larvadex</strong></td>
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<td>IGR</td>
<td>IV</td>
<td>17</td>
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<td><strong>Larvin</strong></td>
<td>thiocarb</td>
<td>Car.</td>
<td>II</td>
<td>1A</td>
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<td>beta-cyfluthrin + imidacloprid</td>
<td>SyP + NEO</td>
<td>III</td>
<td>3A + 4A</td>
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<td>gamma isomer of BHC</td>
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<td>2A</td>
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<td>halofenozide</td>
<td>IGR</td>
<td>IV</td>
<td>18</td>
<td>2850</td>
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<td>Fyfanon*</td>
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<td>bifenthrin*</td>
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<td>methiocarb, Slug-Geta*, Bug-Geta*</td>
<td>Car.</td>
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<td>Slug and snail bait, Deadline*, Durham Metaldehyde*</td>
<td>MSC</td>
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<td>Supracide*</td>
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<tr>
<td><strong>methiocarb</strong></td>
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<td>Car.</td>
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<td>Car.</td>
<td>I</td>
<td>1A</td>
<td>17-24</td>
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<td><strong>methoprene</strong></td>
<td>Altosid*, Dicon*</td>
<td>IGR</td>
<td>III</td>
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<td>Intrepid*</td>
<td>IGR</td>
<td>IV</td>
<td>18A</td>
<td>&gt;5000</td>
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<tr>
<td><strong>methoxyfenozide + spinetoram</strong></td>
<td>Intrepid Edge*</td>
<td>IGR + SP</td>
<td>IV</td>
<td>18A + 5</td>
<td>&gt;5000</td>
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<td>Penncap M*, Methyl*</td>
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<td>1B</td>
<td>5</td>
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<td>SyP</td>
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<td>3A</td>
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<td><strong>MVP II</strong></td>
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<td>B</td>
<td>IV</td>
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<td>Non-toxic to mammals</td>
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<tr>
<td>Insecticide Names</td>
<td>Other Names</td>
<td>Class</td>
<td>Toxicity Category</td>
<td>IRAC CODE</td>
<td>Acute LD50 Values for White Rats</td>
</tr>
<tr>
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<td>------------------------------</td>
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<td></td>
<td>ORAL (mg/kg)</td>
<td>DERMAL (mg/kg)</td>
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<tr>
<td>Mystic Z*</td>
<td>lambda-cyhalothrin, Karate*, Silencer*, Warrior*</td>
<td>SyP</td>
<td>II</td>
<td>3A</td>
<td>180</td>
</tr>
<tr>
<td>naled</td>
<td></td>
<td>OP</td>
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<td>1B</td>
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<td>III</td>
<td>1B</td>
<td>560-630</td>
</tr>
<tr>
<td>Nipsit Inside*</td>
<td>clothianidin, Poncho*, Belay*, Arena*, Crossfire*</td>
<td>NEO</td>
<td>III</td>
<td>4A</td>
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<td>novaluron</td>
<td>Diamond*, Pestfast*, Rimon*, Mayhem*</td>
<td>IGR</td>
<td>II</td>
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<td>nucleopolyhedrovirus</td>
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<td>Misc.</td>
<td>III</td>
<td>&gt;4000</td>
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<tr>
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<td>chlorpyrifos, Lorsban*, Warhawk*, Whirlwind*, Yuma*, Dursban*</td>
<td>OP</td>
<td>II</td>
<td>1B</td>
<td>97-276</td>
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<tr>
<td>Nuprid*</td>
<td>imidacloprid, Provado*, Alias*, Couraze*</td>
<td>NEO</td>
<td>III</td>
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<td>propargite, Comite*</td>
<td>Misc.</td>
<td>III</td>
<td>12C</td>
<td>2200</td>
</tr>
<tr>
<td>Orthene*</td>
<td>acephate, Bracte*</td>
<td>OP</td>
<td>II</td>
<td>1B</td>
<td>866-945</td>
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<tr>
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<td>permethrin</td>
<td>SyP</td>
<td>II</td>
<td>3A</td>
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<tr>
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<td>Vydaste*</td>
<td>Car.</td>
<td>I</td>
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<tr>
<td>paradichlorobenzene</td>
<td>PDB*</td>
<td>OC</td>
<td>III</td>
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<td>Nipsit Inside*</td>
<td>NEO</td>
<td>4A</td>
<td>II</td>
<td>3A</td>
<td>430-4000</td>
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<td>Thimet*</td>
<td>OP</td>
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<td>Imidan*</td>
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<td>I</td>
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<td>Phos.</td>
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<td>Poncho*</td>
<td>clothianidin, Belay*, Arena*, Nipsit Inside*, Crossfire*</td>
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<td>3A</td>
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<td>gamma-cyhalothrin, Prolex*, Declare*</td>
<td>SyP</td>
<td>III</td>
<td>3A</td>
<td>2250-2646</td>
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<td>Curacron*</td>
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<td>3A</td>
<td>2250-2646</td>
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<td>Phos.</td>
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<td>trichlorfon, Dylox*</td>
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<td>560-630</td>
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<td>Pyr.</td>
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<td>3A</td>
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<td>Rabon*</td>
<td>tetra-Chlorvinphos, Ravap*</td>
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<td>III</td>
<td>1B</td>
<td>4000-5000</td>
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<td>Radiant*</td>
<td>spinetoram</td>
<td>SP</td>
<td>IV</td>
<td>5</td>
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<td>1B</td>
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<td>Regent*</td>
<td>fipronil</td>
<td>PP</td>
<td>II</td>
<td>2B</td>
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<td>Chryson*, Synthrin*</td>
<td>Pyr.</td>
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<td>carbaryl</td>
<td>Car.</td>
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<td>esfenvalerate, Asana XL*, Adjourn*</td>
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<td>458</td>
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<td>Shivanta*</td>
<td>flupyradifurone</td>
<td>BU</td>
<td>III</td>
<td>4D</td>
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<td>bifenthrin, Brigade*, Discipline*, Fanfare*</td>
<td>SyP</td>
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<td>Insecticide Names</td>
<td>Other Names</td>
<td>Class</td>
<td>Toxicity Category</td>
<td>IRAC CODE</td>
<td>Acute LD_{50} Values for White Rats</td>
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<td>Spectracide*</td>
<td>diazinon</td>
<td>OP</td>
<td>II, III</td>
<td>1B</td>
<td>300-400 mg/kg, 3600 (rabbit)</td>
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<td>IV</td>
<td>5</td>
<td>&gt;5000 mg/kg</td>
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<td>5</td>
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<td>spinosad, Tracer*, Blackhawk*, Success*, Contain*, Sensat*, Entrust*, Execute*, Consero*</td>
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<td>IV</td>
<td>5</td>
<td>5000 mg/kg</td>
</tr>
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<td>spirmesifen</td>
<td>Oberon*</td>
<td>MISC</td>
<td>II</td>
<td>23</td>
<td>&gt;2000 mg/kg, &gt;4000 (rabbit)</td>
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<td>Steward*</td>
<td>indoxacarb</td>
<td>OX</td>
<td>III</td>
<td>22A</td>
<td>268 mg/kg, &gt;5000 (rabbit)</td>
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<td>Storicide II*</td>
<td>chlorpyrifos-methyl + deltamethrin</td>
<td>OX + SyP</td>
<td>II</td>
<td>1B + 3A</td>
<td>150 mg/kg, 1600 (rabbit)</td>
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<tr>
<td>Strafer*</td>
<td>acetamiprid, Assail*, Intruder*, Anarchy*, ArVida*</td>
<td>NEO</td>
<td>III</td>
<td>4A</td>
<td>1064 mg/kg, &gt;2000 (rabbit)</td>
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<td>Success*</td>
<td>spinosad, Tracer*, Spintor*, Blackhawk*, Contain*, Sensat*, Entrust*, Execute*, Consero*</td>
<td>SP</td>
<td>IV</td>
<td>5</td>
<td>5000 mg/kg</td>
</tr>
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<td>sulfoxaflor</td>
<td>Closed, Transform</td>
<td>SX</td>
<td>IV</td>
<td>4C</td>
<td>&gt;2000 mg/kg, &gt;4000 (rabbit)</td>
</tr>
<tr>
<td>Supracide*</td>
<td>methiathon</td>
<td>OP</td>
<td>I</td>
<td>1B</td>
<td>44 mg/kg, 2000 (rabbit)</td>
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<td>Synapse*</td>
<td>flubeniamide, Belt*</td>
<td>DM</td>
<td>II</td>
<td>28</td>
<td>&lt;2000 mg/kg, &gt;4000 (rabbit)</td>
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<td>Taktic*</td>
<td>amitraz</td>
<td>MISC</td>
<td>II</td>
<td>19</td>
<td>400 mg/kg, &gt;1600 (rabbit)</td>
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<tr>
<td>Talstar*</td>
<td>bifenthrin</td>
<td>SyP</td>
<td>II</td>
<td>3A</td>
<td>375 mg/kg, &gt;2000 (rabbit)</td>
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<tr>
<td>Tane*</td>
<td>Danitol*, fenpropathrin</td>
<td>SyP</td>
<td>I</td>
<td>3A</td>
<td>68 mg/kg</td>
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<tr>
<td>tebufenozide</td>
<td>Confirm*, Mach II*</td>
<td>IGR</td>
<td>IV</td>
<td>18A</td>
<td>5000 mg/kg, &gt;5000 (rabbit)</td>
</tr>
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<td>temephos</td>
<td>Abate*</td>
<td>OP</td>
<td>III</td>
<td>1B</td>
<td>8600-13,000 mg/kg, &gt;4000 (rabbit)</td>
</tr>
<tr>
<td>Tempo*</td>
<td>cyfluthrin, Decathlon*, Renounce*, Tombstone*</td>
<td>SyP</td>
<td>I</td>
<td>3A</td>
<td>1015 mg/kg, &gt;2000 (rabbit)</td>
</tr>
<tr>
<td>Tempo Ultra*</td>
<td>beta-cyfluthrin, Baythroid XL*</td>
<td>SyP</td>
<td>III</td>
<td>3A</td>
<td>647 mg/kg, &gt;2000 (rabbit)</td>
</tr>
<tr>
<td>TenchCU</td>
<td>dinotefuran</td>
<td>NEO</td>
<td>IV</td>
<td>4A</td>
<td>&gt;2000 mg/kg, &gt;2000 (rabbit)</td>
</tr>
<tr>
<td>terbufos</td>
<td>Counter*</td>
<td>OP</td>
<td>I</td>
<td>1B</td>
<td>4.5-9.0 mg/kg, 1.1 (rabbit)</td>
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<td>tetrachlorvinphos</td>
<td>Rabon*</td>
<td>OP</td>
<td>III</td>
<td>1B</td>
<td>4000-5000 mg/kg, &gt;2500 (rabbit)</td>
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<td>thiamethoxam</td>
<td>Centric*, Cruiser*, Actara*</td>
<td>NEO</td>
<td>III</td>
<td>4A</td>
<td>&gt;5000 mg/kg, &gt;2000 (rabbit)</td>
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<td>Thimet*</td>
<td>phorate</td>
<td>OP</td>
<td>I</td>
<td>1B</td>
<td>204 mg/kg, &gt;2000 (rabbit)</td>
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<td>thiodicarb</td>
<td>Larvin*</td>
<td>Car.</td>
<td>II</td>
<td>1A</td>
<td>66-120 mg/kg, &gt;2000 (rabbit)</td>
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<tr>
<td>Thionex*</td>
<td>endosulfan</td>
<td>OC</td>
<td>I</td>
<td>2A</td>
<td>30-110 mg/kg, 359 (rabbit)</td>
</tr>
<tr>
<td>Tombstone*</td>
<td>cyfluthrin, Decathlon*, Renounce*, Tempo*</td>
<td>SyP</td>
<td>I</td>
<td>3A</td>
<td>1015 mg/kg, &gt;2000 (rabbit)</td>
</tr>
<tr>
<td>Torpedo*</td>
<td>permethrin</td>
<td>SyP</td>
<td>II</td>
<td>3A</td>
<td>430-4000 mg/kg, &gt;4000 (rabbit)</td>
</tr>
<tr>
<td>Tourizmo*</td>
<td>flubeniamide, buprofexin, Vetica*</td>
<td>DP + IGR</td>
<td>III</td>
<td>26 + 16</td>
<td>&lt;2000 mg/kg, &gt;2000 (rabbit)</td>
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<tr>
<td>Tracer*</td>
<td>spinosad, Spintor*, Sensat*, Contain*, Conserve*, Entrust*, Blackhawk*, Consero*, Success*</td>
<td>SP</td>
<td>IV</td>
<td>5</td>
<td>5000 mg/kg</td>
</tr>
<tr>
<td>Transform</td>
<td>Closed, sulfoxaflor</td>
<td>SX</td>
<td>IV</td>
<td>4C</td>
<td>&gt;2000 mg/kg, &gt;4000 (rabbit)</td>
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<tr>
<td>trichlorfon</td>
<td>Dylox*, Dipterex*, Neguvon*</td>
<td>OP</td>
<td>III</td>
<td>1B</td>
<td>560-630 mg/kg, &gt;2000 (rabbit)</td>
</tr>
<tr>
<td>Tundra*</td>
<td>bifenthrin</td>
<td>SyP</td>
<td>II</td>
<td>3A</td>
<td>347 mg/kg, &gt;2000 (rabbit)</td>
</tr>
<tr>
<td>UP-Cyde*</td>
<td>cypermethrin, Ammo*, Battery*, Cyper G*, Holster*</td>
<td>SyP</td>
<td>I</td>
<td>3A</td>
<td>247 mg/kg, &gt;2000 (rabbit)</td>
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<td>UpStar*</td>
<td>bifenthrin</td>
<td>SyP</td>
<td>II</td>
<td>3A</td>
<td>347 mg/kg, &gt;2000 (rabbit)</td>
</tr>
<tr>
<td>Vapona*</td>
<td>dichlorphos, DDVP*, dichlorvos</td>
<td>OP</td>
<td>II</td>
<td>1B</td>
<td>80 mg/kg, 107 (rabbit)</td>
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<tr>
<td>Vendex*</td>
<td>fenbutatin-oxide</td>
<td>MISC</td>
<td>I</td>
<td>12B</td>
<td>2631 mg/kg, &gt;2000 (rabbit)</td>
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<tr>
<td>Vetica*</td>
<td>flubeniamide, buprofexin, Tourizmo*</td>
<td>DM + IGR</td>
<td>III</td>
<td>26 + 16</td>
<td>&lt;2000 mg/kg, &gt;2000 (rabbit)</td>
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<tr>
<td>Vydate*</td>
<td>oxamyl</td>
<td>Car.</td>
<td>I</td>
<td>1A</td>
<td>5.4 mg/kg, 37 (rabbit)</td>
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<tr>
<td>Warbex*</td>
<td>famphur</td>
<td>OP</td>
<td>I</td>
<td>1B</td>
<td>35-62 mg/kg, 1460-5093 (rabbit)</td>
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<tr>
<td>Warhawk*</td>
<td>chlorpyrifos, Lorsban*, Whirlwind*, Govern*, Eraser*, Yuma*, CPF*</td>
<td>OP</td>
<td>II</td>
<td>1B</td>
<td>97-276 mg/kg, &gt;2000 (rabbit)</td>
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<td>Whirlwind*</td>
<td>chlorpyrifos, Lorsban*, Warcraft*, Govern*, Eraser*, Yuma*, Vulcan</td>
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<td>1B</td>
<td>97-276 mg/kg, &gt;2000 (rabbit)</td>
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<td>Yuma*</td>
<td>chlorpyrifos, Lorsban*, Whirlwind*, Warcraft*, Hatchet*, Dursban*</td>
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<td>II</td>
<td>1B</td>
<td>97-276 mg/kg, &gt;2000 (rabbit)</td>
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<td>Zeal*</td>
<td>etoxazole</td>
<td>ET</td>
<td>III</td>
<td>10B</td>
<td>&gt;5000 mg/kg, &gt;5000 (rabbit)</td>
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<tr>
<td>zeta-cypermethrin</td>
<td>Mustang*, Mustang Maxx*, Respect*</td>
<td>SyP</td>
<td>III</td>
<td>2A</td>
<td>106 mg/kg, &gt;5000 (rabbit)</td>
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</table>
### Ecological Characteristics of Some Agricultural Insecticides Commonly Used in Arkansas

**Insecticide**

<table>
<thead>
<tr>
<th>Insecticide (common name)</th>
<th>Relative Toxicity* to:</th>
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<tbody>
<tr>
<td></td>
<td>Fish</td>
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<tr>
<td>abamectin (Agri-Mek)</td>
<td>VH</td>
</tr>
<tr>
<td>Acephate (Orthene)</td>
<td>VL</td>
</tr>
<tr>
<td>acetamiprid (Intruder)</td>
<td>M</td>
</tr>
<tr>
<td>aldicarb (Temik)</td>
<td>M</td>
</tr>
<tr>
<td>Azadirachtin</td>
<td>H</td>
</tr>
<tr>
<td>Azinphosmethyst-ethionine (DiPel)</td>
<td>VH</td>
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<tr>
<td>Bacillus thuringiensis (DiPel)</td>
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<tr>
<td>Bifenthrin (Brigade)</td>
<td>VH</td>
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<tr>
<td>Buphentoxine (Applaud)</td>
<td>NT</td>
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<tr>
<td>Carbaryl (Sevin)</td>
<td>M</td>
</tr>
<tr>
<td>Carbofuran (furadan)</td>
<td>H</td>
</tr>
<tr>
<td>Chlorantraniliprole (Prevathon, Coragen)</td>
<td>VL</td>
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<td>Chlorpyrifos (Lorsban-Dursban)</td>
<td>VH</td>
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<td>chlorpyrifos-methyl/deltamethrin (Storicide II)</td>
<td>VL</td>
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<td>chlothianidin</td>
<td>H</td>
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<tr>
<td>cyfluthrin (Tombstone)</td>
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<tr>
<td>cypermethrin</td>
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<tr>
<td>deltamethrin</td>
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<td>diflubenzuron</td>
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<td>Dimethoate (Cygon)</td>
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<td>Dindotefuran (Tench)</td>
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<tr>
<td>ditolufosfot (Di-Syston)</td>
<td>H</td>
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<td>endosulfan (Thionex)</td>
<td>VH</td>
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<td>Esfenvalerate (Asana)</td>
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<td>etoxyzole (Zela)</td>
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<td>fenpropathrin (Danitol)</td>
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<td>fenpyroximate (Portal)</td>
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<td>flupyradol (Regent)</td>
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<td>Flubenamid (Belt)</td>
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<tr>
<td>Flicamid (Carbene)</td>
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<td>Imidacloprid (Trimm, Adima, Alias, etc.)</td>
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<td>indoxacarb (Steward)</td>
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<td>lambda-cyhalothrin</td>
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<td>Malathion</td>
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<td>Methomyl (Lannate)</td>
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<td>Methoxyfenozide (Intrepid)</td>
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<td>novaluron (Diamond)</td>
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<td>oxamyl (Vydane)</td>
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<td>Permethrin (Ambush, Pounce, etc.)</td>
<td>VH</td>
</tr>
<tr>
<td>Phorate (Thimet)</td>
<td>VH</td>
</tr>
<tr>
<td>Phosmet (Imidan)</td>
<td>VH</td>
</tr>
<tr>
<td>pirimiphos-methyl (Actellic)</td>
<td>H</td>
</tr>
<tr>
<td>Propargite (Comite)</td>
<td>VH</td>
</tr>
<tr>
<td>Spinosad (Tracer, Spintor)</td>
<td>L</td>
</tr>
<tr>
<td>Spiromesifen (Oberon)</td>
<td>M</td>
</tr>
<tr>
<td>Tefubenezoline (Confirm)</td>
<td>M</td>
</tr>
<tr>
<td>Tefluthrin</td>
<td>VH</td>
</tr>
<tr>
<td>Terbufos (Counter)</td>
<td>VH</td>
</tr>
<tr>
<td>Thiamefoxam (Centric, Cruiser)</td>
<td>L</td>
</tr>
<tr>
<td>Thiodicarb (Larvin)</td>
<td>M</td>
</tr>
</tbody>
</table>

*aVL=very low; L=low; M=moderate; H=high; VH=very high; NT=no evidence of acute or chronic toxicity.

### TRADE NAMES OF GENERIC INSECTICIDES

<table>
<thead>
<tr>
<th>Active Ingredient</th>
<th>Trade Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>abamectin</td>
<td>Abba, Abacus, AbamectinE, Agri-Mek, Avid, Clinch, Epi-Mek, Flora-Mek, Reaper, Temprano, Varsity, Zephyr, Zoro</td>
</tr>
<tr>
<td>acephate</td>
<td>Acephate, Bracket, Orthene, Avatar</td>
</tr>
<tr>
<td>acetamiprid</td>
<td>Assail, Intruder, Tristar, Strafer, Anarchy, ArVida</td>
</tr>
<tr>
<td>beta-cyfluthrin</td>
<td>Baythroid XL</td>
</tr>
<tr>
<td>bifenthrin</td>
<td>Bifenthrin AG, Bifenture, Bisect, Brigade, Capture, Discipline, Empower, Fanfare, Menace, Onyx, Sniper, Talstar, Tundra, UpStar, Wisdom</td>
</tr>
<tr>
<td>buprofezin</td>
<td>Applaud, Centaur, Courier, Talus</td>
</tr>
<tr>
<td>chlorpyrifos</td>
<td>Chlorpyrifos, Govern, Hatchet, Lock-On, Lorsban, Nufos, Warhawk, Whirlwind, Yuma, Eraser, Pilot, CPF, Vulcan</td>
</tr>
<tr>
<td>chlothianidin</td>
<td>Belay, Clutch, Poncho, NipsIt Inside, Arena</td>
</tr>
<tr>
<td>cyfluthrin</td>
<td>Decathlon, Renounce, Tempo, Tombstone, Sultrus</td>
</tr>
<tr>
<td>cypermethrin</td>
<td>Ammo, Battery, Cypermethrin, Mustang, UP-Cyde, Cyper-G, Holster</td>
</tr>
<tr>
<td>deltamethrin</td>
<td>Chipco Choice, Chipco FireStar, DeltaDust, DeltaGard, Delta Gold, Over 'n Out!, Shooter, Top Choice, Battalion, Centynal, Suspend</td>
</tr>
<tr>
<td>esfenvalerate</td>
<td>Adjourn, Asana XL, S-FenvaloSta, Zyrate</td>
</tr>
<tr>
<td>gamma-cyhalothrin</td>
<td>Declare, Proaxis, Prolex</td>
</tr>
<tr>
<td>malathion</td>
<td>Fyman, Malathion</td>
</tr>
<tr>
<td>permethrin</td>
<td>Actroban, Ambush, Arctic, Astro,ECTiban, Permectrin, Permethrin, Perm-UP, Pounce</td>
</tr>
<tr>
<td>pyriproxyfen</td>
<td>Distance, Esteem, Knack, Seize</td>
</tr>
<tr>
<td>spinosad</td>
<td>Blackhawk, Conserve, Entrust, SpinTor, Success, Tracer, Contain, Sensat</td>
</tr>
<tr>
<td>zeta-cypermethrin</td>
<td>Mustang Maxx, Respect</td>
</tr>
</tbody>
</table>
PROTECTING POLLINATORS FROM PESTICIDES

- Apply pesticides only when and where necessary. Use Integrated Pest Management, incorporating cultural, mechanical, and biological control methods wherever possible.
- Read and follow all product label instructions and requirements. Pay particular attention to the label precautions that indicate specific hazards to bees and other pollinators.
- Be aware of any bee hives in the area that could be affected by application. When spraying is necessary, notify beekeepers in advance, so that they can adequately protect bee hives.
- Use ground equipment instead of aircraft, especially near bee hives.
- Avoid application to crops in bloom where possible. If application is necessary, apply when bees are least likely to be actively foraging (after 3 p.m.).
- Reduce drift and avoid spraying onto non-target areas, including adjacent vegetation that may contain flowers attractive to bees.
- Where possible, leave a border of untreated vegetation between treated areas and areas where wildlife may be present.
- Store and dispose of all pesticides properly.
- If more than one pesticide can provide control, choose the least toxic product and formulation available.

Arkansas Pollinator Stewardship Program

This program seeks to minimize economic loss for both farmers and beekeepers by adequately managing row crop pests while minimizing impact of pesticides on honey bee colonies.

Cooperation and communication is encouraged among beekeepers, farmers and pesticide applicators.

The presence of the yellow and black Bee Aware flags will help to clearly identify locations where honey bees are located near crop areas.

For more information about this program or to obtain flags, contact:

Jon Zawislak, UA Extension Apiculturist
(501) 671-2222, jzawislak@uaex.edu

Gus Lorenz, UA Extension Entomologist
(501) 676-3124, glorenz@uaex.edu

MORE HAZARDOUS FOR BEES
- Insecticidal Dusts
  - particles cling to bees with pollen grains, may be carried back to the hive and stored with food
- ULV Formulations
  - highly concentrated, dangerous to bees
- Wettable Powders
  - often have longer residual activity than other spray formulations; longer REI for humans typically results in greater hazard for bees
- Emulsifiable Concentrates
  - usually have shorter residual toxicity for bees than wettable powders, safer for bees
- Water Soluble Compounds
  - generally safest type of spray, dries quickly leaving little residue to be picked up by bees; fine sprays are less dangerous than coarse droplets
- Granules
  - safest formulation for bees, not always suitable for all pest control situations

LESS HAZARDOUS FOR BEES
### RELATIVE TOXICITY OF PESTICIDES TO HONEYBEES

#### Group 1 — HIGHLY TOXIC. Severe bee losses should be expected if the following pesticides are used when bees are present, if the product is applied near bee hives or if bees forage in the application area within a day after treatment.

<table>
<thead>
<tr>
<th>Pesticide</th>
<th>Trade Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abamectin (Avermectin, Agri-Mek)</td>
<td></td>
</tr>
<tr>
<td>Acephate (Orthene)</td>
<td></td>
</tr>
<tr>
<td>Aldicarb (AgLogic)</td>
<td></td>
</tr>
<tr>
<td>Alpha-cypermethrin (Fastac)</td>
<td></td>
</tr>
<tr>
<td>Azinphos-methyl (Guthion)</td>
<td></td>
</tr>
<tr>
<td>Beta-cyfluthrin (Baythroid XL, Tempo, Leverage)</td>
<td></td>
</tr>
<tr>
<td>Bifenthrin (Brigade, Capture, Discipline)</td>
<td></td>
</tr>
<tr>
<td>Carbaryl (Sevin)</td>
<td></td>
</tr>
<tr>
<td>Carbofuran (Furadan)</td>
<td></td>
</tr>
<tr>
<td>Chlorpyrifos (Dursban, Lorsban, Warhawk)</td>
<td></td>
</tr>
<tr>
<td>Clothianidin (Belay, Poncho)</td>
<td></td>
</tr>
<tr>
<td>Cyfluthrin (Decathlon, Tombstone)</td>
<td></td>
</tr>
<tr>
<td>Deltamethrin (Battalion, Centynal)</td>
<td></td>
</tr>
<tr>
<td>Diazinon (Spectracide)</td>
<td></td>
</tr>
<tr>
<td>Dicrotophos (Bidrin)</td>
<td></td>
</tr>
<tr>
<td>Dimethoate (Dimate)</td>
<td></td>
</tr>
<tr>
<td>Dinofuran (Safari)</td>
<td></td>
</tr>
<tr>
<td>Emamectin benzoate (Denim)</td>
<td></td>
</tr>
<tr>
<td>Esfenvalerate (Asana XL, Adjourn)</td>
<td></td>
</tr>
<tr>
<td>Fenpropatrin (Danitol, Tame)</td>
<td></td>
</tr>
<tr>
<td>Fipronil (Regent, Taurus)</td>
<td></td>
</tr>
<tr>
<td>Flumethrin (Declare, Proaxis)</td>
<td></td>
</tr>
<tr>
<td>Gamma-cyfluthrin (Novaluron)</td>
<td></td>
</tr>
<tr>
<td>Malathion (Fyfanon)</td>
<td></td>
</tr>
<tr>
<td>Methidathion (Supracide)</td>
<td></td>
</tr>
<tr>
<td>Methiocarb (Larvin)</td>
<td></td>
</tr>
<tr>
<td>Methoprene</td>
<td></td>
</tr>
<tr>
<td>Methyl parathion (Penncap-M)</td>
<td></td>
</tr>
<tr>
<td>Naled (Dibrom, Trumpet)</td>
<td></td>
</tr>
<tr>
<td>Methomyl (Lannate)</td>
<td></td>
</tr>
<tr>
<td>Methoprene</td>
<td></td>
</tr>
<tr>
<td>Methyl parathion (Penncap-M)</td>
<td></td>
</tr>
<tr>
<td>Oxamyl (Vydate)</td>
<td></td>
</tr>
<tr>
<td>Pyrethrins</td>
<td></td>
</tr>
<tr>
<td>Resmethrin (Scourage)</td>
<td></td>
</tr>
<tr>
<td>Sulfoxaflor (Transform, Closer)</td>
<td></td>
</tr>
<tr>
<td>Thiamethoxam (Adage, Centric, Endigo, Voliam)</td>
<td></td>
</tr>
<tr>
<td>Zeta-cypermethrin (Mustang Maxx, Hero, Stallion)</td>
<td></td>
</tr>
</tbody>
</table>

#### Group 2 — MODERATELY TOXIC. These pesticides can be used in the vicinity of bees as long as dosage, timing, method of application and conditions are correct. These products should NEVER be applied directly on bees in the field or near bee colony locations (apiaries).

<table>
<thead>
<tr>
<th>Pesticide</th>
<th>Trade Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetamiprid (Assail, Intruder, Strafer)</td>
<td></td>
</tr>
<tr>
<td>Azadirachtin (Neemix, Ecozin)</td>
<td></td>
</tr>
<tr>
<td>Beauvaria bassiana</td>
<td></td>
</tr>
<tr>
<td>Bifenazate (Acramite, Floramite)</td>
<td></td>
</tr>
<tr>
<td>Chlorfenapyr (Phantom, Pylon)</td>
<td></td>
</tr>
<tr>
<td>Copper hydroxide (Kocide)</td>
<td></td>
</tr>
<tr>
<td>Cyromazine (Trigard)</td>
<td></td>
</tr>
<tr>
<td>Diatomaceous earth</td>
<td></td>
</tr>
<tr>
<td>Disulfoton (Di-Syston)</td>
<td></td>
</tr>
<tr>
<td>Endosulfan (Thionex)</td>
<td></td>
</tr>
<tr>
<td>Ethoprop (Mocap)</td>
<td></td>
</tr>
<tr>
<td>Fenpropathrin (Danitol, Tame)</td>
<td></td>
</tr>
<tr>
<td>Flumethrin (Declare, Proaxis)</td>
<td></td>
</tr>
<tr>
<td>Gamma-cyfluthrin (Novaluron)</td>
<td></td>
</tr>
<tr>
<td>Imidacloprid (Admire, Advise, Alias, Couraze, Trimax, Wrangler)</td>
<td></td>
</tr>
<tr>
<td>Indoxacarb (Steward, Avaunt)</td>
<td></td>
</tr>
<tr>
<td>Lambda-cyhalothrin (Karnate, Silencer, Warrior, Voliom)</td>
<td></td>
</tr>
<tr>
<td>Malathion (Fyfanon)</td>
<td></td>
</tr>
<tr>
<td>Methidathion (Supracide)</td>
<td></td>
</tr>
<tr>
<td>Methiocarb (Mesurol)</td>
<td></td>
</tr>
<tr>
<td>Methomyl (Lannate)</td>
<td></td>
</tr>
<tr>
<td>Methoprene</td>
<td></td>
</tr>
<tr>
<td>Methyl parathion (Penncap-M)</td>
<td></td>
</tr>
<tr>
<td>Oxamyl (Vydate)</td>
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</tr>
<tr>
<td>Permethrin (Ambush, Pounce)</td>
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<tr>
<td>Phorate (Thimet)</td>
<td></td>
</tr>
<tr>
<td>Phosmet (Imidan)</td>
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</tr>
<tr>
<td>Pyrethrins</td>
<td></td>
</tr>
<tr>
<td>Resmethrin (Scourage)</td>
<td></td>
</tr>
<tr>
<td>Sulfoxaflor (Transform, Closer)</td>
<td></td>
</tr>
<tr>
<td>Thiamethoxam (Adage, Centric, Endigo, Voliam)</td>
<td></td>
</tr>
<tr>
<td>Zeta-cypermethrin (Mustang Maxx, Hero, Stallion)</td>
<td></td>
</tr>
</tbody>
</table>

#### Group 3 — RELATIVELY NONTOXIC. These pesticides can generally be used around bees with a minimum of injury provided that dosage, timing, and method are correct. NEVER apply pesticides directly to bee hives.

<table>
<thead>
<tr>
<th>Pesticide</th>
<th>Trade Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aldoxy carb (Standak)</td>
<td></td>
</tr>
<tr>
<td>Amitraz (Mitac)</td>
<td></td>
</tr>
<tr>
<td>Bacillus thuringiensis (Biotrol, Javelin)</td>
<td></td>
</tr>
<tr>
<td>B.t. tenerebrionis</td>
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</tr>
<tr>
<td>Chlorantraniliprole (Altacor, Coragen, Prevathon)</td>
<td></td>
</tr>
<tr>
<td>Clofentezine (Apollo)</td>
<td></td>
</tr>
<tr>
<td>Cyromazine (Trigard)</td>
<td></td>
</tr>
<tr>
<td>Diatomaceous earth</td>
<td></td>
</tr>
<tr>
<td>Disulfoton (Di-Syston)</td>
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</tr>
<tr>
<td>Endosulfan (Thionex)</td>
<td></td>
</tr>
<tr>
<td>Ethoprop (Mocap)</td>
<td></td>
</tr>
<tr>
<td>Fenpropatrin (Danitol, Tame)</td>
<td></td>
</tr>
<tr>
<td>Flumethrin (Declar, Proaxis)</td>
<td></td>
</tr>
<tr>
<td>Gamma-cyfluthrin (Novaluron)</td>
<td></td>
</tr>
<tr>
<td>Imidacloprid (Admire, Advise, Alias, Couraze, Trimax, Wrangler)</td>
<td></td>
</tr>
<tr>
<td>Indoxacarb (Steward, Avaunt)</td>
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<tr>
<td>Lambda-cyhalothrin (Karnate, Silencer, Warrior, Voliom)</td>
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</tr>
<tr>
<td>Methomyl (Lannate)</td>
<td></td>
</tr>
<tr>
<td>Methoprene</td>
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</tr>
<tr>
<td>Methyl parathion (Penncap-M)</td>
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<tr>
<td>Novaluron (Diamond)</td>
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<tr>
<td>Primicarb</td>
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<tr>
<td>Pymetrozine (Fulfill)</td>
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<tr>
<td>Pyrethrum</td>
<td></td>
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<tr>
<td>Spinetoram (Radiant)</td>
<td></td>
</tr>
<tr>
<td>Spinosad (Blackhawk, Spintor, Tracer)</td>
<td></td>
</tr>
<tr>
<td>Spirotetramat (Movento)</td>
<td></td>
</tr>
<tr>
<td>Temephos (Abate)</td>
<td></td>
</tr>
<tr>
<td>Terbufos (Counter)</td>
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</tr>
<tr>
<td>Thiabendazole (Calypso)</td>
<td></td>
</tr>
<tr>
<td>Thiodicarb (Larvin)</td>
<td></td>
</tr>
<tr>
<td>Thiophos (Abate)</td>
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<tr>
<td>Terbufos (Counter)</td>
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<tr>
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<tr>
<td>Thiodicarb (Larvin)</td>
<td></td>
</tr>
<tr>
<td>Thiophos (Abate)</td>
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</tr>
</tbody>
</table>

### Acaricides, Diseases, IGRs and Insecticides

<table>
<thead>
<tr>
<th>Pesticide</th>
<th>Trade Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acibenzolar-S-methyl (Actigard)</td>
<td></td>
</tr>
<tr>
<td>Azoxystrobin (Quadris)</td>
<td></td>
</tr>
<tr>
<td>Benomyl (Benlate)</td>
<td></td>
</tr>
<tr>
<td>Bordeaux mixture</td>
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</tr>
<tr>
<td>Captan</td>
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</tr>
<tr>
<td>Copper 8-quinolinate</td>
<td></td>
</tr>
<tr>
<td>Dicofol (Kelthane)</td>
<td></td>
</tr>
<tr>
<td>Diflubenzuron (Dimlin)</td>
<td></td>
</tr>
<tr>
<td>Etoxazole (Zeal)</td>
<td></td>
</tr>
<tr>
<td>Fenbutatin-oxide (Vendex)</td>
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</tr>
<tr>
<td>Fenpropathrin (Fujimite)</td>
<td></td>
</tr>
<tr>
<td>Fonicamid (Carbine, Beleaf)</td>
<td></td>
</tr>
<tr>
<td>Flubendiamide (Belt, Synapsec)</td>
<td></td>
</tr>
<tr>
<td>Hexythiazox (Onager, Savoy)</td>
<td></td>
</tr>
<tr>
<td>Lime sulfur</td>
<td></td>
</tr>
<tr>
<td>Metaldehyde bait</td>
<td></td>
</tr>
<tr>
<td>Methoxyfenozide (Intrepid)</td>
<td></td>
</tr>
<tr>
<td>Nosema locustae fungus (Canning)</td>
<td></td>
</tr>
<tr>
<td>Nucleopolyhedrovirus (Heligen)</td>
<td></td>
</tr>
<tr>
<td>Propargite (Comite, Omite)</td>
<td></td>
</tr>
<tr>
<td>Pyriproxyfen (Esteem, Knock)</td>
<td></td>
</tr>
<tr>
<td>Rotenone</td>
<td></td>
</tr>
<tr>
<td>Spiromesifen (Oberon)</td>
<td></td>
</tr>
<tr>
<td>Tebufenozide (Confirm)</td>
<td></td>
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</tbody>
</table>

### Fungicides

<table>
<thead>
<tr>
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<th>Trade Name</th>
</tr>
</thead>
<tbody>
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<tr>
<td>Azoxystrobin (Quadris)</td>
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</tr>
<tr>
<td>Benomyl (Benlate)</td>
<td></td>
</tr>
<tr>
<td>Bordeaux mixture</td>
<td></td>
</tr>
<tr>
<td>Captan</td>
<td></td>
</tr>
<tr>
<td>Copper 8-quinolate</td>
<td></td>
</tr>
<tr>
<td>Dicofol (Kelthane)</td>
<td></td>
</tr>
<tr>
<td>Diflubenzuron (Dimlin)</td>
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</tr>
<tr>
<td>Etoxazole (Zeal)</td>
<td></td>
</tr>
<tr>
<td>Fenbutatin-oxide (Vendex)</td>
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</tr>
<tr>
<td>Fenpropathrin (Fujimite)</td>
<td></td>
</tr>
<tr>
<td>Fonicamid (Carbine, Beleaf)</td>
<td></td>
</tr>
<tr>
<td>Flubendiamide (Belt, Synapsec)</td>
<td></td>
</tr>
<tr>
<td>Hexythiazox (Onager, Savoy)</td>
<td></td>
</tr>
<tr>
<td>Lime sulfur</td>
<td></td>
</tr>
<tr>
<td>Metaldehyde bait</td>
<td></td>
</tr>
<tr>
<td>Methoxyfenozide (Intrepid)</td>
<td></td>
</tr>
<tr>
<td>Nosema locustae fungus (Canning)</td>
<td></td>
</tr>
<tr>
<td>Nucleopolyhedrovirus (Heligen)</td>
<td></td>
</tr>
<tr>
<td>Propargite (Comite, Omite)</td>
<td></td>
</tr>
<tr>
<td>Pyriproxyfen (Esteem, Knock)</td>
<td></td>
</tr>
<tr>
<td>Rotenone</td>
<td></td>
</tr>
<tr>
<td>Spiromesifen (Oberon)</td>
<td></td>
</tr>
<tr>
<td>Tebufenozide (Confirm)</td>
<td></td>
</tr>
<tr>
<td>Mancozeb</td>
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</tr>
<tr>
<td>Maneb (Manzate)</td>
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</tr>
<tr>
<td>Nabam (Parzate)</td>
<td></td>
</tr>
<tr>
<td>Sulfur</td>
<td></td>
</tr>
<tr>
<td>Thiram</td>
<td></td>
</tr>
<tr>
<td>Trifloxystrobin (Flint, Stratego, Compass)</td>
<td></td>
</tr>
<tr>
<td>Triphenyltin hydroxide (Super Tin)</td>
<td></td>
</tr>
<tr>
<td>Ziram (Vancide)</td>
<td></td>
</tr>
<tr>
<td>Zoxamide (Gavel, Zing)</td>
<td></td>
</tr>
</tbody>
</table>
RELATIVE TOXICITY OF PESTICIDES TO HONEYBEES

Group 3 — RELATIVELY NONTOXIC. These pesticides can generally be used around bees with a minimum of injury provided that dosage, timing, and method are correct. NEVER apply pesticides directly to bee hives.

### Herbicides, Defoliants, Desiccants and PGRs

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Pesticide Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,4-D</td>
<td>Cyhalofop-butyl (Clincher)</td>
</tr>
<tr>
<td>2,4-DB (Butyrac)</td>
<td>Dicamba (Banvel)</td>
</tr>
<tr>
<td>Acetochlor</td>
<td>Dichlobenil (Casoron)</td>
</tr>
<tr>
<td>Alachlor (Lasso)</td>
<td>Diflufenpyr (Distant)</td>
</tr>
<tr>
<td>Ammonium sulfate</td>
<td>EPTC (Eptam)</td>
</tr>
<tr>
<td>Atrazine (Aatrex)</td>
<td>Ethephon (Prep)</td>
</tr>
<tr>
<td>Bentazon (Basagran)</td>
<td>Ethylfluralin (Sonalan)</td>
</tr>
<tr>
<td>Bromacil (Hyvar)</td>
<td>Flufenacet (Axiom DF)</td>
</tr>
<tr>
<td>Clodinafop-propargyl (Discover)</td>
<td>Flumeturon (Cotoran)</td>
</tr>
<tr>
<td>Clopyralid (Select)</td>
<td>Flumioxazin (Valor)</td>
</tr>
<tr>
<td>Cloransulam-methyl (First-Rate)</td>
<td>Fluridone (Brake, Sonar)</td>
</tr>
<tr>
<td>Cyanazine (Bladex)</td>
<td>Fluroxypyr (Starane EC)</td>
</tr>
<tr>
<td></td>
<td>Fluthiacet-methyl (Athem, Cadet)</td>
</tr>
<tr>
<td></td>
<td>Foramsulfuron (Option)</td>
</tr>
<tr>
<td></td>
<td>Glyphosate (Roundup)</td>
</tr>
<tr>
<td></td>
<td>Imazapyr (Arsenal)</td>
</tr>
<tr>
<td></td>
<td>Imazamox (Raptor)</td>
</tr>
<tr>
<td></td>
<td>Isoxaflutole (Balance)</td>
</tr>
<tr>
<td></td>
<td>Linuron (Lorox)</td>
</tr>
<tr>
<td></td>
<td>MCPA (Bonide)</td>
</tr>
<tr>
<td></td>
<td>Metribuzin (Sencor, Cloak)</td>
</tr>
<tr>
<td></td>
<td>Mesotrione (Callisto)</td>
</tr>
<tr>
<td></td>
<td>Paraquat</td>
</tr>
<tr>
<td></td>
<td>Picloram (Tordon)</td>
</tr>
</tbody>
</table>

| Prohexadone calcium (Apogee PGR, Baseline) | Prometryn (Caparol) |
| Propanil (Stam F-34)                      | Quinclorac (Facel) |
| S-metolachlor (Dual)                      | Simazine (Princep)  |
| Sodium chlorate (Defol)                   | Terbacil (Sinbar)   |
| Tribufos (Def, Folex)                     | Trifluralin (Treflan) |
# ANIMAL INSECT CONTROL

<table>
<thead>
<tr>
<th>Animal</th>
<th>Pest Problem</th>
<th>Insecticide Formulation</th>
<th>Method and Rate</th>
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</tr>
</thead>
</table>
| BARNS, STABLES AND DAIRY BARNS | Adult Flies | Sprays and Fogs | 3 lb 50% WP in 7.5 gal water. Spray 1 gal/500-1,000 sq ft to wet all surfaces. Repeat every 3 or 4 weeks. | General Precautions for All Insecticides Are:  
1. Apply where flies congregate; i.e., ceilings, light fixtures, walls, windows, etc. DO NOT apply within 1 week of applying whitewash.  
2. DO NOT spray in milk houses.  
3. DO NOT spray on milk utensils.  
4. DO NOT contaminate feed or water supplies. Cover them when spraying.  
5. Remove animals before spraying.  
7. DO NOT mix a combination of compounds.  
8. Wear protective clothing—jacket or coveralls, cap or hat, rubber gloves, and preferably a respirator. Wash protective clothing after using. Wash with soap and water after spraying.  
Apply as directed on label. Treat walls, ceilings, moldings, screens, door and window frames and similar resting places. |
| (Not for human dwellings) | | Rabon 50% WP (tetrachlorvinphos) | 1 gal Rabon EC/25 gal water. Allow 4 hours to dry before returning cows to barn. Apply 1 gal spray solution/1,000 sq ft. | |
| | | Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos) | 1 pt/10 gal clean water. Apply 1 gal/750-1,000 sq ft. Provides up to 8 weeks of control. | |
| | | Atroban 11% EC (permethrin) | 4 oz/10 gal water. Apply 1 gal/750-1,000 sq ft. | |
| | | Atroban 42.5% EC (permethrin) | 4 oz/12.5 gal water. Apply 1 gal/750 sq ft. | |
| | | Permethrin 3.2 EC, Tengard SFR (36.8% permethrin) | Mix 2 to 8 oz. product per gallon of water. For severe infestations use the higher rate. | |
| | | Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide) | | |
| | | Vapona Concentrate Insecticide (R) (40.2% dichlorvos) | 2 oz/1.5 gal water (0.5% dilution) 5 oz/2 gal water (1.0% dilution) | |
| | | Annihilator (0.02% deltamethrin) | Ready to use. | |
| | | Annihilator Polyzone (4.75% deltamethrin) | Mix and apply according to directions. | |
| | | Grenade ER, Oxyfly, Cyonara 9.7 (9.7% lambda-cyhalothrin) | Mix 0.2-0.4 oz/gal water to make a 0.015% to 0.03% dilution. | |
| | | Pyrethrins (synergized) | Use as directed on label. | |
| | | Permethrin II (10% permethrin) | 1 qt 10% permethrin/25 gal water. Use 1 gal/750 sq ft. | |
| | | GardStar 40% EC (permethrin) | 4 oz/10 gal of water (surface spray). | |
| | | Talstar, Bifenthrin I/T 7.9F, Optashield CS (7.9% bifenthrin) | Mix with water and apply 0.33-1.0 oz product per 1,000 sq ft. | |
| | | StandGuard 5.9 (5.9% gamma-cyhalothrin) | Mix 0.16 oz (5 mL)/gal of water. | |
| | | Vapona Concentrate Insecticide (R) (40.2% dichlorvos) | | |
| | | Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide) | | |
| | | Vapona Concentrate Insecticide (R) (40.2% dichlorvos) | 2 oz/1.5 gal water (0.5% dilution) 5 oz/2 gal water (1.0% dilution) | |
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| | | Vapona Concentrate Insecticide (R) (40.2% dichlorvos) | | |

See Poultry section for poultry houses.
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</thead>
<tbody>
<tr>
<td>BARNES, STABLES AND DAIRY BARNES</td>
<td>Adult Flies</td>
<td>Baits</td>
<td>Ready-to-use strip: Use 1 bait strip/250 sq ft.</td>
<td>DO NOT use in areas accessible to food-producing animals or allow to contact food or water. DO NOT apply directly to milking equipment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>QuickBayt Disposable Fly Bait Strip (0.5% imidacloprid and 0.1% muscalure (z)-9-tricosene)</td>
<td>Scattered 6 oz of bait/1,000 sq ft around the outside of dairies, stables, animal barns and inaccessible areas of animal housing facilities, or mix 1.5 oz bait/1 oz water, mix thoroughly, let stand for 15 minutes and paint on non-dusty fly resting areas inaccessible to animals.</td>
<td>Use around the outside of dairies and other animal housing structures. DO NOT apply to milking equipment or allow bait to contact food or water. Can be used inside horse stables, broiler, turkey and caged layer houses, swine confinement buildings, dairy barns and milking parlors ONLY if used in bait stations. Bait stations must be placed at least 4 feet above ground level and in areas inaccessible to animals, children or pets.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>QuickBayt Spot Spray (10% imidacloprid and 0.1% muscalure (z)-9-tricosene)</td>
<td>Mix 16 oz/gal of water. Carefully read label directions.</td>
<td>For use in and around agriculture production facilities such as poultry houses, turkey and chicken houses, cattle, sheep and goat facilities, feedlots, dairy barns, swine confinement buildings, dog kennels and horse stables. Carefully read label directions. DO NOT apply on surfaces accessible to children or pets. DO NOT apply where animals can ingest the bait. DO NOT apply to milking equipment at dairy facilities.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>QuikStrike Fly Scatter Bait (0.5% dinotefuran and 0.04% (z)-9-tricosene)</td>
<td>Scatter 4 oz/500 sq ft of fly breeding area, or use bait in any commercial bait station.</td>
<td>Use as a scatter bait only around the outside of animal housing areas. Bait stations must be hung at least 4 feet from ground level. Scatter baits and bait stations must only be used in areas inaccessible to animals, pets or children.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>QuikStrike Fly Bait Spray (0.5% dinotefuran and 0.04% (z)-9-tricosene)</td>
<td>To spray on, mix 2 oz product with 16 oz of water to treat 250 sq ft. To paint on, mix 2 oz product with 3 oz water to treat 250 sq ft.</td>
<td>Apply to fly resting areas such as walls, fences, window sills, posts, etc., typically 4 feet above the floor surface. Do not apply to milking equipment. Hang 1 strip for every 150-300 sq ft. Hang close to the ground or floor in areas inaccessible to animals, birds or children. Do not place in areas where strips will become wet.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>QuikStrike Fly Abatement strip (1.0% nithiazine)</td>
<td>Ready-to-hang strip.</td>
<td>Use as a scatter bait only around the outside of animal housing areas. Can be used in walkways of caged layer houses. Bait stations must be hung at least 4 feet from ground level. Scatter baits and bait stations must only be used in areas inaccessible to animals, pets or children.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Golden Malrin (1.1% methomyl and 0.049% (z)-9-tricosene)</td>
<td>Scatter 4 oz/500 sq ft of fly breeding area, or use bait in any commercial bait station.</td>
<td>Use as a scatter bait only around the outside of animal housing areas. Can be used in walkways of caged layer houses. Bait stations must be hung at least 4 feet from ground level. Scatter baits and bait stations must only be used in areas inaccessible to animals, pets or children.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Elector Bait (0.5% spinosad and 0.04% (z)-9-tricosene)</td>
<td>Scatter 12-16 oz of Elector Bait per 2,000 sq ft. Elector Bait can also be used in bait stations or applied to hang boards/cards. Use 8-10 bait stations or hang boards/cards per 2,000 sq ft. See label for more detailed instructions on bait station and hang board/card use.</td>
<td>DO NOT allow Elector Bait to contact food, feedstuffs, water, milk or milking utensils. DO NOT use where milk is processed or stored. When using Elector in bait stations, hang stations in areas inaccessible to children, livestock and pets. Elector Bait stations or hang cards must be located at least 4 feet above the ground.</td>
</tr>
</tbody>
</table>
# Animal Insect Control

## Barns, Stables and Dairy Barns

(Not for human dwellings)

See Poultry section for poultry houses.

<table>
<thead>
<tr>
<th>Animal</th>
<th>Pest Problem (cont.)</th>
<th>Insecticide Formulation</th>
<th>Method and Rate</th>
<th>Restrictions/Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adult Flies</strong></td>
<td></td>
<td><strong>Baits</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Zyrox Fly Granular Bait</td>
<td></td>
<td>Do not place bait in areas accessible to food-producing animals or animals being grown for food. Do not place bait in areas accessible to children and pets. Bait stations must be used if bait is applied inside residential structures, commercial establishments, food processing plants, restaurants and animal housing units. Do not apply bait outdoors when rain is expected.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.5% cyantraniliprole)</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Ready-to-use granular fly bait. Apply from 3.2-6.4 oz granular bait per 1,000 square feet. Depending upon application site, product can be scattered or placed in bait stations.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>QuikStrike Fly Abatement Strip (1% nithiazine)</td>
<td>Ready-to-use strip. Hang 1 strip/100-300 sq ft depending on fly population.</td>
<td>Hang in enclosed areas protected from rain. Keep out of reach of children and animals.</td>
</tr>
<tr>
<td>Fly Maggots</td>
<td></td>
<td>Neporex 2 SG (2% cyromazine)</td>
<td>Spray: Mix 1 lb Neporex 2 SG per gallon of water. Apply as a coarse low-pressure spray on fly breeding sites with suitable spray equipment (hand-pressurized or power-operated sprayers). One gallon of finished solution will treat 200 sq ft. Scatter: Apply 1 lb Neporex 2 SG per 200 sq ft. Apply directly and evenly on fly breeding sites. Use dry scattering only in case of wet manure or liquid manure. Treat edges and spillage areas around feed and water troughs and where manure accumulates. The spray solutions may also be applied 3 days after manure removal and repeated after next manure removal or when fly larvae are found.</td>
<td>DO NOT apply directly to livestock or livestock feed. DO NOT feed treated manure to animals. Allow at least 1 day between last application and harvest. May be used with slatted floors to treat areas where manure and other refuse accumulate to create fly breeding sites.</td>
</tr>
<tr>
<td>Fire Ants</td>
<td></td>
<td>Apply baits only on the perimeter of barns, stables and dairy barns.</td>
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<tr>
<td></td>
<td></td>
<td>Amdro Pro (hydramethylnon)</td>
<td>5 Tbsp/mound or 1.0-1.5 lb/acre if broadcast</td>
<td>Mound treatment – uniformly distribute materials 3-4 feet around the mound NOT on top of mound.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Extinguish (methoprene)</td>
<td>3-5 Tbsp/mound or 1.0-1.5 lb/acre if broadcast</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Extinguish Plus (methoprene and hydramethylnon)</td>
<td>3-5 Tbsp/mound or 1.0-1.5 lb/acre if broadcast</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Esteem Ant Bait (pyriproxyfen)</td>
<td>2-4 Tbsp/mound or 1.5-2.0 lb/acre if broadcast</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clinch Ant Bait (abamectin)</td>
<td>5-7 Tbsp/mound or 1.0 lb/acre if broadcast</td>
<td></td>
</tr>
</tbody>
</table>
# Animal Insect Control

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>BEEF CATTLE</strong></td>
<td><strong>Cattle Grub</strong> (Also controls lice, some reduction of horn flies.)</td>
<td><strong>Pour-Ons</strong></td>
<td>1 mL/22 lb body weight.</td>
<td>Pour along midline of back.</td>
<td>0 Do not use in calves to be processed for veal.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cydectin (moxidectin)</td>
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<tr>
<td></td>
<td></td>
<td>Ivermectin 0.5% pour-on (Ivomec), generics available</td>
<td>1 mL/22 lb body weight.</td>
<td>Pour along midline of back.</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dectomax pour-on (doramectin)</td>
<td>1 mL/22 lb body weight.</td>
<td>Pour along midline of back.</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ivomec Eprinex pour-on (eprinomectin)</td>
<td>1 mL/22 lb body weight.</td>
<td>Pour along midline of back.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ivomec 1% injection, generics available</td>
<td>1 mL/110 lb body weight.</td>
<td>Subcutaneous injection.</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dectomax injection (doramectin)</td>
<td>1 mL/110 lb body weight.</td>
<td>Subcutaneous injection.</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cydectin injection (moxidectin)</td>
<td>1 mL/110 lb body weight.</td>
<td>Subcutaneous injection.</td>
<td>21</td>
</tr>
<tr>
<td><strong>Horn Flies, Lice</strong> (Aids in control of face flies.)</td>
<td><strong>Dust Bags</strong></td>
<td>Co-Ral (Coumaphos) 1% livestock dust</td>
<td>Dust bag treatment; self-treatment. No mixing necessary.</td>
<td>DO NOT contaminate feed or water.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>permethrin (Permethrin and others) 0.25% D</td>
<td>Dust bag treatment; self-treatment. No mixing necessary.</td>
<td>Dust bags have shown an indication of good lice control when left in place during winter months. Install in gates, doorways, loafing areas, etc.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ProZap Dust'R or Rabon 3% Dust (tetrachlorvinphos)</td>
<td>Dust bag treatment; self-treatment. No mixing necessary.</td>
<td>Dust bags have shown an indication of good lice control when left in place during winter months. Install in gates, doorways, loafing areas, etc.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Python Dust (0.075% zeta-cypermethrin and 0.150% piperonyl butoxide)</td>
<td>Dust bag treatment; self-treatment. Ready-to-use dust.</td>
<td>DO NOT use Python Dust if currently using ear tags containing cypermethrin or zeta-cypermethrin.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rabon 3% Livestock Dust (tetrachlorvinphos)</td>
<td>Dust bag treatment; self-treatment. Ready-to-use dust.</td>
<td>Dust bags have shown an indication of good lice control when left in place during winter months. Install in gates, doorways, loafing areas, etc.</td>
<td>0</td>
</tr>
</tbody>
</table>

Several different dusts can be purchased and hand-sprinkled on cattle. Do not use these in dust bags unless the label indicates you can do so.
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</thead>
<tbody>
<tr>
<td>BEEF CATTLE</td>
<td>Horn Flies, Lice (cont.) (Aids in control of face flies.)</td>
<td><strong>Backrubbers</strong>&lt;br&gt;Permethrin II, Martin’s Permethrin, Durvet Permethrin, Insectrin, Prozap X, Permethrin 10 (10% permethrin)&lt;br&gt;Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide)&lt;br&gt;Co-Ral Fly and Tick Spray (6.15% coumaphos)&lt;br&gt;Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)&lt;br&gt;Prolate/Lintox HD (11.75% phosmet)</td>
<td>Backrubber treatment. Add 1 qt to 20 gal oil. Apply 1 gal solution/20 ft cable to saturate backrubber. Dilute 8 oz. in 5 gallons of oil. Use 9 3/4 oz/gal of fuel oil. Apply 1 gal solution per 20 ft cable to saturate backrubber. Backrubber treatment. Use 1 qt of Ravap in 7 gal of No. 2 diesel oil. Apply 1 gal of mixed solution/20 ft cable to saturate backrubber. Use 1 pt/6.25 gal of fuel oil. Apply solution to backrubber.</td>
<td>Backrubbers help prevent lice infestations. Install cable in gates, doorways, loafing areas, etc., at first sign of pest. DO NOT use motor oil. Use only No. 2 oil or diesel oil. (Mineral oils are a little less irritating than fuel oils.) DO NOT treat sick, stressed or convalescent animals or animals less than 3 months of age. Phosmet is a cholinesterase inhibitor. Consult veterinarian at first sign of adverse reaction.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Horn Flies, Face Flies, Biting and Sucking Lice</td>
<td><strong>Pour-Ons</strong>&lt;br&gt;CyLence (1% cyfluthrin)&lt;br&gt;Brute (10% permethrin)&lt;br&gt;Boss (5% permethrin)&lt;br&gt;Permethrin 1% pour-on&lt;br&gt;Synergized Permethrin Pour-on (permethrin and piperonyl butoxide), Permethrin CDS, Martin’s Fly Ban, Ultra Boss, Synergized DeLice, Permethrin S, Cattle Armor and generic pour-ons&lt;br&gt;Ultra Saber Pour-on and Cyonara Plus Pour-on (1% lambda-cyhalothrin and 5% piperonyl butoxide)&lt;br&gt;StandGuard Pour-on (0.05% gamma-cyhalothrin)&lt;br&gt;Clean-Up Pour-on (5.0% diflubenzuron and 5.0% permethrin) or Clean-Up II pour-on (3% piperonyl butoxide and 5% permethrin)</td>
<td>Ready to use in dispenser. Ready to use. Ready to use. Ready to use. Ready to use. Ready to use.</td>
<td>Use 4-12 mL depending on weight of animal. See label. Also aids in control of other flies. Pour correct dose on back and down the face. Pour correct dose on back and down the face. Pour correct dose on back and down the face. Pour correct dose on back and down the face. Pour correct dose down the backline at rates specified on label. DO NOT APPLY TO FACE OF CATTLE. Pour correct dose down the backline at rates specified on label. DO NOT APPLY TO FACE OF CATTLE.</td>
<td>0</td>
</tr>
</tbody>
</table>

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<table>
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<tr>
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<th>Minimum Days From Last Application to Slaughter</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEEF CATTLE</td>
<td>Horn Flies, Face Flies, Biting and Sucking Lice</td>
<td>Pour-Ons</td>
<td>Apply 10 mL to animals less than 600 lb or 15 mL to animals over 600 lb. Pour along the backline of the animal.</td>
<td>DO NOT apply more than 4 times within a 6-month period. DO NOT apply more often than every two weeks. Not recommended for veal calves. DO NOT apply to dry or lactating dairy cows. DO NOT apply to the face of beef cattle or calves.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ivomec, Ivermectin, Bimectin pour-on</td>
<td>1 mL/22 lb body weight.</td>
<td>Apply along the topline of the back from withers to the tailhead; not labeled to control face flies.</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cydectin</td>
<td>1 mL/22 lb body weight.</td>
<td>Apply along the topline of the back from withers to tailhead; not labeled to control face flies. Provides 7 days of persistent activity against horn flies.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dectomax Pour-on (0.5% doramectin)</td>
<td>1 mL/22 lb body weight.</td>
<td>Apply along the topline of the back from withers to tailhead; not labeled to control face flies. Provides 7 days of persistent activity against horn flies.</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ivomec Eprinex pour-on (eprinomectin)</td>
<td>1 mL/22 lb body weight</td>
<td>Pour along midline of back from withers to tailhead. Provides 7 days of persistent activity against horn flies.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Endectocides</td>
<td></td>
<td>Endectocides (ivermectin, moxidectin and doramectin) are used as part of an integrated control program for internal and external parasite management. For optimal horn fly control over an extended period, use other methods and chemistries.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Remote Delivery Capsule</td>
<td>Apply only 1 VetCap per animal to the upper two-thirds of the body between the front shoulder and 6 inches ahead of the tail with an AIM-L VetGun. Application should be made no closer than 15 feet and no further than 30 feet from the animal.</td>
<td>Use only on cattle weighing 600 pounds or more. DO NOT repeat treatment more often than once every 2 weeks or more often than 4 times within any 6-month period. DO NOT expose VetCaps to humidity above 50% or temperatures above 70°F for any extended period. DO NOT apply to any animal in or within 10 feet of any body of water.</td>
<td>0</td>
</tr>
<tr>
<td>Horn Flies, Face Flies</td>
<td>Oral Larvicides</td>
<td>Rabon Oral Larvicide (tetrachlorvinphos)</td>
<td>Read label directions carefully. Use salt block or pre-mixed mineral as directed on the label.</td>
<td>Start feeding early in spring before flies appear. Oral larvicides pass through the digestive system and kill fly larvae in manure. For horn, face, stable and house fly control.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Altosid IGR (methoprene)</td>
<td>Read label directions carefully.</td>
<td>For horn fly control.</td>
<td>0</td>
</tr>
</tbody>
</table>
### ANIMAL INSECT CONTROL

<table>
<thead>
<tr>
<th>Animal</th>
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<th>Restrictions/Remarks</th>
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</tr>
</thead>
<tbody>
<tr>
<td>BEEF CATTLE</td>
<td>Horn Flies, Face Flies (cont.)</td>
<td><strong>Oral Larvicides</strong>&lt;br&gt;ClariFly Larvicide 0.67% premix or Justify feedthrough — 3% (diflubenzuron)</td>
<td>Read label directions carefully.</td>
<td>For house, stable, horn and face fly control.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Ear Tags and Ear Strips</strong>&lt;br&gt;A number of brand names of insecticide-impregnated ear tags are available for purchase.</td>
<td>Use number of tags recommended on label. Alternating the use of pyrethroid, organophosphate, pyrazole and macrocyclic lactone ear tags will mini-mize resistance/tolerance issues. Ear tags are prima-ry used to control horn flies and ear ticks; however, some ear tags will aid in controlling face flies.</td>
<td>If ear tags within the same insecticide class have been used for two or more consecutive years, substantial reduction in control effectiveness is possible. Use dusts, sprays or ear tags in a different insecticide class or alternative methods.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Horn Flies, Lice, Ticks</td>
<td><strong>Dips</strong>&lt;br&gt;Prolate/Lintox-HD (11.75% phosmet)</td>
<td>Follow label directions.</td>
<td>DO NOT treat sick, stressed or convalescent animals or animals less than 3 months of age. Phosmet is a cholinesterase inhibitor. Consult veterinarian at first sign of adverse reaction.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Sprays</strong>&lt;br&gt;Co-Ral Fly and Tick Spray (6.15% coumaphos)</td>
<td>For horn flies and lice, use 5 oz/4 gal of water; for ticks, use 10 oz/4 gal of water.</td>
<td>One application of these sprays may be sufficient for lice. If live lice are present after 2 weeks, apply a second treatment. Spray to point of runoff.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GardStar 40% EC, Tengard SFR (permethrin)</td>
<td>4 oz/2.5 gal of water. Low-pressure spray. 4 oz/25 gal of water. High-pressure spray.</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rabon (tetrachlorvinphos)</td>
<td>Mix as directed on label for specific pest. Use between 1/2 and 1 gal of spray per animal. Spray face to aid in face fly control.</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Permection II 10% EC, Martin’s Permethrin, Durvet Permethrin, Prozap Insectrin X, Permethrin 10 (10% permethrin)</td>
<td>Use 1 qt in 100-200 gal water. Re-treat after 3 to 5 weeks. Spray to runoff or fog using 1 gal spray mix per head.</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Atroban, Expar 11% EC (permethrin)</td>
<td>1 pt 11% EC/50 gal water for horn fly; 1 pt/25 gal for lice. Use 1 qt spray per head for horn fly and 2 qt spray for lice.</td>
<td>Ready-to-use pour-on; use as directed.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Atroban DeLice 1% (permethrin)</td>
<td>Mix 4 to 8 teaspoons per gallon of water. Thoroughly wet animal’s hair.</td>
<td>For severe infestations use the 8 oz./gallon rate.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide)</td>
<td>Use 1 pt Pvap/10 gal water for horn flies and lice or 1 pt/6 gal water for ticks; then use 1/2-1 gal of spray mixture per animal.</td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>
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</tr>
</thead>
<tbody>
<tr>
<td>BEEF CATTLE</td>
<td>Lice, Internal Parasites</td>
<td><strong>Injectables</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ivomec injection (1% ivermectin)</td>
<td>1 mL/110 lb body weight. Follow label directions.</td>
<td>Subcutaneous injection. For sucking lice.</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cydectin injection (moxidectin)</td>
<td>1 mL/110 lb body weight.</td>
<td>Subcutaneous injection. For sucking lice.</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dectomax injection (doramectin)</td>
<td>1 mL/110 lb body weight.</td>
<td>Subcutaneous injection. For sucking lice.</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Pour-Ons</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ivomec, Ivermectin, Bimectin (0.5% ivermectin)</td>
<td>1 mL/22 lb body weight. Apply along the topline of the back from withers to tailhead.</td>
<td>Apply along topline of the back from withers to tailhead.</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cydectin pour-on (moxidectin)</td>
<td>1 mL/22 lb body weight. Apply along the topline of the back from withers to tailhead.</td>
<td>Apply along topline of the back from withers to tailhead. DO NOT use on calves to be processed for veal.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dectomax pour-on (0.5% doramectin)</td>
<td>1 mL/22 lb body weight. Apply along the topline of the back from withers to tailhead.</td>
<td>Apply along topline of the back from withers to tailhead. DO NOT use on calves to be processed for veal.</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ivomec Eprinex pour-on (eprinomectin)</td>
<td>1 mL/22 lb body weight. Pour along midline of back from withers to tailhead. Provides 7 days of persistent activity against horn flies.</td>
<td>Pour along midline of back from withers to tailhead. Provides 7 days of persistent activity against horn flies.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Ear Ticks</td>
<td>Catron IV (permethrin)</td>
<td>Use as directed on label.</td>
<td>Ear tags will not control lone star tick.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Insecticide-impregnated ear tags</td>
<td>Use as directed on label.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Screwworms (maggots in wounds)</td>
<td>Catron IV (permethrin)</td>
<td>Ready to use. Spray wounds thoroughly.</td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>
## INSECTICIDE EAR TAGS 2019

### Organophosphate Tags

<table>
<thead>
<tr>
<th>Trade Name</th>
<th>Market Source</th>
<th>Active Ingredient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corathon 1</td>
<td>Bayer Corporation Animal Health</td>
<td>coumaphos (2) + diazinon (2)</td>
</tr>
<tr>
<td>Co-Ral Plus 1</td>
<td>Bayer Corporation Animal Health</td>
<td>coumaphos (2) + diazinon (2)</td>
</tr>
<tr>
<td>Dominator 3</td>
<td>Schering-Plough Animal Health</td>
<td>pirimiphos-methyl (2)</td>
</tr>
<tr>
<td>Optimizer 4</td>
<td>Y-Tex Corporation</td>
<td>diazinon (2)</td>
</tr>
<tr>
<td>Patriot 5</td>
<td>KMG-Bernuth, Inc.*</td>
<td>diazinon (2)</td>
</tr>
<tr>
<td>Warrior 4</td>
<td>Y-Tex Corporation</td>
<td>diazinon (2) + chlorpyrifos (2)</td>
</tr>
<tr>
<td>Terminator II 5</td>
<td>KMG-Bernuth, Inc.*</td>
<td>diazinon (2)</td>
</tr>
</tbody>
</table>

### Synthetic Pyrethroid Tags

<table>
<thead>
<tr>
<th>Trade Name</th>
<th>Market Source</th>
<th>Active Ingredient</th>
</tr>
</thead>
<tbody>
<tr>
<td>CyGuard (5) 1</td>
<td>Bayer Corporation Animal Health</td>
<td>beta-cyfluthrin (1)</td>
</tr>
<tr>
<td>Cylence Ultra (5)</td>
<td>Bayer Corporation Animal Health</td>
<td>beta-cyfluthrin (1) + piperonyl butoxide (4)</td>
</tr>
<tr>
<td>GardStar Plus (5)</td>
<td>Y-Tex Corporation</td>
<td>permethrin (1)</td>
</tr>
<tr>
<td>Python Ear Tag or Ear Strip** (5)</td>
<td>Y-Tex Corporation</td>
<td>zeta-cypermethrin (1), piperonyl butoxide (4)</td>
</tr>
<tr>
<td>Python Magnum (5)</td>
<td>Y-Tex Corporation</td>
<td>zeta-cypermethrin (1) + piperonyl butoxide (4)</td>
</tr>
<tr>
<td>Saber Extra 5</td>
<td>Schering-Plough Animal Health</td>
<td>lambda-cyhalothrin (1) + piperonyl butoxide (4)</td>
</tr>
</tbody>
</table>

### Macrocyclic Lactone Tags

<table>
<thead>
<tr>
<th>Trade Name</th>
<th>Market Source</th>
<th>Active Ingredient</th>
</tr>
</thead>
<tbody>
<tr>
<td>XP 820 Ear Tag or XP 820 Ear Strip** (5)</td>
<td>Y-Tex Corporation</td>
<td>abamectin (3) + piperonyl butoxide (4)</td>
</tr>
</tbody>
</table>

### Insecticide Combination Ear Tags

<table>
<thead>
<tr>
<th>Trade Name</th>
<th>Market Source</th>
<th>Active Ingredient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tri-Zap (5) 5</td>
<td>Y-Tex Corporation</td>
<td>Zeta-cypermethrin (1) + abamectin (3) + piperonyl butoxide (4)</td>
</tr>
</tbody>
</table>

1 = synthetic pyrethroid, 2 = organophosphate, 3 = macrocyclic lactone, 4 = synergist, 5 = labeled for use on lactating dairy cattle

Carefully read label concerning the number of tags to apply (1 or 2 per animal) and any precautions concerning calves and lactating dairy cattle.

* Ear tags marketed by KMG-Bernuth, Inc., now marketed by Bayer Corporation.
** Attaches to button side of identification tag.
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</tr>
</thead>
<tbody>
<tr>
<td>DAIRY CATTLE, Lactating</td>
<td>Cattle Grub</td>
<td>Ivomec Eprinex pour-on (eprinomectin)</td>
<td>Pour 1 mL/22 lb body weight along backline.</td>
<td>DO NOT treat after Oct. 15 to avoid toxic reactions in cattle unless cattle were treated for grubs at end of heel fly season. Apply along the topline from withers to the tailhead. To avoid undesirable host-parasite reactions, cattle should be treated as soon as possible after heel fly season (between Aug. 1 and Oct. 15).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cydecln (0.5% moxidectin)</td>
<td>1 mL/22 lb body weight.</td>
<td></td>
</tr>
<tr>
<td>Horn Flies (Flies around the face)</td>
<td>Sprinkle-On Dusts and Dust Bags</td>
<td>Coumaphos 1% livestock dust, Co-Ral 1% shaker can (coumaphos)</td>
<td>1-2 oz/head.</td>
<td>Apply at first sign of pest. Dust only after milking. Rub dust lightly into hair on poll, neck, back and upper sides. Repeat Co-Ral dust application as necessary. DO NOT apply more than once every 7 days. Install bags across gate or door where cows leave milking parlor. DO NOT hang bags over feed, mineral or water troughs. No restrictions when used as recommended.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ProZap Dust'R or Rabon 3% Dust (tetrachlorvinphos)</td>
<td>1-2 Tbsp/head.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Co-Ral 1% D (coumaphos)</td>
<td>Follow label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ProZap Dust'R or Rabon 3% Dust (tetrachlorvinphos)</td>
<td>Follow label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ectiban, Insectrin or Permethrin 0.25% D (permethrin)</td>
<td>Follow label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Python Dust (0.075% zeta-cypermethrin and 0.150% piperonyl butoxide)</td>
<td>Follow label directions.</td>
<td>DO NOT use Python Dust if currently using ear tags containing zeta-cypermethrin or cypermethrin. Apply into the hair over the head, ears, neck, shoulders, back and tailhead. Use shaker can, mechanical duster or dusting glove.</td>
</tr>
<tr>
<td>Horn Flies, Stable Flies and Flies around the face</td>
<td>Mist Sprays</td>
<td>pyrethrins 0.3% OS</td>
<td>Ready to use.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Permethrin II 10% EC (permethrin)</td>
<td>Use 1 qt in 100-200 gal water applied as mist; use 1 gal of mixture per head.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Atroban, Expar 11% EC (permethrin)</td>
<td>1 pt/25 gal water.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vapona Concentrate Insecticide (R) (40.2% dichlorvos)</td>
<td>Mix 5 oz/2 gal water to make a 1% dilution. Apply 1-2 oz of the dilution per animal as a fine mist spray (such as an exit sprayer). May be used daily. DO NOT apply in combination with any other dermal organo-phosphate insecticides (trichlofon). DO NOT treat Brahman or Brahman crossbred cattle due to hypersensitivity to organophosphates. DO NOT apply to calves under 6 months of age.</td>
<td></td>
</tr>
</tbody>
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</thead>
<tbody>
<tr>
<td>DAIRY CATTLE, Lactating</td>
<td>Horn Flies, Stable Flies and Flies around the face (cont.)</td>
<td>Animal Sprays</td>
<td>Follow label directions for low- or high-pressure spray applications or mixing with oil for spot applications.</td>
<td>Care should be taken so the spray does not come in contact with lactating cows’ teats unless they are washed with an approved cleansing solution and dried before milking. Apply the spray at least 20 minutes prior to milking or after milking has been completed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Animal Sprays</td>
<td>Mix 2 oz Ravap per 3 gal of water. Direct spray to cover thoroughly with up to 1/2 gal of the dilution per animal.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ear Tags and Ear Strips</td>
<td>Use as directed on label. Make sure it states for use on dairy animals. Ear tags registered for use on lactating dairy cattle include Gold Star Plus, Python, Python Magnum, ZetaGard and CyLence. Ear tags are primarily used to control horn flies and ear ticks; however, some ear tags will aid in controlling face flies.</td>
<td>If ear tags within the same insecticide class have been used for two or more consecutive years, substantial reduction in control effectiveness is possible. Use dusts, sprays or ear tags in a different insecticide class or alternative methods.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Backrubbers</td>
<td>Use 9 3/4 oz per gal of fuel oil.</td>
<td>Use only diesel oil or No. 2 fuel oil to dilute concentrates. Use 1 gal of oil solution per 20 ft of backrubber. Re-treat back-rubbers weekly. DO NOT treat calves under 6 months old.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Backrubbers</td>
<td>1/2 pt/5 gal of oil.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Backrubbers</td>
<td>Dilute 8 oz. in 5 gallons of oil.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Backrubbers</td>
<td>5 oz/1 gal of oil.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Backrubbers</td>
<td>4 oz/10 gal of oil.</td>
<td>Self-use treatment.</td>
</tr>
<tr>
<td>Dusts</td>
<td>Python Dust</td>
<td>Dust bag treatment; self-treatment. No mixing necessary.</td>
<td>Apply into hair over the head, ears, neck, shoulders, back and tailhead. Use shaker can, mechanical duster or dusting glove. Python Dust is labeled for use in self-treatment dust bags. DO NOT use Python Dust if currently using ear tags containing cypermethrin or zeta-cypermethrin.</td>
<td>Dust bags have shown an indication of good lice control when left in place during winter months. Install in gates, doorways, loafing areas, etc.</td>
</tr>
<tr>
<td></td>
<td>Coumaphos</td>
<td>Dust bag treatment; self-treatment. No mixing necessary.</td>
<td>DO NOT contaminate feed or water.</td>
<td>Dust bags have shown an indication of good lice control when left in place during winter months. Install in gates, doorways, loafing areas, etc.</td>
</tr>
<tr>
<td></td>
<td>1% livestock dust</td>
<td>Dust bag treatment; self-treatment. No mixing necessary.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Permethrin (Permectrin, Prozap, Insectrin) 0.25% D</td>
<td>Dust bag treatment; self-treatment. No mixing necessary.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ProZap Dust’R or Rabon 3% Dust</td>
<td>Dust bag treatment; self-treatment. No mixing necessary.</td>
<td></td>
<td></td>
</tr>
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</thead>
<tbody>
<tr>
<td><strong>DAIRY CATTLE, Lactating</strong></td>
<td>Horn Flies, Stable Flies and Flies around the face</td>
<td>Oral Larvicides (7.76% and 97.3% tetrachlorvinphos formulations)</td>
<td>Use salt block or pre-mixed mineral as directed on label. Look for specific instructions on label.</td>
<td>Start feeding early in the spring before flies begin to appear. Continue feeding throughout the summer and into the fall until cold weather restricts fly activity.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Altosid IGR (methoprene)</td>
<td>Methoprene is used as a mineral or feed additive.</td>
<td>Methoprene must be used on a program basis for horn fly control.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clarifly Larvicide (0.67% premix or Justify feedthrough – 3% (diflubenzuron))</td>
<td>Read label directions carefully.</td>
<td>Must be used on a program basis. For control of house, stable, horn and face flies.</td>
</tr>
<tr>
<td>Horn Flies, Face Flies, Biting and Sucking Lice</td>
<td>Pour-Ons</td>
<td>CyLence (1% cyfluthrin)</td>
<td>Ready to use in dispenser.</td>
<td>Use 4-12 mL per animal. See label for dosage. Use on both lactating and non-lactating animals.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Brute (10% permethrin)</td>
<td>Ready to use in dispenser.</td>
<td>Aids in control of other flies.</td>
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<td>Boss (5% permethrin)</td>
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<td></td>
<td>Permethrin CDS, Martin’s Fly Ban pour-on (permethrin and piperonyl, butoxide)</td>
<td>Pour correct dose on back and down the face.</td>
<td>Comes in ready-to-use dispenser.</td>
</tr>
<tr>
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<td></td>
<td>Ultra Boss and Synergized DeLice, Permethrin S, Cattle Armor Pour-ons (permethrin and piperonyl butoxide)</td>
<td>Pour correct dose on back and down the face.</td>
<td>Comes in ready-to-use dispenser.</td>
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<td></td>
<td>Clean-Up pour-on (5.0% diflubenzuron and 5.0% permethrin) or Clean-Up II pour-on (3% piperonyl butoxide and 5% permethrin)</td>
<td>Apply 3 mL/100 lb body weight along backline and down face. DO NOT apply more than 30 mL to any animal.</td>
<td>Ready to use.</td>
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<td></td>
<td>Atroban 1% DeLice, Permethrin 1% pour-on (permethrin)</td>
<td>Follow label directions. Ready-to-use pour-on.</td>
<td>DO NOT exceed 5 fluid oz/animal.</td>
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<td></td>
<td></td>
<td>Cydecitin (0.5% moxidectin)</td>
<td>1 mL/22 lb body weight.</td>
<td>Apply along the topline from withers to tailhead. Provides 7 days of persistent activity against horn flies. Not labeled for face fly control.</td>
</tr>
<tr>
<td>Lice and Ticks</td>
<td>Sprays and Dusts</td>
<td>Co-Ral Fly and Tick Spray (6.15% coumaphos)</td>
<td>For lice, use 2.5 oz/4 gal of water.</td>
<td>Complete wetting to runoff.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Atroban, Expar 11% EC (permethrin)</td>
<td>1 pt/25 gal water. Use 2 qt of spray per animal.</td>
<td>Spray only after milking.</td>
</tr>
</tbody>
</table>
## ANIMAL INSECT CONTROL

<table>
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<tr>
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<tbody>
<tr>
<td><strong>DAIRY CATTLE, Lactating</strong></td>
<td>Lice and Ticks (cont.)</td>
<td>Sprays and Dusts</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)</td>
<td>2 oz/3 gal water. 1 gal/200 gal water.</td>
<td>Use 1/2 gal of diluted spray per animal. Repeat as necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ectiban 5.7% EC (permethrin)</td>
<td>1 qt/100 gal water for lice. 1 qt/25 gal water for ticks.</td>
<td>0 days. Repeat 14-21 days after first treatment.</td>
</tr>
<tr>
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<td></td>
<td>GardStar 40% EC, Tengard SFR (permethrin)</td>
<td>4 oz/25 gal water treats 50-100 head. High-pressure spray.</td>
<td>1-2 qt of coarse spray per animal.</td>
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<td></td>
<td></td>
<td>Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide)</td>
<td>Mix 2 to 8 oz. product per gallon of water. For severe infestations use the higher rate.</td>
<td>Wet hair thoroughly. Spray lactating dairy cows only after milking has been completed.</td>
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<td></td>
<td>Python Dust (0.075% zeta-cypermethrin and 0.15% piperonyl butoxide)</td>
<td>Up to 2 oz per animal.</td>
<td>Apply into hair over the head, ears, neck, shoulders, back and tailhead. Use shaker can, mechanical duster or dusting glove. Python Dust is labeled for use in self-treatment dust bags.</td>
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<tr>
<td></td>
<td></td>
<td>ProZap Dust'R or Rabon 3% Dust (tetrachlorvinphos)</td>
<td>2 oz per animal. Dust thoroughly.</td>
<td>DO NOT apply more than once every 7 days.</td>
</tr>
<tr>
<td><strong>DAIRY CATTLE Non-lactating</strong></td>
<td>Cattle Grubs</td>
<td>Pour-Ons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Dry Cows and Heifers Only)</td>
<td>Late summer or fall treatments (July through Oct. 15 prior to freshening)</td>
<td>Ivomec Eprinex pour-on (eprinomectin)</td>
<td>Pour 1 mL/22 lb body weight along backline.</td>
<td>DO NOT treat after Oct. 15 to avoid toxic reactions in cattle unless cattle were treated for grubs at end of heel fly season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ivomec Eprinex pour-on (eprinomectin)</td>
<td>1 mL/22 lb body weight.</td>
<td>Pour along midline of back. DO NOT treat after Oct. 15 to avoid toxic reactions in cattle unless cattle were treated for grubs at end of heel fly season.</td>
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<td></td>
<td></td>
<td>Cydectin pour-on (0.5% moxidectin)</td>
<td>1 mL/22 lb body weight.</td>
<td>Apply along topline from withers to the tailhead. To avoid undesirable host-parasite reactions, cattle should be treated as soon as possible after heel fly season (between Aug. 1 and Oct. 15).</td>
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<td></td>
<td>Injectables</td>
<td>1% ready to use. 1.0 mL/110 lb body weight.</td>
<td>Use subcutaneous injection only. Allow 35 days from last application to slaughter. Not for intravenous or intramuscular use. No more than 10 mL of Ivomec should be used on animals over 1,100 lb (see label for specific instructions). Also controls sucking lice. <strong>DO NOT use in female dairy cattle of breeding age.</strong></td>
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<td></td>
<td></td>
<td>Ivermectin, Ivomec, Noromectin and other generics (1% ivermectin)</td>
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<tr>
<td></td>
<td></td>
<td>Cydectin injectable (1% moxidectin)</td>
<td>1% ready to use. 1.0 mL/110 lb body weight.</td>
<td>Use subcutaneous injection only. <strong>Cattle must not be slaughtered for human consumption within 21 days of treatment. Not for use in female dairy cattle 20 months of age or older (including dry dairy cows), veal calves and calves less than 8 weeks of age.</strong></td>
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</tbody>
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<tr>
<td><strong>DAIRY CATTLE Non-lactating</strong> (Dry Cows and Heifers Only)</td>
<td>Lice</td>
<td><strong>Pour-Ons</strong>&lt;br&gt;Aatroban, DeLice or Expar 1% (permethrin)&lt;br&gt;Synergized DeLice, Synergized Permethrin, Permethrin S, Cattle Armor (1% permethrin and 1% piperonyl butoxide)&lt;br&gt;Permethrin CDS, Martin’s Fly Ban pour-on (permethrin and piperonyl butoxide)&lt;br&gt;Clean-up pour-on (5.0% diflubenzuron and 5.0% permethrin or Clean-Up II pour-on (3% piperonyl butoxide and 5% permethrin))&lt;br&gt;Ivomec Eprinex pour-on (eprinomectin)&lt;br&gt;Cydectin (0.5% moxidectin)</td>
<td>0.5 fl oz/100 lb body weight.&lt;br&gt;Pour 1/2 oz/100 lb body weight up to a maximum of 5 oz per animal. Pour correct dose down face and along back.&lt;br&gt;Pour correct dose on back and down the face.&lt;br&gt;Apply 3 mL/100 lb body weight along backline and down face. DO NOT apply more than 30 mL to any animal.</td>
<td>0 days. DO NOT exceed 5 fl oz/animal. These pour-ons can also be used on lactating dairy cattle.&lt;br&gt;Can also be applied undiluted as a mist spray or diluted with mineral oil or diesel fuel (1 pt Synergized DeLice to 1 gal mineral oil or diesel fuel) for use in a backrubber.&lt;br&gt;DO NOT treat after Oct. 15 to avoid toxic reactions in cattle unless cattle were treated for grubs at the end of heel fly season. Apply along the topline from withers to tailhead. To avoid undesirable host-parasite reactions, cattle should be treated as soon as possible after heel fly season (between Aug. 1 and Oct. 15).&lt;br&gt;If ear tags within the same insecticide class have been used for two or more consecutive years, substantial reduction in control effectiveness is possible. Use dusts, sprays or ear tags in a different insecticide class or alternative methods.</td>
</tr>
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</table>

**Horn Flies**<br>Several brand names of insecticide-impregnated ear tags are available for purchase.<br>Insecticides recommended for lactating dairy cattle can be used on non-lactating dairy cattle. Some insecticides recommended for use on beef cattle can be used on non-lactating dairy cattle. Be certain to follow the days to freshening guidelines and instructions on the label before using any insecticide labeled for beef cattle.<br>Use as directed on label. Ear tags are primarily used to control horn flies and ear ticks; however, some ear tags will aid in controlling face flies. | Ear Tags and Ear Strips | Use as directed on label. Ear tags are primarily used to control horn flies and ear ticks; however, some ear tags will aid in controlling face flies. | If ear tags within the same insecticide class have been used for two or more consecutive years, substantial reduction in control effectiveness is possible. Use dusts, sprays or ear tags in a different insecticide class or alternative methods. |

**Sprays, Dusts and Backrubbers** | Horn Flies, Stable Flies, and Flies Around the Face | Insecticides recommended for lactating dairy cattle can be used on non-lactating dairy cattle. Some insecticides recommended for use on beef cattle can be used on non-lactating dairy cattle. Be certain to follow the days to freshening guidelines and instructions on the label before using any insecticide labeled for beef cattle. | | |
## Animal Pest Problem

- **DAIRY CATTLE, DAIRY BARNS**
  - House Flies and Flies around the premises

### Insecticide Formulation

- **Sanitation, Biological Control and Integrated Pest Management (IPM)**
  - Sanitation is critical to any fly control program in dairies and animal housing facilities. IPM includes sanitation, insecticides (baits, contact insecticides, etc.), surveillance (monitoring and/or trapping) and biological control (conserving natural enemies and/or releases). Use insecticides judiciously to minimize impact on natural enemies and to prevent or delay insecticide resistance. Use a combination of management methods.

### Sanitation

- Waste (spilled feed, wet feed, manure, bedding) removal and management is the first line of defense in any fly management program. Prompt removal and disposal (such as spreading on pastures) of waste will reduce fly breeding sites and break the house fly life cycle. Some producers have experienced reduced fly populations with weekly releases of parasitic wasps beginning in April or May. Releases should be made in dry areas out of traffic and in areas where flies reproduce. **Parasite and/or insecticide use are not a substitute for a good sanitation program.**

### Sticky Ribbons/Tapes

- Sticky ribbons and tapes can be effective in managing small to moderate fly populations. Sticky ribbons are also useful in monitoring house fly populations when used weekly.

### Baits

- **QuickBayt, Martin’s Quick Draw and Bonanza Fly Bait**
  - (0.5% imidacloprid and 0.1% muscalure, (2)-(9)-tricosene)
  - Ready-to-Use Fly Bait
  - Mix 1.5 oz/1 oz of water, mix thoroughly, let stand for 15 minutes or until a paste consistency and paint on non-dusty fly resting areas inaccessible to animals.

- **QuickBayt Disposable Fly Bait Strip**
  - (0.5% imidacloprid and 0.1% muscalure (2)-(9)-tricosene)
  - Ready-to-use strip. Use 1 bait strip/250 sq ft.

- **QuickBayt Spot Spray**
  - (10% imidacloprid and 0.1% muscalure (2)-(9)-tricosene)
  - Mix 16 oz/gal water. Carefully read label directions.

- **QuikStrike Fly Scatter Bait**
  - (0.5% dinotefuran and 0.04% (2)-(9)-tricosene)
  - Scatter 4 oz/500 sq ft of fly breeding area or use bait in any commercial bait station.

- **Golden Malrin**
  - (1.1% methomyl and 0.049% (2)-(9)-tricosene)
  - Scatter 4 oz/500 sq ft of fly breeding area or use bait in any commercial bait station.

### Restrictions/Remarks

- Use around the outside of dairies and animal housing areas. **DO NOT** apply to milking equipment or allow bait to contact food or water. Can be used inside horse stables, broiler, turkey and caged layer houses, swine confinement buildings, dairy barns and milking parlors **ONLY** if used in bait stations. Bait stations must be placed at least 4 feet above ground level and in areas inaccessible to animals, pets or children.

- Use as a scatter bait only around the outside of animal housing areas. **Bait stations must be hung at least 4 ft from ground level. Scatter baits and bait stations must only be used in areas inaccessible to animals, pets or children.**

- Apply to fly resting areas such as walls, fences, window sills, posts, etc., typically 4 feet above the floor surface. **DO NOT** apply to milking equipment.

- Use as a scatter bait only around the outside of animal housing areas. **Bait stations must be hung at least 4 ft from ground level. Scatter baits and bait stations must only be used in areas inaccessible to animals, pets or children.**
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<tr>
<td>DAIRY CATTLE, DAIRY BARNES</td>
<td>House Flies and Flies around the premises</td>
<td>Baits</td>
<td>Scatter 12-16 oz/2,000 sq ft. Elector Bait can also be used in bait stations or applied to hang boards/cards. Use 8-10 bait stations or hang boards/cards per 2,000 sq ft. See label for more detailed instructions on bait station and hang board/card use.</td>
<td>DO NOT allow Elector Bait to contact food, feedstuffs, water, milk or milking utensils. DO NOT use where milk is processed or stored. When using Elector in bait stations, hang stations in areas inaccessible to children, livestock and pets. Elector Bait stations or hang cards must be located at least 4 ft above the ground.</td>
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<tr>
<td></td>
<td></td>
<td>Zyrox Fly Granular Bait</td>
<td>Ready-to-use granular fly bait. Apply from 3.2-6.4 oz granular bait/1,000 square feet. Depending upon application site, product can be scattered or placed in bait stations.</td>
<td>DO NOT place bait in areas accessible to food-producing animals or animals being grown for food. DO NOT place bait in areas accessible to children and pets. Bait stations must be used if bait is applied inside residential structures, commercial establishments, food processing plants, restaurants and animal housing units. DO NOT apply bait outdoors when raining.</td>
</tr>
<tr>
<td>Sprays</td>
<td></td>
<td>Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)</td>
<td>12 Tbsp/gal water/500-1,000 sq ft.</td>
<td>Remove animals from barn before spraying. Allow at least 4 hours for spray to dry before allowing cows to return to the barn. DO NOT contaminate feed, water or milking utensils.</td>
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<td>Rabon 50% WP (tetrachlorvinphos)</td>
<td>4 lb per 25 gal applied/1 gal per 500 sq ft.</td>
<td>1 gal/750-1,000 sq ft. (DO NOT use in milk rooms.)</td>
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<td>GardStar 40% EC, Tengard SFR (permethrin)</td>
<td>4 oz/10 gal water. Surface spray.</td>
<td>Apply as directed on label.</td>
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<td>Pounce 3.2 EC (permethrin)</td>
<td>4 oz/12.5 gal water. Apply 1 gal solution/750 sq ft.</td>
<td>Apply as directed on label. Treat walls, ceilings, moldings, screens, door and window frames and similar resting places.</td>
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<tr>
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<td></td>
<td>Pyranha Stock Guard Concentrate</td>
<td>Mix 2 to 8 oz. product per gallon of water.</td>
<td>Apply 0.5% dilution as a space spray mist to open air space at the rate of 1 qt/8,000 cu ft or as a coarse surface spray to indoor surfaces at the rate of 1 qt/1,000 sq ft. For the 1.0% dilution, apply as above but only half the total volume of mixture. DO NOT use this product in areas where animals have received a direct organophosphate application within 8 hours. If animals are present, ventilate treated area immediately following application. DO NOT contaminate water, feed or foodstuffs, milk or milking utensils.</td>
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<td>Vapona Concentrate Insecticide (R)</td>
<td>2 oz/1.5 gal water (0.5% dilution). 5 oz/2 gal water (1.0% dilution).</td>
<td>Wet surfaces where flies rest. DO NOT spray animals, humans, animal feed or water. DO NOT apply more than once per week.</td>
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<td>Annihilator (0.02% deltamethrin)</td>
<td>Ready to use.</td>
<td>Apply dilution to horizontal and overhead surfaces where flies rest. DO NOT make applications in areas where animals are present. Allow to dry before reintroducing animals or birds. DO NOT contaminate animal food, feed or water during application.</td>
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<td>Grenade ER (9.7% lambda-cyhalothrin)</td>
<td>Mix 0.2 to 0.4 oz/gal water to make a 0.015% to 0.03% dilution.</td>
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### Animal Insect Control

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| **DAIRY CATTLE**, **DAIRY BARNS** | House Flies and Flies around the premises (cont.) | Sprays  
Atroban, Expar 11% EC (permethrin) | 1 pt/10 gal water. Apply 1 gal/750-1,000 sq ft of surface. | Apply as directed on label.  
Talstar, Bifenthrin I/T 7.9F, Optashield CS (7.9% bifenthrin) | Target areas where flies rest such as ceilings, trusses, rafters, supports, walls, windows and vegetation.  
StandGuard 5.9 (5.9% gamma-cyhalothrin) | Mix 0.16 oz (5 mL)/gal of water. | Spray 1 gal of diluted spray to treat 500-1,000 sq ft fly resting surfaces. |
| **DAIRY CATTLE**, **MILK ROOMS** | Adult Flies | Sprays  
Pyrethrins (synergized) | Use as directed on label. |  
Tempo 20WP (cyfluthrin) | Use adequate water for coverage.  
Baits  
QuickBayt Disposable Fly Bait Strip (0.5% imidacloprid and 0.1% muscalure (z)-9-tricosene) | Ready-to-use strip; use 1 bait strip/250 sq ft. | DO NOT use in areas accessible to food-producing animals or allow to contact food or water. DO NOT apply directly to milking equipment.  
QuickBayt, Martin’s Quick Draw and Bonanza Fly Bait (0.5% imidacloprid and 0.1% muscalure (z)-9-tricosene) | 1.5 oz/bait station/250 sq ft. | Can be used inside horse stables, broiler, turkey and caged layer houses, swine confinement buildings, dairy barns and milking parlors ONLY if used in bait stations. Bait stations must be placed at least 4 feet above ground level and in areas inaccessible to animals, children or pets.  
Zyrox Fly Granular Bait (0.5% cyrantraniliprole) | Ready-to-use granular fly bait. Apply from 3.2-6.4 oz granular bait/1,000 square feet. Depending upon application site, product can be scattered or placed in bait stations. **When applied inside, product must be placed in commercial bait stations.** | Bait stations must be used if bait is applied inside residential structures, commercial establishments, food processing plants, restaurants and animal housing units. Do not place bait in areas accessible to food-producing animals or animals being grown for food. Do not place bait in areas accessible to children and pets. Do not apply bait outdoors when raining. |
## ANIMAL INSECT CONTROL

### Animal Pest Problem

**PREMISES Fleas (premises)**

Often, animal treatment alone does not completely control severe flea infestations. Sanitation (removal of pet bedding, etc.) and insecticide application of the infested areas with an adulticide and an insect growth regulator mixture may be necessary.

### Adulticides

**Permethin concentrates**
- Martin’s permethrin 10,
- Perectrin II,
- Tengard SFR

Mix according to label directions. Can be mixed with an insect growth regulator such as Nylar or Precor – listed below.

**Cypermethrin concentrates**
- Martin’s Viper Insecticide Concentrate and others
- Bifenthrin
- Bug Blaster Bifenthrin 2.4 and others

(Outdoor USE only)

Can be mixed with an insect growth regulator. Apply only as directed on the label.

**Outdoors**: When treating outdoors, concentrate in areas where fleas are present. Presence of fleas in the yard can be confirmed by walking the area while wearing white socks pulled to the knees; fleas will be easily seen against the white background of the socks. It is not usually necessary to treat the entire yard. Fleas normally occur in areas where pets rest, sleep, and run such as doghouse and kennel areas, under decks, along fences and next to the foundation.

**Indoors**: Use only products labeled for indoor use and apply only as directed on the label. Apply where pets spend the most time. Treat pet bedding, rugs, area under pet bedding, under furniture and in cracks and crevices. Hardwood floors seldom require treatment, but the area should be vacuumed thoroughly.

### Insect Growth Regulators

**Nylar (pyriproxyfen):**
- Martin’s IG Regulator

Mix according to label directions. Can be mixed with an adulticide such as those listed above.

Can be mixed with an adulticide. Apply only as directed on the label.

**Outdoors**: When treating outdoors, concentrate in areas where fleas are present. Presence of fleas in the yard can be confirmed by walking the area while wearing white socks pulled to the knees; fleas will be easily seen against the white background of the socks. It is not usually necessary to treat the entire yard. Fleas normally occur in areas where pets rest, sleep, and run, such as doghouse and kennel areas, under decks, along fences and next to the foundation.

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### Ready-to-Use IGR and Adulticide Mixtures

**Precor Premise Plus, Vet-Kem Siphotrol Plus II Premise spray (aerosol):**
- (S)-methoprene, permethrin, phenothrin, N-octyl bicycloheptene dicarboximide, piperonyl butoxide

Use only as directed on label. For use in the home, garage, kennel and commercial buildings. Cover aquariums before making applications. Pets and humans should not be in the house during treatment and should not return until the spray has dried or as directed on the label.
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<tr>
<td>PREMISES</td>
<td>Fleas (premises)</td>
<td>Prescription Treatment</td>
<td>Ready-to-use aerosol</td>
<td>Use only as directed on label. For use in the home, garage, kennel and commercial buildings. Cover aquariums before making applications. Pets and humans should not be in the house during treatment and should not return until the spray has dried or as directed on the label.</td>
</tr>
<tr>
<td></td>
<td>(cont.)</td>
<td>Prescription Treatment Alpine Flea Insecticide with IGR (aerosol): dinotefuran, pyriproxyfen, prallethrin</td>
<td>Ready-to-use aerosol</td>
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<td>Raid Flea Killer Plus Carpet and Room Spray (aerosol): pyrethrins, tetramethrin, piperonyl butoxide, N-octyl bicycloheptene dicarboximide, (S)-methoprene</td>
<td>Ready-to-use aerosol</td>
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<td>GardStar Garden and Poultry Dust and others (0.25% permethrin dust).</td>
<td>Ready to use. Use 1/2 oz on dogs 20 lb and under. Use 1 oz on dogs greater than 20 lb. Can be used to dust dog bedding and dog house. DO NOT use on puppies under 12 weeks of age. Use only on dogs.</td>
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<tr>
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<td></td>
<td>Hartz Flea and Tick Powder for Dogs (3.3% tetrachlorvinphos)</td>
<td>Ready to use. Use 1/2 ounce on small dogs, 1 oz on medium-sized dogs and 1 1/4 oz on large dogs. Can be used to dust dog bedding – read label directions. DO NOT use on puppies under 12 weeks of age. Use only on dogs.</td>
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<td>Sergeant's Flea Powder for Dogs (2.0% piperonyl butoxide and 0.50% permethrin)</td>
<td>Ready to use. Follow label directions.</td>
<td>Follow cautions and age restrictions on the label.</td>
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<td></td>
<td></td>
<td>Preventic Tick Collar for Dogs (amitraz)</td>
<td>Ready-to-use collar. Follow label directions.</td>
<td>DO NOT use on puppies less than 12 weeks old. For ticks only. Aerosol pest sprays are also available for controlling fleas and ticks. Dip, sponge or swab dog until thoroughly wet.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Permectrin II 10% EC (permethrin)</td>
<td>1 oz in 3-5 gal water. Use 1 qt on big dogs; 1 pt on small dogs. Pet sensitivities may occur after using a pesticide product. If you see signs of sensitivity bathe your pet with mild soap and rinse with large quantities of water. If signs continue, consult a veterinarian immediately. Do not treat puppies less than twelve weeks old. Also controls ticks. DO NOT use on puppies less than 8 weeks old.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Expar 3.2% EC (permethrin)</td>
<td>Use 4 Tbsp in 1 gal water.</td>
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<tr>
<td></td>
<td></td>
<td>Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide)</td>
<td>Mix 2 to 8 oz. product per gallon of water</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Frontline or Parastar spot-on (fipronil)</td>
<td>Follow label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Frontline Plus or Martin’s Preferred for Dogs (9.8% fipronil and 8.8% methoprene)</td>
<td>Follow label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Promeris for Dogs (metaflumizone and amitraz)</td>
<td>Ready-to-use spot-on.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Parastar Plus (fipronil and cyphenothrin)</td>
<td>Follow label directions.</td>
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</tbody>
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## ANIMAL INSECT CONTROL

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>DOGS</td>
<td>Fleas, Ticks (cont.)</td>
<td>Sergeant's PreTect Squeeze-on (45% permethrin and 1.9% pyriproxyfen) Certifect for Dogs (flpronil, (S)-methoprene, amitraz) K-9 Advantix (8.8% imidacloprid and 44% permethrin) Organic Solution pet powder for dogs (pyrethrins, piperonyl butoxide and diatomaceous earth) Sergeant's PreTect Squeeze-on (45% permethrin and 1.9% pyriproxyfen)</td>
<td>Follow label directions. Ready-to-use spot-on. Ready-to-use spot-on. Apply 3 or 4 spots to the skin along the backline between back of the shoulders and base of the tail. Work into hair of animal down to skin. Dust bedding.</td>
<td>DO NOT apply to puppies less than 3 months of age. DO NOT use on puppies less than 8 weeks old. Purchase the appropriate formulation for the weight and age of your dog. Also repels mosquitoes and biting flies. Apply as directed on label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GardStar 40% EC, Tengard SFR One Shot (permethrin)</td>
<td>4 oz/20 gal water (dip)</td>
<td>Make sure all areas are soaked to skin. DO NOT rinse off.</td>
</tr>
<tr>
<td>Oral Tablets</td>
<td>NexGard (afoxolaner)</td>
<td>Available through prescription only. Administer tablet every 30 days.</td>
<td></td>
<td>DO NOT use on puppies less than 8 weeks old.</td>
</tr>
<tr>
<td></td>
<td>Bravecto (fluralaner)</td>
<td>Available through prescription only. One tablet will last for 12 weeks.</td>
<td></td>
<td>Use only on dogs over 4.4 pounds or six months of age.</td>
</tr>
<tr>
<td></td>
<td>Simparica (sarolaner)</td>
<td>Available through prescription only. Administer tablet every 30 days.</td>
<td></td>
<td>Use only on dogs over 2.8 pounds or six months of age.</td>
</tr>
<tr>
<td>Fleas</td>
<td>Flea collars containing Vapona, Rabon, Chlorpyrifos, Baygon, Propoxur and other chemicals (permethrin)</td>
<td>Use as directed on label. Some animals are sensitive to collars.</td>
<td></td>
<td>Fleas are killed quickly. Ticks are tough and are killed slowly. They will usually be dead in 1-5 days. When bathing dogs, remove collar until dog is dry. Replace collar when effectiveness diminishes. Specially formulated dips for dogs are available for purchase. DO NOT use on puppies less than 12 weeks of age. DO NOT use on puppies less than 7 weeks old. DO NOT use on puppies less than 6 weeks of age.</td>
</tr>
<tr>
<td>Also controls ticks</td>
<td>Vet-Kem PowerBand Flea and Tick Collar for Dogs (propoxur and (S)-methoprene)</td>
<td>Use as directed on label.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Also controls ticks</td>
<td>Seresto Collar (flumethrin and imidacloprid)</td>
<td>Collar. Use as directed on label.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Also controls ticks</td>
<td>Hartz UltraGuard Plus Flea and Tick Collar for Dogs and Puppies (tetrachlorvinphos and (S)-methoprene)</td>
<td>Use as directed on label.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Also controls ticks</td>
<td>Synergized pyrethrins soap methoprene or Precor 1% methoprene 0.075% + permethrin 0.5% Ortho Total Flea Control</td>
<td>Wet pet thoroughly. Apply soap and work up good lather. Let stand 5-10 minutes to kill fleas. Rinse. Follow mixing directions on label and combine with adulticide for best results. Follow label directions.</td>
<td></td>
<td>The lather of this soap cleans, grooms and deodorizes as it kills fleas. Premise spray for control of fleas. DO NOT use on dogs. Medicated shampoos and dips labeled for use on dogs will often help reduce flea and tick problems.</td>
</tr>
</tbody>
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**ANIMAL INSECT CONTROL**

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<tr>
<td><strong>DOGS</strong></td>
<td><strong>Fleas</strong> (cont.)</td>
<td>Comfortis (spinosad)</td>
<td>Chewable tablet. Follow label directions.</td>
<td>Available by prescription from licensed veterinarians.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advantage Spot-on (9.1% imidacloprid)</td>
<td>Ready-to-use spot-on. Apply 3 or 4 spots to the skin along the backbone between the shoulders and base of the tail.</td>
<td>Purchase the appropriate formulation for the weight and age of your dog.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advantage Multi for Dogs (imidacloprid and moxidectin)</td>
<td>Ready-to-use spot-on.</td>
<td>Available by prescription only. Also labeled for treatment of intestinal parasites and heartworm prevention.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Program Flea Control (lufenuron)</td>
<td>Oral.</td>
<td>Available by prescription only.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Capstar tablet (nitenpyram)</td>
<td>Oral tablet.</td>
<td>Do not use on puppies less than 4 weeks old.</td>
</tr>
<tr>
<td></td>
<td><strong>Ear Mites</strong></td>
<td>Malathion 5% aerosol spray can</td>
<td>Apply to the ears.</td>
<td>Repeat every 7 days as needed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Adams Pene-Mite, Eradimate and others (pyrethrins and piperonyl butoxide)</td>
<td>Ready-to-use drops.</td>
<td>DO NOT use on puppies less than 12 weeks of age.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ready-to-use permethrin or pyrethrin drops such as Mite-X and Ear-Rite</td>
<td>Apply as directed on label.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pet Care Ear Mite Solution (0.12% rotenone and 0.16% cube resins)</td>
<td>Ready to use.</td>
<td>DO NOT use on puppies less than 12 weeks of age.</td>
</tr>
<tr>
<td><strong>CATS</strong></td>
<td><strong>Fleas</strong></td>
<td>Pyrethrin 1% D</td>
<td>Lightly work material into the hair down to the skin. Repeat once a month.</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td></td>
<td>Also controls ticks</td>
<td>Bravecto spot-on (fluralaner)</td>
<td>Available by prescription only. One application lasts 12 weeks.</td>
<td>Use only on cats weighing 2.6 pounds or greater. Do not use on cats less than 6 months of age.</td>
</tr>
<tr>
<td></td>
<td>Also controls ticks</td>
<td>Assurity (spinetoram)</td>
<td>Ready-to-use spot-on.</td>
<td>Apply as directed on label. DO NOT use on kittens less than 8 weeks of age.</td>
</tr>
<tr>
<td></td>
<td>Also controls ticks</td>
<td>Organic Solution pet powder for cats (pyrethrins, piperonyl butoxide and diatomaceous earth)</td>
<td>Apply as directed on label.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Also controls ticks</td>
<td>Adams Plus Breakaway Flea and Tick Collar for Cats and Kittens, Vet-Kem Breakaway Plus Fleas and Tick Collar for Cats and Kittens (propoxur, (S)-methoprene)</td>
<td>Use as directed on label.</td>
<td>Do not use on kittens less than 12 weeks of age.</td>
</tr>
<tr>
<td></td>
<td>Also controls ticks</td>
<td>Flea collars containing Vapona, Rabon, Baygon and other chemicals</td>
<td>Use as directed on label.</td>
<td>Fleas are killed quickly. Ticks are tough and are killed slowly. They will usually be dead in 1-5 days.</td>
</tr>
<tr>
<td></td>
<td>Also controls ticks</td>
<td>Sentry PurrScriptions Dual Action Collar for Cats (phenothrin and propoxur)</td>
<td>Collar. Use as directed on label.</td>
<td>New flea collars can sometimes cause severe skin irritation around the necks of dogs and cats. Should irritation occur, remove the collar and place it in a quart jar with a screw lid. Put the collar back on the pet after 2 or 3 days. DO NOT use on kittens less than 12 weeks old.</td>
</tr>
<tr>
<td></td>
<td>Also controls ticks</td>
<td>Seresto Collar (flumethrin and imidacloprid)</td>
<td>Collar. Use as directed on label.</td>
<td>DO NOT use on kittens less than 10 weeks old.</td>
</tr>
</tbody>
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<tbody>
<tr>
<td>CATS</td>
<td>Fleas (cont.)</td>
<td>Frontline, EasySpot and Sentry Fiproguard (fipronil)</td>
<td>Spray or spot-on.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Also controls ticks</td>
<td>Frontline Plus, Martin’s Preferred for Cats and Sentry Fiproguard Plus (fipronil and (S)-methoprene)</td>
<td>Available to use as a spot-on.</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td></td>
<td>Also controls ticks</td>
<td>Bio-Spot for Cats (5.3% pyriproxyfen)</td>
<td>Follow label directions.</td>
<td>DO NOT apply to kittens less than 12 weeks of age.</td>
</tr>
<tr>
<td></td>
<td>Also controls ticks</td>
<td>Zodiac Spot-on for Cats and Kittens (S)-methoprene</td>
<td>Follow label directions.</td>
<td>DO NOT apply to kittens less than 12 weeks of age.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Promeris for Cats (metaflumizone)</td>
<td>Spot-on. Follow label directions.</td>
<td>DO NOT apply to kittens less than 8 weeks old.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advantage Multi for Cats (imidacloprid and moxidectin)</td>
<td>Follow label directions.</td>
<td>Available by prescription only. Also labeled for treatment of intestinal parasites, ear mites and heartworm prevention.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advantage II (imidacloprid and pyriproxyfen)</td>
<td>Follow label directions.</td>
<td>DO NOT use on kittens less than 8 weeks old.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Program Flea Control (lufenuron)</td>
<td>Oral</td>
<td>Available by prescription only.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Capstar tablet (nitenpyram)</td>
<td>Oral tablet</td>
<td>Do not use on kittens less than 4 weeks old.</td>
</tr>
<tr>
<td></td>
<td>Ear Mites</td>
<td>Malathion 5% aerosol spray can</td>
<td>Apply to the ears.</td>
<td>Repeat every 7 days as needed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Advantage Multi for Cats (imidacloprid and moxidectin)</td>
<td>Follow label directions.</td>
<td>Available by prescription only. Also labeled for treatment of intestinal parasites, ear mites and heartworm prevention.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pet Care Ear Mite Solution (0.12% rotenone and 0.16% cube resins)</td>
<td>Ready to use.</td>
<td>DO NOT use on kittens less than 12 weeks of age.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ear Rite Miteicide, Adams Pene-Mite, Eradimite and others (pyrethrins and piperonyl butoxide)</td>
<td>Ready-to-use drops.</td>
<td>DO NOT use on kittens less than 12 weeks of age.</td>
</tr>
<tr>
<td></td>
<td>RABBITS</td>
<td>Mites (cuterebra spp.)</td>
<td>Remove birds and spray entire cage.</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td></td>
<td>Lice</td>
<td>Pyrethrins + Piperonyl butoxide</td>
<td>Spray bird directly—hold aerosol 18 inches from bird; spray one burst 2-3 seconds.</td>
<td>Apply no more than 3 times per week.</td>
</tr>
<tr>
<td></td>
<td>Ear mites</td>
<td>Adams Pene-Mite, Eradimite and others (pyrethrins and piperonyl butoxide)</td>
<td>Ready-to-use drops.</td>
<td>DO NOT use on rabbits less than 12 weeks of age.</td>
</tr>
<tr>
<td></td>
<td>Ear mites, fur mites and rabbit bots (Cuterebra spp.)</td>
<td>More effective treatments are available from licensed veterinarians.</td>
<td>Consult your veterinarian for other effective treatment options.</td>
<td></td>
</tr>
</tbody>
</table>

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**ANIMALS**
## Animal Insect Control

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<tr>
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<tr>
<td>HORSES</td>
<td>Bots</td>
<td>Ivermectin (Zimecterin, Eqvalan, Eqimectrin) 1.87% paste</td>
<td>Oral paste.</td>
<td>Treat horses after second killing frost.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quest Plus Equine Oral Gel (moxidectin/praziquantel)</td>
<td>Oral paste.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Equinox Dewormer (ivermectin/praziquantel)</td>
<td>Oral paste.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quest Equine Oral Gel (moxidectin)</td>
<td>Oral paste.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Manual Controls</strong></td>
<td><strong>Sponge animal with warm water (120 degrees F) to initiate egg hatching.</strong></td>
<td><strong>Firmly sponge horse's forelegs, chest, neck and belly on cool days (below 60 degrees F) so that larva will hatch and die of exposure. Manual control may limit bot infestations but may NOT eliminate infestations.</strong></td>
</tr>
<tr>
<td>Lice, Ticks</td>
<td></td>
<td>Co-Ral Fly and Tick Spray (6.15% coumaphos)</td>
<td>For horn flies and lice, use 5 oz in 4 gal water.</td>
<td>Follow label directions. DO NOT use on horses intended for slaughter. Co-Ral is a cholinesterase inhibitor. DO NOT treat sick, stressed or convalescent animals. DO NOT use on animals less than 3 months of age. Use 2 qt spray per animal.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Atroban 11% EC (permethrin)</td>
<td>Mix 1 pt in 25 gal water.</td>
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<tr>
<td></td>
<td></td>
<td>Horse Lice Duster III and other permethrin dust formulations (0.25% permethrin)</td>
<td>Apply 2 oz over the head, shoulders and back.</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Clean-Up pour-on (5% diflubenzuron and 5% permethrin)</td>
<td>Apply 3 mL/100 lb body weight as a spray or wipe-on only. DO NOT apply more than 30 mL to any one animal.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td><strong>Horn Flies</strong></td>
<td>Mix 1 pt 11% EC with 25 gal water. Horn flies require only 1 pt 11% EC/50 gal water.</td>
<td>Use 2 qt finished spray per animal.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Atroban 11% EC (permethrin)</td>
<td><strong>For high-pressure sprayers:</strong> Mix 1 qt in 200 gal of water; 8 oz in 50 gal of water.</td>
<td>Spray to thoroughly cover entire animal. Apply from 1/2 to 1 gal of spray per head. For lice or mites, a second treatment is recommended 14-21 days later. Wet hair thoroughly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Permethrin II and generics (10% permethrin)</td>
<td>Mix 2 to 8 oz. product per gallon of water. For severe infestations use the higher rate.</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide)</td>
<td><strong>For hand or garden sprayers and low-pressure sprayers:</strong> Mix 8 oz in 3 gal of water; 2.5 oz (5 Tbsp) in 1 gal of water; or 20 mL (4 tsp) in 1 qt of water.</td>
<td>Spray each animal with up to 8 oz of mixed spray. For lice and mites, a second treatment is recommended 14-21 days later. 2 oz/animal. Follow label directions.  1-2 fl oz of spray per animal. Spot treat back, face, legs, tail and ears. Follow label directions. DO NOT use on horses intended for slaughter. Co-Ral is a cholinesterase inhibitor. DO NOT treat sick, stressed or convalescent animals. DO NOT use on animals less than 3 months of age. Also kills ticks.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spray-N-Repel (pyrethrins)</td>
<td>Pyrethrin mist spray.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flypel, Flysect, Equi-Spot, Fly Rid Plus (permethrin or pyrethrin)</td>
<td>Ready-to-use sprays and spot-ons.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>GardStar 40% EC, Tengard SFR (permethrin)</td>
<td>0.25 oz/1 pint of water. Low-pressure spray.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Co-Ral Fly and Tick Spray (6.15% coumaphos)</td>
<td>For horn flies and lice, use 5 oz in 4 gal water.</td>
<td></td>
</tr>
<tr>
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<td></td>
<td>Flypel, Flysect (permethrin or pyrethrin)</td>
<td>Ready-to-use sprays and spot-ons.</td>
<td></td>
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<td>HORSES</td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>Horn Flies</td>
<td>Tri-Tec Concentrate Fly Spray for Horses (cypermethrin, pyrethrins, piperonyl butoxide, Di-n-propyl isocinchomeronate, butoxy polypropylene glycol)</td>
<td>Mix 1 part Tri-Tec Concentrate to 3 parts water. Use spray or wipe-on solution.</td>
<td>DO NOT allow solution in horse’s eyes, nose or mouth. Wear protective gloves when using as a wipe-on.</td>
</tr>
<tr>
<td></td>
<td>Stable Flies</td>
<td>Equi-Spot Spot-on Fly Control and generics (permethrin)</td>
<td>Ready to use. Follow label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Horse Flies</td>
<td>Brute pour-on, Tuttle’s Brute Insecticide for Horses (10% permethrin)</td>
<td>Ready to use. Apply 3-6 mL per 200 lb body weight (do not exceed 30 mL).</td>
<td>Apply as a whole body wipe with a cloth or insecticide application mitt. For horn flies, pour 3-6 mL per 200 lb body weight over the withers and down the back. DO NOT treat more often than once every 7 days. DO NOT treat foals under 12 weeks of age.</td>
</tr>
<tr>
<td></td>
<td>Mosquitoes</td>
<td>Permethin CDS, Buzz Off pour-on, Martin’s Fly Ban pour-on (7.4% permethrin and 7.4% piperonyl butoxide)</td>
<td>Ready to use. Apply 8-16 mL as a pour-on spray or wipe.</td>
<td>Apply as a whole body wipe with a cloth or insecticide application mitt. For pour-on application, pour over the withers and down the back. For spray application, apply with a mist sprayer in undiluted form after riding or exercise.</td>
</tr>
<tr>
<td></td>
<td>Black Flies</td>
<td>Python Dust (0.075% zeta-cypermethrin and 0.150% piperonyl butoxide)</td>
<td>Ready-to-use dust. Apply up to 2 oz per animal.</td>
<td>DO NOT apply more often than every 3 days. Also controls ticks.</td>
</tr>
<tr>
<td></td>
<td>Deer Flies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Biting Gnats</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>House Flies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Face Flies (cont.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>A number of wipe-on towels and roll-on products are available in ready-to-use formulations for horses. These products can be useful, particularly on equines that become restless or agitated when attempting to apply insecticide spray formulations or to treat sensitive areas of the animal.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Roll-ONS</td>
<td>Endure Roll-On for Horses (0.15% cypermethrin, 0.02% pyrethrins, 0.63% piperonyl butoxide, 0.05% di-n-propyl isocinchomeronate and 4.85% butoxy polypropylene glycol)</td>
<td>Ready to use. Follow label directions.</td>
<td>DO NOT use on horses or foals intended for slaughter.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flysect Roll-On fly repellent face lotion or Farnum Roll-On fly repellent (0.40% pyrethrins, 1.0% piperonyl butoxide, 1.0% di-n-propyl isocinchomeronate and 0.4% n-octyl bicycloheptene dicarboximide)</td>
<td>Ready to use. Follow label directions.</td>
<td>DO NOT use on animals less than 12 weeks of age. May also be used on dogs.</td>
</tr>
<tr>
<td></td>
<td>Paste</td>
<td>War Paint Insecticide Paste (7% permethrin, 1% piperonyl butoxide)</td>
<td>Ready to use. Follow label directions. Applications can be directed to specific body areas to kill and repel specific fly species</td>
<td>Do not apply to wet animals because the product does not adhere to wet surfaces.</td>
</tr>
<tr>
<td></td>
<td>Towels</td>
<td>Absorbine UltraShield Towelettes (0.40% permethrin, 0.08% pyrethrins and 0.79% piperonyl butoxide)</td>
<td>Ready to use. Follow label directions.</td>
<td>May also be used on dogs.</td>
</tr>
</tbody>
</table>
## Horsera Bar Insect Control

### Sanitation, Biological Control and Integrated Pest Management (IPM)
Sanitation is critical to any fly control program in horse barns and animal housing facilities. IPM includes sanitation, insecticides (baits, contact insecticides, etc.), surveillance (monitoring and/or trapping) and biological control (conserving natural enemies and/or releases). Use insecticides judiciously to minimize impact on natural enemies and to prevent or delay insecticide resistance. Use a combination of management methods.

### Waste Management
Waste (spilled feed, wet feed, manure, bedding) removal and management are the first lines of defense in any filth fly management program. Prompt removal and disposal (such as spreading on pastures) of waste will reduce filth fly breeding sites and break the house fly life cycle. Some producers have experienced reduced fly populations with weekly releases of parasitic wasps beginning in April or May. Releases should be made in dry areas out of traffic and in areas where flies reproduce. **Parasite and/or insecticide use are not substitutes for a good sanitation program.**

### Bait Mixtures
- **QuickBayt**, [Martin’s Quick Draw and Bonanza Fly Bait](0.5% imidacloprid and 0.1% muscalure (z)-9-tricosene)
  - Ready-to-Use Fly Bait
  - Scatter 6 oz of bait/1,000 sq ft around the outside of horse barns in areas inaccessible to horses. Can also be mixed with water and painted on fly resting areas. See label directions.
  - Use only in fly bait stations inside horse stables. Place bait stations in areas inaccessible to animals.

- **QuickBayt Disposable Fly Bait Strip** (0.5% imidacloprid and 0.1% muscalure (z)-9-tricosene)
  - Ready-to-use strip. Use 1 bait strip/250 sq ft.
  - DO NOT use in areas accessible to food-producing animals or allow to contact food or water.

- **QuickBayt Spot Spray** (10% imidacloprid and 0.1% muscalure (z)-9-tricosene)
  - Mix 16 oz/gal water.
  - For use in and around agriculture production facilities such as turkey and chicken houses, cattle, sheep and goat facilities, feedlots, dairy barns, swine confinement buildings, dog kennels and horse stables. DO NOT apply on surfaces accessible to children or pets. DO NOT apply where animals can ingest the bait.

- **Golden Malrin** (1.1% methomyl and 0.049% (z)-9-tricosene)
  - Ready to use. Scatter 4 oz/500 sq ft of area where flies congregate, rest or feed, or use bait in any commercial bait station.
  - Use as a scatter bait only around the outside of animal housing areas. Can be used in horse stables ONLY if used in bait stations. Bait stations must be hung at least 4 ft from ground level. Scatter baits and bait stations must only be used in areas inaccessible to animals, pets or children.

- **QuikStrike Fly Scatter Bait** (0.5% dinotefuran and 0.04% (z)-9-tricosene)
  - Scatter 4 oz/500 sq ft of fly breeding area, or use bait in any commercial bait station.
  - Use as a scatter bait only around the outside of animal housing areas. Bait stations must be hung at least 4 ft from ground level. Scatter baits and bait stations must only be used in areas inaccessible to animals, pets or children.

- **Zyrox Fly Granular bait** (0.5% cyantraniliprole)
  - Ready-to-use granular fly bait. Apply from 3.2-6.4 oz granular bait/1,000 sq ft. Depending upon application site, product can be scattered or placed in bait stations.
  - DO NOT place bait in areas accessible to food-producing animals or animals being grown for food. Do not place bait in areas accessible to children and pets. Bait stations must be used if bait is applied inside residential structures, commercial establishments, food processing plants, restaurants and animal housing units. Do not apply bait outdoors when raining.

- **Nithiazine strip (QuikStrike)**
  - Ready to use.
  - DO NOT use in areas accessible to animals.
## Animal Insect Control

<table>
<thead>
<tr>
<th>Animal</th>
<th>Pest Problem</th>
<th>Insecticide Formulation</th>
<th>Method and Rate</th>
<th>Restrictions/Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>HORSE BARN</td>
<td>Flies (cont.)</td>
<td>Automatic Spray Systems</td>
<td></td>
<td><strong>General Precautions for All Insecticides Are:</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Resmethrin, pyrethrin and piperonyl butoxide</td>
<td></td>
<td>1. Apply where flies congregate; i.e., ceilings, light fixtures, walls, windows, etc. DO NOT apply within 1 week of applying whitewash.</td>
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<td></td>
<td></td>
<td><strong>Residual Sprays</strong></td>
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<td>2. DO NOT contaminate feed or water supplies. Cover them when spraying.</td>
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<tr>
<td></td>
<td></td>
<td>Resmethrin, pyrethrin and piperonyl butoxide</td>
<td></td>
<td>3. Remove animals before spraying.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Resmethrin, pyrethrin and piperonyl butoxide</td>
<td></td>
<td>4. Keep out of reach of animals and children.</td>
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<tr>
<td></td>
<td></td>
<td>Resmethrin, pyrethrin and piperonyl butoxide</td>
<td></td>
<td>5. DO NOT mix a combination of compounds.</td>
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<td></td>
<td></td>
<td>Resmethrin, pyrethrin and piperonyl butoxide</td>
<td></td>
<td>Wear protective clothing—jacket or coveralls, cap or hat, rubber gloves, and preferably a respirator. Wash protective clothing after using. Wash with soap and water after spraying.</td>
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<td></td>
<td>Rabon 50% WP (tetrachlorvinphos)</td>
<td>3 lb 50% WP in 7.5 gal water. Spray 1 gal/500-1,000 sq ft to wet all surfaces. Repeat every 3 or 4 weeks.</td>
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<td></td>
<td>Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)</td>
<td>1 gal Ravap EC/25 gal water. Allow 4 hours to dry before returning animals to barn. Apply 1 gal spray solution/1,000 sq ft.</td>
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<td></td>
<td>Atroban 11% EC (permethrin)</td>
<td>1 pt/10 gal clean water. Apply 1 gal/750-1,000 sq ft. Provides up to 8 weeks of control.</td>
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<td></td>
<td>Atroban 42.5% EC (permethrin)</td>
<td>4 oz/10 gal water. Apply 1 gal/750-1,000 sq ft.</td>
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<td></td>
<td>Permethrin 3.2 EC, Tengard SFR (36.8% permethrin)</td>
<td>4 oz/12.5 gal water. Apply 1 gal/750 sq ft.</td>
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<td>Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide)</td>
<td>Mix 2 to 8 oz. product per gallon of water. For severe infestations use the higher rate.</td>
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<td>Vapona Concentrate (R) (40.2% dichlorvos)</td>
<td>2 oz/1.5 gal water (0.5% dilution)</td>
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<td></td>
<td>Insecticide Concentrate (R)</td>
<td>5 oz/2 gal water (1.0% dilution)</td>
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<td></td>
<td>Annihilator (0.02% deltamethrin)</td>
<td>Ready to use</td>
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<td>Grenade ER, Oxyfly, Cyonara 9.7 (9.7% lambda-cyhalothrin)</td>
<td>Mix 0.2-0.4 oz/gal water to make a 0.015% to 0.03% dilution.</td>
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<td></td>
<td>Permetrin II (10% permethrin)</td>
<td>1 qt 10% permethrin/25 gal water. Use 1 gal/750 sq ft. Other similar permethrin formulations are registered as surface sprays.</td>
<td></td>
</tr>
<tr>
<td>Animal</td>
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<tr>
<td>HORSE BARNES</td>
<td>Flies (cont.)</td>
<td>Residual Sprays (cont.)</td>
<td>4 oz/10 gal of water (surface spray).</td>
<td>1 gal covers 1,000 sq ft. DO NOT use in milk rooms.</td>
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<td>GardStar 40% EC (permethrin)</td>
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<td></td>
<td>Talstar, Bifenthrin I/T 7.9F,</td>
<td>Mix with water and apply 0.33-1.0 oz product per 1,000 sq ft.</td>
<td>Target areas where flies rest such as ceilings, trusses, rafters, supports, walls, windows and vegetation.</td>
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<td>Optashield CS (7.9% bifenthrin)</td>
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<td>StandGuard 5.9 (5.9% gamma-cyhalothrin)</td>
<td>Mix 0.16 oz (5 mL)/gal of water.</td>
<td>Spray 1 gal of diluted spray to treat 500-1,000 sq ft fly resting surfaces.</td>
</tr>
<tr>
<td></td>
<td>Fly Maggots</td>
<td>Neporex 2 SG (2% cyromazine)</td>
<td>Spray: Mix 1 lb Neporex 2 SG per gal of water. Apply as a coarse low-pressure spray on fly breeding sites with suitable spray equipment (hand-pressurized or power-operated sprayers). One gal of finished solution will treat 200 sq ft.</td>
<td>DO NOT apply directly to livestock or livestock feed. DO NOT feed treated manure to animals. (ONLY FOR HORSES NOT INTENDED FOR SLAUGHTER OR FOOD.)</td>
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<td></td>
<td>(developing in manure and/or moist spilled feed)</td>
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<td>Scatter: Apply 1 lb Neporex 2 SG per 200 sq ft. Apply after cleaning underneath bedding on stall floors.</td>
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<tr>
<td></td>
<td>Feed-Through</td>
<td>SimpliFly LarvaStop Fly growth regulator (0.24% diflubenzuron)</td>
<td>FOR HOUSE AND STABLE FLIES ONLY. Feed daily to horses. Rate is dependent on weight of the horse.</td>
<td>Read and follow labeled rates. DO NOT use on horses intended for slaughter. Prevents the development of house and stable fly larvae in treated manure.</td>
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<tr>
<td></td>
<td></td>
<td>Equitrol II (diflubenzuron)</td>
<td>Feed-through house fly control for horse barns and stables. Add specified amount of Equitrol to your horse’s daily ration.</td>
<td>DO NOT use on horses intended for slaughter.</td>
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<tr>
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<td></td>
<td>Prairie Pride Rabon Supplement Block (0.3% tetrachlorvinphos)</td>
<td>Follow label directions. Feed blocks at the rate of 0.88 oz per 100 lb of bodyweight per day.</td>
<td>Not to be used on horses destined for slaughter. PRECAUTIONS FOR HORSE USE: This product contains tetrachlorvinphos, a cholinesterase inhibitor. The most frequently reported clinical signs of cholinesterase inhibition in the horse are abdominal pain, lethargy, sweating, tearing and excessive salivation. If these signs are seen in horses, consult your veterinarian immediately. DO NOT use this product simultaneously or within a week before or after treatment with cholinesterase-inhibiting drugs, pesticides or chemicals. Consult a veterinarian before using this product on debilitated, aged, pregnant or nursing animals. This product has not been tested in breeding horses.</td>
</tr>
<tr>
<td></td>
<td>Solitude IGR feed-through</td>
<td>Daily Dosage: Using 1/2 oz scoop supplied with the product, mix one (1) scoop of Solitude IGR in the horse’s ration every day.</td>
<td>DO NOT USE ON HORSES INTENDED FOR SLAUGHTER. Follow precautions on label.</td>
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<td></td>
<td>(2.12% cyromazine)</td>
<td>Alternate Day Dosage: Using 1/2 oz scoop supplied with the product, mix two (2) scoops of Solitude IGR in the horse’s ration every other day.</td>
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</tbody>
</table>
**ANIMAL INSECT CONTROL**

<table>
<thead>
<tr>
<th>Animal</th>
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<tr>
<td>Poultry</td>
<td>Litter Treatments for Fleas, Lice and Mites (including northern fowl mites)</td>
<td>Sprays Rabon 50% WP</td>
<td>For floor management/roost paint, make 1% solution (1/2 lb Rabon 50% per 3 gal water). Spray finished solution into cracks and crevices at rate of 1 pt solution per 100 ft.</td>
<td>No withholding period from last application to slaughter. Read label directions carefully.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rabon 50% WP (tetrachlorvinphos)</td>
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<td></td>
<td>Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)</td>
<td>Mix 1 gal of Ravap in 50 gal water. Use 1-2 gal of finished spray per 1,000 sq ft. Spray evenly for penetration of litter surface. Spray walls, roosts, cracks, crevices and interiors thoroughly. Spray birds lightly. Mix EC with water as directed on label.</td>
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<tr>
<td>Dusts</td>
<td></td>
<td>Rabon Beetle Shield (3% tetrachlorvinphos)</td>
<td>For roost paint, mix 1 lb of Rabon Beetle Shield with 1 pt of water to make a slurry (will treat 100 ft).</td>
<td>Check label. No waiting period between application and slaughter.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rabon 50% WP (tetrachlorvinphos)</td>
<td>Mix evenly throughout top layer of box using 2.5 oz per 50 birds.</td>
<td>No waiting period between application and slaughter.</td>
</tr>
<tr>
<td>Litter Beetles</td>
<td>(Darkling beetles, black bugs, lesser mealworms)</td>
<td>Pyrethroid Insecticides</td>
<td>Apply from 25-50 lb per broiler or turkey growout house (see remarks to the right). Applications should be made with a drop-type dust/granular spreader in bands under feed lines and along walls. See product label for more details.</td>
<td>For use in chicken broiler houses and turkey growout houses. Do not apply with power duster equipment. Do not enter or allow others to enter until dusts have settled. The maximum use rate is 50 pounds of product per broiler or turkey growout house. The application can be split into two 25-pound applications, or one single 50-pound application, per flock. These applications can occur as one application at the 50-pound rate prior to the flock being placed in the broiler house, or as one application at the 25-pound rate prior to the flock being placed in the broiler house and a second 25-pound application occurring not later than three weeks prior to shipping the birds for slaughter. If one single application is made at the maximum rate of 50 pounds, slaughter cannot occur sooner than six weeks after application.</td>
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<tr>
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<td></td>
<td>ZetaGard LBT (0.375% zeta-cypermethrin (2S), 0.750% piperonyl butoxide)</td>
<td>Apply from 25-50 lb per broiler or turkey growout house (see remarks to the right). Applications should be made with a drop-type dust/granular spreader in bands under feed lines and along walls. See product label for more details.</td>
<td>For use in chicken broiler houses and turkey growout houses. Do not apply with power duster equipment. Do not enter or allow others to enter until dusts have settled. The maximum use rate is 50 pounds of product per broiler or turkey growout house. The application can be split into two 25-pound applications, or one single 50-pound application, per flock. These applications can occur as one application at the 50-pound rate prior to the flock being placed in the broiler house, or as one application at the 25-pound rate prior to the flock being placed in the broiler house and a second 25-pound application occurring not later than three weeks prior to shipping the birds for slaughter. If one single application is made at the maximum rate of 50 pounds, slaughter cannot occur sooner than six weeks after application.</td>
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<td></td>
<td>Tempo 20 WP (cyfluthrin)</td>
<td>Two 9.5-gram packets (19 grams) or two Tempo scoopfuls of 20 WP in a water-based spray per 1,000 sq ft. Four level teaspoonfuls also equals 9.5 grams.</td>
<td>DO NOT apply while birds are in house. DO NOT make application to feeding or watering equipment. When applications are made with existing manure and litter on the floor, allow that accumulation to dry enough to form a crust before applications are made. DO NOT apply when birds are present. DO NOT contaminate feed, water or feeding and watering equipment with spray. Also helps in fly control if applied to fly resting areas. Apply only when birds are NOT present. DO NOT contaminate feed, water or feeding and watering equipment with spray.</td>
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<td>9.5-gram packet or 50-gram powerpack</td>
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<td>Tempo SC Ultra (11.8% beta-cyfluthrin)</td>
<td>Mix 15 mL per gallon of water. Apply as a general spray or to cracks and crevices.</td>
<td>DO NOT apply when birds are present. DO NOT contaminate feed, water or feeding and watering equipment with spray. Also helps in fly control if applied to fly resting areas. Apply only when birds are NOT present. DO NOT contaminate feed, water or feeding and watering equipment with spray.</td>
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<td></td>
<td>Grenade ER, OxyFly, Cyonara 9.7 (9.7% lambda-cyhalothrin)</td>
<td>Mix 0.8 oz (24 mL) per gallon of water. Apply to walls and floors following cleanout.</td>
<td>Follow label directions. Apply only when birds are NOT present. DO NOT contaminate feed, water or feeding and watering equipment with spray.</td>
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<td></td>
<td>StandGuard (5.9% gamma-cyhalothrin)</td>
<td>Mix according to label. Apply to walls and floor following cleanout or after growout.</td>
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</tbody>
</table>
## ANIMAL INSECT CONTROL

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<thead>
<tr>
<th>Animal</th>
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<tbody>
<tr>
<td>POULTRY</td>
<td>Litter Beetles (cont.) (Darkling beetles, black bugs, lesser mealworms)</td>
<td>A litter beetle treatment/monitoring program should be maintained year-round to reduce litter beetle populations and damage caused by this pest. Frequent removal of litter and replacement with fresh shavings in poultry houses can help reduce beetle populations. Litter beetle populations at outbreak levels are difficult to control. Loss of insecticide susceptibility has been observed in some parts of the country; therefore, periodic rotation of insecticides from different insecticide classes should be considered. The life cycle from egg to an adult darkling beetle ranges from about 40 to 100 days, indicating that classes should be rotated every 2-3 flocks (in broiler production) depending upon grow-out duration.</td>
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<td>Pyrethroid insecticides</td>
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<td>ActiShield (7.9% bifenthrin)</td>
<td>Mix according to label. Apply to walls, floors and posts following cleanout or after growout.</td>
<td>Follow label directions. Apply only when birds are NOT present. DO NOT contaminate feed, water or feeding and watering equipment with spray.</td>
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<td>Organophosphate insecticides</td>
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<td>Durashield CS (20% chlorpyrifos)</td>
<td>Mix 2-5 oz/1,000 sq ft in an adequate amount of water to provide good coverage.</td>
<td>Follow label directions. Treat litter, especially under feeder lines, water lines and perimeter. Apply only when birds are NOT present. Treat evenly and thoroughly using 3/4 oz/100 sq ft.</td>
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<td>Rabon 50% WP (tetrachlorvinphos)</td>
<td>Mix 2 lb of 50% WP in 25 gal of water.</td>
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<td>Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)</td>
<td>Mix as directed on label. Use as a residual spray.</td>
<td>Apply 1 gal of dilution/500-1,000 sq ft.</td>
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<td>Neonicotinoid insecticides</td>
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<td>Credo SC, Midash Forte and others (42.8% imidacloprid)</td>
<td>Mix as directed on the label. Apply 3 fl oz Credo SC diluted in water per 1,000 sq ft.</td>
<td>Apply between flocks following de-caking/sanitation procedures. Apply a 3-foot band to litter under feed and/or water lines and a 3-foot band to litter adjacent to walls, including 1 foot up the wall above the foundation. Follow all other application directions on the label. Under severe infestations, Credo SC and specific generics may be applied to the whole house.</td>
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<td>Credo D (21.4% imidacloprid with DStar adjuvant)</td>
<td>Mix as directed on the label. Apply 6.4 fl oz Credo D diluted in water per 1,000 sq ft. Apply from 1/2 to 2 1/2 gal of finished spray per 1,000 sq ft.</td>
<td>Apply between flocks following de-caking/sanitation procedures. Apply a 3-foot band to litter under feed and/or water lines and a 3-foot band to litter adjacent to walls, including 1 foot up the wall above the foundation. Follow all other application directions on the label. Under severe infestations, Credo D may be applied to the whole house.</td>
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<td>Darlex (23.6% clothianidin)</td>
<td>Use 4 oz product per 1,000 sq ft. For example, mix 4 oz product with 1/2 to 2 gal of water to treat 1,000 sq ft of floor, litter or wall.</td>
<td>Apply between flocks following de-caking/sanitation procedures. Do not apply when birds are present. Addition of disinfectants to insecticide tank mix may affect insecticidal activity.</td>
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<td>Spinosyn insecticides</td>
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<td>Elector PSP (44.2% spinosad)</td>
<td>Use 8 oz per 20,000 sq ft (use up to 16 oz for heavy infestations). Mix enough water to ensure coverage of treated area. Treat litter along feed and water lines, walls and support beams.</td>
<td>DO NOT apply premise treatment directly to poultry. Read and follow label precautions.</td>
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<td>Insect Growth Regulators</td>
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<td>Pyri-Shield EC, Archer 1.3 (1.3% pyriproxyfen)</td>
<td>Use 1 oz/1,000 sq ft space in sufficient volume water to wet litter. General broadcast, spot, crack and crevice treatment.</td>
<td>FOR LARVAL CONTROL ONLY. Pyri-Shield and Nylar are insect growth regulators that will alter the development of larval forms. Can be used in conjunction with an adulticide to provide immediate control of adults. For best results, apply following cleanout. Remove birds from immediate treatment area. DO NOT contaminate food or water.</td>
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<tr>
<td></td>
<td></td>
<td>Nylar IGR Concentrate (10% pyriproxyfen)</td>
<td>Use 4-12 mL/1,500 sq ft of surface area in sufficient water to wet the surface.</td>
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</tbody>
</table>
## ANIMAL INSECT CONTROL

<table>
<thead>
<tr>
<th>Animal</th>
<th>Pest Problem</th>
<th>Insecticide Formulation</th>
<th>Method and Rate</th>
<th>Restrictions/Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>POULTRY CAGED LAYER TREATMENTS (directly on birds)</td>
<td>External Parasites: Lice and Mites, including northern fowl mite</td>
<td>Sprays and Dusts</td>
<td>Rabon Beetle Shield 3% insecticide dust (3% tetrachlorvinphos)</td>
<td>Apply 1 lb/300 birds. Direct dust application to vent and fluff areas.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Rabon 50% WP (tetrachlorvinphos)</td>
<td>Apply directly to birds; spray vent and fluff areas from below. Repeat when necessary.</td>
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<td></td>
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<td></td>
<td>Ectiban, Insectrin or Permaban 5.7% or 11% EC (permethrin)</td>
<td>0.05% spray. Mix 1 qt 5.7% EC or 1 pt 11% EC in 25 gal water.</td>
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<td></td>
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<td></td>
<td>Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)</td>
<td>Mix 1 gal Ravap/50 gal water. 1 gal of finished spray per 100 birds. Apply directly to birds. Spray vent and fluff areas from below. For chickens on litter, spray as above and apply 1-2 gal of dilution/1,000 sq ft of litter surface. Also spray walls, roosts, cracks and crevices.</td>
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<td></td>
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<td></td>
<td>Permethrin II 10% EC and generics (permethrin)</td>
<td>1 qt/50 gal water. Spray 1-2 oz/bird at vent area. Cover or remove feed and water.</td>
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<td></td>
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<td></td>
<td>GardStar 40% EC, Tengard SFR (permethrin)</td>
<td>1-4 oz/3.75 gal water. Treats 1,500 birds.</td>
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<td></td>
<td>Atroban 11% EC (permethrin)</td>
<td>1 pt/25 gal water. Use 1 gal of finished spray per 100 birds.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide)</td>
<td>Dilute 1.28 oz. product per gallon of water.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ectiban or Permethrin 0.25% D (permethrin)</td>
<td>Use 1 lb per 100 birds.</td>
</tr>
<tr>
<td>POULTRY HOUSES (for treatment of poultry facility)</td>
<td>Bed Bugs, Fowl Ticks</td>
<td>ActiShield (7.9% bifenthrin)</td>
<td>Mix according to label. Apply to cracks, crevices, walls, posts, nest boxes and mobile side curtains.</td>
<td>Follow label directions. DO NOT apply directly to birds. For occupied areas of poultry facility, apply to cracks and crevices ONLY. DO NOT contaminate feed, water or feeding and watering equipment with spray.</td>
</tr>
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<td></td>
<td></td>
<td>Grenade ER, OxyFly, Cyonara 9.7 (9.7% lambda-cyhalothrin)</td>
<td>Mix according to label. Apply to cracks, crevices, walls, posts and cage frames.</td>
<td>Follow label directions. DO NOT apply in areas where birds are present. DO NOT contaminate feed, water or feeding and watering equipment with spray.</td>
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<tr>
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<td></td>
<td>Tempo 20 WP (cyfluthrin) 9.5-gram packet or 50-gram powerpack</td>
<td>Mix according to label. Apply to cracks and crevices.</td>
<td>Follow label directions. DO NOT apply when birds are present. DO NOT contaminate feed, water or feeding and watering equipment with spray.</td>
</tr>
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<td></td>
<td></td>
<td>Tempo SC Ultra (11.8% beta-cyfluthrin)</td>
<td>Mix according to label. Apply to cracks and crevices.</td>
<td>Follow label directions. DO NOT apply when birds are present. DO NOT contaminate feed, water or feeding and watering equipment with spray. Spray crevices of roost poles, cracks in nests and walls where chicken mites and bed bugs hide.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide)</td>
<td>Dilute 1.28 oz. product per gallon of water.</td>
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<tr>
<td></td>
<td></td>
<td>Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)</td>
<td>Mix according to label. Apply to cracks and crevices.</td>
<td>Follow label directions.</td>
</tr>
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<tr>
<td>Poultry Houses</td>
<td>Bed Bugs, Fowl Ticks (cont.)</td>
<td>Rabon 50 WP</td>
<td>Mix according to label. Apply to cracks and crevices.</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Permethrin (various formulations)</td>
<td>Mix according to label. Apply to cracks and crevices.</td>
<td>Follow label restrictions and directions.</td>
</tr>
<tr>
<td></td>
<td>House Flies and Flies around the premises</td>
<td>Sanitation, Biological Control and Integrated Pest Management (IPM)</td>
<td>Sanitation is critical to any fly control program in poultry facilities. IPM includes sanitation, insecticides (baits, contact insecticides, etc.), surveillance (monitoring and/or trapping) and biological control (conserving natural enemies and/or releases). Use insecticides judiciously to minimize impact on natural enemies and to prevent or delay insecticide resis-tance. Use a combination of management methods.</td>
<td>Waste removal and management is the first line of defense in any filth fly management program. Waste management includes both removal and moisture control. Minimizing the amount of moisture in waste will reduce fly breeding poten-tial. Some producers have experienced reduced fly popula-tions with releases of parasitic wasps. Parasite and/or insecticide use are not substitutes for a good sanitation and moisture control program.</td>
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<td>Neporex 2 SG (2% cyromazine)</td>
<td>Mix 1 lb Neporex 2 SG per gal of water. Apply as a coarse low-pressure spray on fly breeding sites with suitable spray equipment (hand-pressurized or power-operated sprayers). One gal of finished solution will treat 200 sq ft.</td>
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<td></td>
<td>Larvadex 1% premix (cyromazine)</td>
<td>Mix 1 lb of Larvadex 1% premix per ton of feed. Feed Larvadex continuously as directed for 4 to 6 weeks. Read label thoroughly before use.</td>
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<td></td>
<td></td>
<td>Rabon EC or WP (tetrachlorvinphos)</td>
<td>4 gal of 24.3% EC or 16 lb of 50% WP in 100 gal of water. Apply to droppings at rate of 1 gal/100 sq ft.</td>
<td>DO NOT feed Larvadex-treated feed to broiler poultry. Larvadex-treated feed must be removed from layers at least 72 hours before slaughter.</td>
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<td></td>
<td></td>
<td>Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)</td>
<td>Mix 1 gal Ravap EC in 25 gal water. Apply 1 gal of finished spray per 100 sq ft of manure.</td>
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<td></td>
<td>Adult House Flies (and other premise flies)</td>
<td>Baits (ready-to-use)</td>
<td>Scatter 6 oz of bait/1,000 sq ft around the outside of poultry houses and in inaccessible areas of animal housing, or mix 1.5 oz/1 oz of water, mix thoroughly, let stand for 15 minutes or until a paste consistency and paint non-dusty fly resting areas inaccessible to animals.</td>
<td>Use only around the outside of poultry houses. In caged layer houses, apply only on the outside and in walkways. Place bait in areas inaccessible to animals. DO NOT allow bait to contact food or water. Can be used inside horse stables, broiler, turkey and caged layer houses, swine confinement buildings, dairy barns and milking parlors ONLY if used in bait stations. Bait stations must be placed at least 4 ft above ground level and in areas inaccessible to animals, pets or children.</td>
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<tr>
<td>POULTRY HOUSES</td>
<td>Adult House Flies</td>
<td>Baits (ready to use)</td>
<td>Mix 16 oz per gallon of water.</td>
<td>For use in and around poultry, turkey and chicken houses. DO NOT apply to surfaces accessible to children or pets. DO NOT apply where animals can ingest product.</td>
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<tr>
<td>(for treatment</td>
<td>(and other premise flies)</td>
<td>QuickBayt Spot Spray</td>
<td>(10% imidacloprid and 0.1% muscalure (z)-9-tricosene)</td>
<td></td>
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<tr>
<td>of poultry facility)</td>
<td>(cont.)</td>
<td>QuickBayt Disposable</td>
<td>Ready-to-use strip. Use 1 bait strip per 250 sq ft.</td>
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<tr>
<td></td>
<td></td>
<td>Fly Bait Strip</td>
<td>(0.5% imidacloprid and 0.1% muscalure (z)-9-tricosene)</td>
<td>DO NOT use in areas accessible to food-producing animals or allow to contact food or water.</td>
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<td></td>
<td></td>
<td>Golden Matrin</td>
<td>Ready to use. Scatter 4 oz per 500 sq ft of area where flies congregate, rest or feed or use bait in any commercial bait station.</td>
<td>Use as a scatter bait only around the outside of animal housing areas and poultry facilities. Can be used on walkways in caged layer houses. Bait stations must be hung at least 4 ft from ground level. Scatter baits and bait stations must only be used in areas inaccessible to animals, pets or children. When using baits, DO NOT contaminate equipment, feed or water. Keep baits out of reach of birds, pets or children.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>QuikStrike Fly Scatter</td>
<td>Scatter 4 oz/500 sq ft of fly breeding area or use bait in any commercial bait station.</td>
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<td></td>
<td></td>
<td>Bait</td>
<td>To spray on, mix 2 oz product with 16 oz of water to treat 250 sq ft. To paint on, mix 2 oz product with 3 oz of water to treat 250 sq ft.</td>
<td>Apply to fly resting areas such as walls, fences, window sills, posts, etc., typically 4 feet above the floor surface.</td>
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<td>Elector Bait</td>
<td>Scatter 12-16 oz/2,000 sq ft. Can also be used in bait stations or applied to hang boards/cards. Use 8-10 bait stations or hang boards/cards per 2,000 sq ft. See label for more detailed instructions on bait station and hang board/card use.</td>
<td>DO NOT allow Elector Bait to contact food, feedstuffs or water. When using Elector in bait stations, hang stations in areas inaccessible to children, livestock and pets. Elector Bait stations or hang cards must be located at least 4 ft above the ground.</td>
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<td>Zyrox Fly Granular bait</td>
<td>Ready-to-use granule fly bait. Apply 3.2-6.4 oz granule bait/1,000 sq ft. Depending upon application site, product can be scattered or placed in bait stations.</td>
<td>DO NOT place bait in areas accessible to food-producing animals or animals being grown for food. DO NOT place bait in areas accessible to children and pets. Bait stations must be used if bait is applied inside residential structures, commercial establishments, food processing plants, restaurants and animal housing units. DO NOT apply bait outdoors when raining.</td>
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<tr>
<td></td>
<td></td>
<td>QuikStrike (1% nithiazine) Fly Abatement Strip</td>
<td>Ready-to-use strip.</td>
<td>Hang 1 strip per 100-300 sq ft in enclosed area protected from rain. Observe safety restrictions.</td>
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<td>Space Treatments</td>
<td>Ready-to-use oil sprays, aerosols, ULV concentrates and concentrates for dilution are available. Follow directions on label. Saturate the atmosphere with electric fogging gun for quick kill when adult flies are numerous.</td>
<td>Follow manufacturer’s directions, ESPECIALLY FIRE HAZARD PRECAUTIONS. Can be used while birds are in houses.</td>
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<tr>
<td><strong>POULTRY HOUSES</strong></td>
<td><strong>Adult House Flies</strong> (and other premise flies) (cont.)</td>
<td><strong>Space Treatments</strong> Vapona Concentrate Insecticide (40.2% dichlorvos and 3% related compounds equivalent to 43.2% Vapona)</td>
<td>Apply 1 pt of 1% spray/8,000 cu ft as mist or fog. To make a 1% solution, mix 1 gal concentrate to 50 gal water or 5 oz concentrate to 2 gal water.</td>
<td>Reduce air movement as much as possible. DO NOT apply directly to birds. DO NOT contaminate eggs, feed or water.</td>
</tr>
<tr>
<td><strong>Residual Surface Sprays</strong></td>
<td></td>
<td>Grenade ER, Cyonara 9.7, OxyFly (9.7% lambda-cyhalothrin)</td>
<td>Apply to walls and ceilings. Mix 0.2-0.4 oz/gal water to make a 0.015% to 0.03% dilution. Rates can be increased to a 0.06% dilution (0.8 oz/gal of water) if environmental conditions are severe or populations are high.</td>
<td>Apply dilution to horizontal and overhead surfaces where flies rest. DO NOT make applications in areas where birds are present. Allow to dry before reintroducing birds. DO NOT contaminate bird food, feed or water during application.</td>
</tr>
<tr>
<td>Rabon 50% WP (tetrachlorvinphos)</td>
<td></td>
<td>Mix 2 to 8 oz. product per gallon of water. For severe infestations use the higher rate.</td>
<td>4 oz/12.5 gal water.</td>
<td>No need to remove birds from house. DO NOT apply to chickens.</td>
</tr>
<tr>
<td>Pounce 3.2 EC (permethrin)</td>
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<td></td>
<td>Apply 1 gallon solution/750 sq ft.</td>
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<tr>
<td>Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide)</td>
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<td></td>
<td></td>
<td>Apply as directed on label. Treat walls, ceilings, moldings, screens, door and window frames and similar resting places.</td>
</tr>
<tr>
<td>Atroban 11% EC (permethrin)</td>
<td></td>
<td>1 pt 11% EC to 10 gal water. 1 gal/750-1,000 sq ft.</td>
<td></td>
<td>Avoid contamination of feed and water.</td>
</tr>
<tr>
<td>Ravap EC (23% tetrachlorvinphos and 5.3% dichlorvos)</td>
<td></td>
<td>1 gal Ravap EC to 25 gal water.</td>
<td></td>
<td>Apply 1 gallon diluted spray/1,000 sq ft.</td>
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<tr>
<td>Also Permethrin (Ectiban, Insectrin, Permethrin Overtime)</td>
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<td>Follow label mixing instructions.</td>
<td></td>
<td>DO NOT apply more often than once every two weeks.</td>
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<tr>
<td>Talstar, Bifenthrin I/T 7.9F, Optashield CS (7.9% bifenthrin)</td>
<td></td>
<td>Mix with water and apply 0.33 to 1.0 oz product per 1,000 sq ft.</td>
<td></td>
<td>Target areas where flies rest such as ceilings, trusses, rafters, supports, walls, windows and vegetation.</td>
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<tr>
<td>StandGuard 5.9 (5.9% gamma-cyhalothrin)</td>
<td></td>
<td>Mix 0.16 oz (5 mL)/gal of water.</td>
<td></td>
<td>Spray 1 gal of diluted spray to treat 500-1,000 sq ft fly resting surfaces.</td>
</tr>
<tr>
<td><strong>Fire Ants</strong></td>
<td></td>
<td>Amdro Pro (hydramethylnon) (outside use only)</td>
<td>2-5 Tbsp/mound broadcast 1.0-1.5 lb/acre</td>
<td>Apply when ants are active and soil temperature is above 60 degrees F. DO NOT treat if rain is anticipated within 6 hours. <strong>Check with complex integrator before using insecticides inside the house.</strong></td>
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<tr>
<td></td>
<td></td>
<td>Extinguish (methoprene) (outside use only)</td>
<td>3-5 Tbsp/mound broadcast 1.0-1.5 lb/acre</td>
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<td></td>
<td></td>
<td>Extinguish Plus (methoprene and hydramethylnon) (outside use only)</td>
<td>3-5 Tbsp/mound broadcast 1.0-1.5 lb/acre</td>
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<tr>
<td></td>
<td></td>
<td>Esteem Ant Bait (pyriproxyfen) (outside use only)</td>
<td>2-4 Tbsp/mound or 1.5-2.0 lb/acre if broadcast</td>
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<tr>
<td></td>
<td></td>
<td>Clinch Ant Bait (abamectin) (outside use only)</td>
<td>5-7 Tbsp/mound or 1.0 lb/ac if broadcast</td>
<td></td>
</tr>
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</table>
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<tr>
<td>SHEEP AND GOATS</td>
<td>Fleeceworms and Screwworms (Wool maggots and maggots in wounds)</td>
<td>Catron IV (0.5% permethrin)</td>
<td>Ready-to-use spray. Spray wound and surrounding area.</td>
<td>Check label for restrictions.</td>
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<td></td>
<td></td>
<td>Prozap Screw Worm Aerosol (0.5% permethrin)</td>
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<td></td>
<td>Lice, Keds and Ticks (In fall or spring after shearing)</td>
<td>Treat animals 3-6 months old lightly only. Read insecticide label for further instructions. Repeat after 2-3 weeks if needed. (DO NOT repeat within 1 week.) Treat during fall and winter.</td>
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<td>GardStar 40% EC, Tengard SFR (permethrin)</td>
<td>4 oz/25 gal water. Treats 50-100 head.</td>
<td>Use high-pressure spray.</td>
<td>0</td>
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<tr>
<td></td>
<td></td>
<td>Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide)</td>
<td>Mix 2 to 8 oz. product per gallon of water. For severe infestations use the higher rate.</td>
<td>Wet hair thoroughly.</td>
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<td></td>
<td></td>
<td>Permethrin II 10% EC and generics (permethrin) (sheep only)</td>
<td>Check label for dosages.</td>
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<td></td>
<td></td>
<td>Permethrin CDC (permethrin) (sheep only)</td>
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<td>0</td>
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<tr>
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<td>Python Dust (0.075% zeta-cypermethrin and 0.25% piperonyl butoxide)</td>
<td>Ready-to-use dust. Dust animals. Apply up to 2 oz per animal.</td>
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<td>0</td>
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<tr>
<td></td>
<td></td>
<td>Ectiban, Hard Hitter or Insectaban 5.7% EC (permethrin)</td>
<td>1 qt/25 gal water.</td>
<td>Use 1-2 qt/animal.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Atroban DeLice 1% (permethrin)</td>
<td>Ready-to-use pour-on.</td>
<td>Pour along back. Treatment at 14-day intervals.</td>
<td>0</td>
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<tr>
<td></td>
<td>Nasal Bots</td>
<td>Ivomec Sheep Drench (0.08% ivermectin)</td>
<td>Administer orally at 3 mL per 26 lb body weight.</td>
<td>Formulated for sheep only. May cause severe reactions in other animals. DO NOT treat within 11 days of slaughter.</td>
<td>11</td>
</tr>
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(ANIMALS)
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<td><strong>SWINE</strong></td>
<td>Sarcopes Mange and Lice</td>
<td>GardStar 40% EC, Tengard SFR (permethrin)</td>
<td>4 oz/25 gal water. Treats 50-100 head.</td>
<td>Repeat at 14 days. Thoroughly wet or dip animals. Mange–spray pens thoroughly.</td>
<td>0</td>
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<td></td>
<td></td>
<td>Atroban 11% EC (permethrin)</td>
<td>1 qt/50 gal water. Use 1 pt of spray per animal.</td>
<td>DO NOT spray food or water.</td>
<td>5</td>
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<td></td>
<td>Ivomec 1% Injection (ivermectin)</td>
<td>1 mL/75 lb body weight.</td>
<td>Subcutaneous administration only. An Ivomec 0.27% formulation is available for grower and feeder pigs.</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dectomax Injectable Solution</td>
<td>1 mL/75 lb body weight.</td>
<td>Intramuscular injection.</td>
<td>24</td>
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<td></td>
<td>Prolate/Lintox-HD (11.75% phosmet)</td>
<td>Mix 1 qt/25 gal water.</td>
<td>DO NOT treat pigs less than 3 months old.</td>
<td>1</td>
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<td></td>
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<td>Swine Gard pour-on (10% permethrin)</td>
<td>Ready to use. Apply 3 mL per 100 lb of body weight up to a maximum of 15 mL. Pour across back of head and ears then apply down midline of neck and over shoulders.</td>
<td>DO NOT treat more often than every two weeks. For optimum control, two treatments 14 days apart may be required. Apply to swine 85 lb and over.</td>
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<td>Demodex Mange</td>
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<td>Lice Only</td>
<td>Rabon 50% WP (tetrachlorvinphos)</td>
<td>Mix 4 lb/50 gal water or 1/2 lb/6 gal water.</td>
<td>Apply 1-2 qt per animal as a coarse spray. Wet animal entirely.</td>
<td>0</td>
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<tr>
<td></td>
<td></td>
<td>Co-Ral Fly and Tick Spray (6.15% coumaphos)</td>
<td>Mix 5 oz/4 gal water. Spray animal until runoff.</td>
<td>DO NOT apply more frequently than 10 days.</td>
<td>10</td>
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<td></td>
<td></td>
<td>Co-Ral (shaker can) (coumaphos)</td>
<td>1 oz/head.</td>
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<td>Pyranha Stock Guard Concentrate (10% permethrin and 10% piperonyl butoxide)</td>
<td>Mix 2 to 8 oz. product per gallon of water. For severe infestations use the higher rate.</td>
<td>Wet hair thoroughly.</td>
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<td></td>
<td></td>
<td>Atroban 11% EC (permethrin)</td>
<td>Apply 1/4-1/2 Tbsp.</td>
<td>Can be used on pigs less than 30 days old.</td>
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<td>Ectiban, Insectrin or Permethrin 0.25% D (permethrin)</td>
<td>1 oz/animal.</td>
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<td>Rabon Dust (3% tetrachlorvinphos)</td>
<td>3-4 oz/animal.</td>
<td>In severe infestations, apply to bedding. Apply 1 lb/150 sq ft of bedding.</td>
<td>0</td>
</tr>
</tbody>
</table>
## Animal Insect Control

<table>
<thead>
<tr>
<th>Animal</th>
<th>Pest Problem</th>
<th>Insecticide Formulation</th>
<th>Method and Rate</th>
<th>Restrictions/Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWINE BARNES (not on animals)</td>
<td>House Flies and Flies around the premises</td>
<td>Sanitation, Biological Control and Integrated Pest Management (IPM)</td>
<td>Sanitation is critical to any fly control program in swine operations. IPM includes sanitation, insecticides (baits, contact insecticides, etc.), surveillance (monitoring and/or trapping) and biological control (conserving natural enemies and/or releases). Use insecticides judiciously to minimize impact on natural enemies and to prevent or delay insecticide resistance. Use a combination of management methods.</td>
<td>Waste (spilled feed, wet feed, manure and bedding) removal and management is the first line of defense in any fly management program. Prompt removal and disposal (such as spreading on pastures, use of lagoons, etc.) of waste will reduce fly breeding sites and break the house fly life cycle. Some producers have experienced reduced fly populations with weekly releases of parasitic wasps beginning in April or May. Releases should be made in dry areas out of traffic and in areas where flies reproduce. Parasite and/or insecticide use are not a substitute for a good sanitation program.</td>
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### Adult Flies

**Sprays**

- **Ravap EC** (23% tetrachlorvinphos and 5.3% dichlorvos)
  - 12 Tbsp/gal water.
  - Use 1 gal of diluted spray per 500-1,000 sq ft.

- **Pounce 3.2 EC** (permethrin)
  - 4 oz/12.5 gal. Apply 1 gal/750 sq ft.
  - Apply as directed on label. Treat walls, ceilings, moldings, screens, doors and window frames and similar resting places.

- **Pyranha Stock Guard Concentrate** (10% permethrin and 10% piperonyl butoxide)
  - Mix 2 to 8 oz. product per gallon of water. For severe infestations use the higher rate.

- **Rabon 50% WP** (tetrachlorvinphos)
  - 1/2 lb/3 gal water.

- **Atroban 11% EC** (permethrin)
  - 1 pt/10 gal water.
  - Use 1 gal diluted spray per 750-1,000 sq ft.

- **Vapona Concentrate Insecticide (R)** (40.2% dichlorvos)
  - 2 oz/1.5 gal water (0.5% dilution).
  - 5 oz/2 gal water (1.0% dilution).
  - Apply 0.5% dilution as a space spray mist to open air space at the rate of 1 qt/8,000 cu ft or as a coarse surface spray to indoor surfaces at the rate of 1 qt/1,000 sq ft. For the 1.0% dilution, apply as above but only half the total volume of mixture. DO NOT use this product in areas where animals have received a direct organophosphate application within 8 hours. If animals are present, ventilate treated area immediately following application. DO NOT contaminate water, feed or foodstuffs.
  - Wet surfaces where flies rest. DO NOT spray animals, humans, animal feed or water. DO NOT apply more than once per week.

- **Annihilator** (0.02% deltamethrin)
  - Ready to use.

- **Grenade ER** (9.7% lambda-cyhalothrin)
  - Mix 0.2-0.4 oz/gal water to make a 0.015% to 0.03% dilution.
  - Apply dilution to horizontal and overhead surfaces where flies rest. DO NOT make applications in areas where animals are present. Allow to dry before reintroducing animals or birds. DO NOT contaminate animal food, feed or water during application.
  - Target areas where flies rest such as ceilings, trusses, rafters, supports, walls, windows and vegetation.

- **Talstar, Bifenthrin I/T 7.9F, Optashield CS** (7.9% bifenthrin)
  - Mix with water and apply 0.33-1.0 oz product per 1,000 sq ft.
  - Spray 1 gal of diluted spray to treat 500-1,000 sq ft fly resting surfaces.

- **StandGuard 5.9** (5.9% gamma-cyhalothrin)
  - Mix 0.16 oz (5 mL)/gal of water.
  - Use around the outside of animal housing structures. DO NOT allow bait to contact food or water. Can be used inside swine confinement buildings ONLY if used in bait stations. Bait stations must be placed at least 4 feet above ground level and in areas inaccessible to animals, pets or children.

**Baits**

- **QuickBayt, Martin’s Quick Draw and Bonanza Fly Bait** (0.5% imidacloprid and 0.1% muscarele (2)-(9-tricosene)
  - Ready-to-Use Fly Bait
  - Scatter 6 oz of bait/1,000 sq ft around the outside and inaccessible areas of swine confinement facilities, or mix 1.5 oz bait/1 oz water, mix thoroughly, let stand for 15 minutes and paint on non-dusty fly resting areas inaccessible to animals.
  - Use around the outside of animal housing structures. DO NOT allow bait to contact food or water. Can be used inside swine confinement buildings ONLY if used in bait stations. Bait stations must be placed at least 4 feet above ground level and in areas inaccessible to animals, pets or children.
# ANIMAL INSECT CONTROL

<table>
<thead>
<tr>
<th>Animal</th>
<th>Pest Problem</th>
<th>Insecticide Formulation</th>
<th>Method and Rate</th>
<th>Restrictions/Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWINE BARNES</td>
<td>Adult Flies (cont.)</td>
<td><strong>Baits</strong>&lt;br&gt;QuickBayt Spot Spray (10% imidacloprid and 0.1% muscalure (z)-9-tricosene)&lt;br&gt;Golden Malrin (1.1% methomyl and 0.049% (z)-9-tricosene)&lt;br&gt;QuikStrike Fly Scatter Bait (0.5% dinotefuran and 0.04% (z)-9-tricosene)&lt;br&gt;QuikStrike Fly Bait Spray (0.5% dinotefuran and 0.04% (z)-9-tricosene)&lt;br&gt;Elector Bait (0.5% spinosad and 0.04% (z)-9-tricosene)&lt;br&gt;Zyrox Fly Granular bait (0.5% cyantraniliprole)&lt;br&gt;Neporex 2 SG (2% cyromazine)&lt;br&gt;<strong>Fly Maggots</strong> (fly breeding areas)</td>
<td>Mix 16 oz per gallon of water.&lt;br&gt;Ready to use. Scatter 4 oz/500 sq ft of area where flies congregate, rest or feed, or use bait in any commercial bait station.&lt;br&gt;Scatter 4 oz/500 sq ft of fly breeding area, or use bait in any commercial bait station.&lt;br&gt;To spray on, mix 2 oz product with 16 oz of water to treat 250 sq ft. To paint on, mix 2 oz of product with 3 oz water to treat 250 sq ft.&lt;br&gt;Scatter 12-16 oz of Elector Bait/2,000 sq ft&lt;br&gt;Ready-to-use granular fly bait. Apply from 3.2-6.4 oz granular bait/1,000 sq ft. Depending upon application site, product can be scattered or placed in bait stations.&lt;br&gt;Spray: Mix 1 lb Neporex 2 SG/gal of water. Apply as a coarse low-pressure spray on fly breeding sites with suitable spray equipment (hand-pressurized or power-operated sprayers). One gallon of finished solution will treat 200 sq ft. Treat manure surface and wet spots around feed and water troughs. Also apply 3 days after manure removal or when larvae are found.&lt;br&gt;Scatter: Apply 1 lb Neporex 2 SG/ 200 sq ft. Apply after cleaning and prior to the installation of pigs on fly breeding sites where fly larvae are found.</td>
<td>For use in and around swine confinement buildings. DO NOT apply on surfaces accessible to children or pets. DO NOT apply where animals can ingest product.&lt;br&gt;Use as a scatter bait only around the outside of animal housing areas or swine confinement buildings. Bait stations must be hung at least 4 ft above ground level. Scatter baits and bait stations must only be used in areas inaccessible to animals, pets or children.&lt;br&gt;Use as a scatter bait only around the outside of animal housing areas. Bait stations must be hung at least 4 ft from ground level. Scatter baits and bait stations must only be used in areas inaccessible to animals, pets or children.&lt;br&gt;Apply to fly resting areas such as walls, fences, window sills, posts, etc., typically 4 feet above the floor surface.&lt;br&gt;DO NOT allow Elector Bait to contact food, feedstuffs or water. When using Elector in bait stations, hang stations in areas inaccessible to children, livestock and pets. Elector Bait stations or hang cards must be located at least 4 feet above the ground.&lt;br&gt;DO NOT place bait in areas accessible to food-producing animals or animals being grown for food. DO NOT place bait in areas accessible to children and pets. Bait stations must be used if bait is applied inside residential structures, commercial establishments, food processing plants, restaurants and animal housing units. DO NOT apply bait outdoors when raining.</td>
</tr>
</tbody>
</table>
### Insecticide Performance Rating, 2019

<table>
<thead>
<tr>
<th>Chemistry</th>
<th>Restricted Entry Interval (hours)</th>
<th>Restricted Use (R)</th>
<th>Chinch Bug</th>
<th>Fall Armyworm</th>
<th>Corn Rootworm</th>
<th>Cutworm</th>
<th>European Corn Borer</th>
<th>Flea Beetle</th>
<th>Grasshopper</th>
<th>Seed Corn Maggot</th>
<th>Southwestern Corn Borer</th>
<th>Green and Southern Green Stink Bug</th>
<th>Brown Stink Bug</th>
<th>Wireworm</th>
<th>Fire Ant</th>
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**Rating Scale:** 0 = no control, 10 = excellent

*No longer labeled. Use of existing supplies is allowed.

The performance ratings in the chart are for comparison purposes only and are not necessarily a measure of percent control. Shaded boxes indicate products recommended for specific pests in this guide.

### Quick View Threshold Guide

**Insect** | **Threshold** | **Scouting Procedure**
---|---|---
Fall armyworm/Corn earworm | 3-6 larvae per whorl | Examine 25-50 plants
Chinch bugs | when stand is threatened | Examine 25-50 plants (stink bugs tend to infest field borders first)
European corn borer | 50% of plants showing damage | Examine 25-50 plants
Southwestern corn borer | Pheromone Traps: First generation – 50 per week; Second generation – 100 per week. Field Scouting: 10% of plants showing damage | Examine 25-50 plants
Stink bugs | 10% of plants infested (< 2 feet tall) | Examine 25-50 plants
| 25% of plants during early ear formation | |

When planting into a cover crop, consider using a high seed treatment rate of 500 or above.
## FIELD CORN INSECT CONTROL

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (REI) Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Corn Rootworm</strong></td>
<td>chlorpyrifos (R)</td>
<td>Lorsban 15 G</td>
<td>8 oz/1,000 ft of row</td>
<td>1</td>
<td>Apply in 7-inch band or in furrow.</td>
<td>21</td>
<td>24</td>
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<tr>
<td></td>
<td>clothianidin</td>
<td>Poncho 600</td>
<td>0.25-1.25 mg ai/seed</td>
<td></td>
<td>Seed treatment – commercially available.</td>
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<tr>
<td></td>
<td>cyfluthrin + phostebupirim (R)</td>
<td>Aztec or Defcon 2.1 G</td>
<td>6.7 oz/1,000 ft of row</td>
<td>0.12</td>
<td>Apply Aztec/Defcon in 7-inch band or in furrow.</td>
<td>30</td>
<td>48</td>
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<tr>
<td></td>
<td>imidacloprid</td>
<td>Senator/Axcess 5 FS</td>
<td>1.34 mg ai/kernel</td>
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<td>Seed treatment</td>
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<td>phorate (R)</td>
<td>Thimet/Phorate 20 G</td>
<td>6 oz/1,000 ft of row</td>
<td>1</td>
<td>Apply in 7-inch band behind the planter shoe directly in front of the press wheel. DO NOT apply Thimet or Phorate directly in furrow.</td>
<td>30</td>
<td>48</td>
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<tr>
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<td>tefluthrin (R)</td>
<td>Force 3 G</td>
<td>4-5 oz/1,000 ft of row</td>
<td>0.1-0.24</td>
<td>Apply in 7-inch band or in furrow.</td>
<td>48</td>
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<tr>
<td></td>
<td>terbufos (R)</td>
<td>Counter 15 G</td>
<td>8 oz/1,000 ft of row</td>
<td>1</td>
<td>Apply in furrow or in 7-inch band behind planter shoe in front of the press wheel.</td>
<td>48</td>
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<tr>
<td></td>
<td>thiamethoxam</td>
<td>Cruiser 5 FS</td>
<td>1.25 mg ai/kernel</td>
<td></td>
<td>Seed treatment</td>
<td>12</td>
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<tr>
<td><strong>Seed Corn Maggot</strong></td>
<td>chlorpyrifos (R)</td>
<td>Lorsban 15 G</td>
<td>8 oz/1,000 ft of row</td>
<td>1.0</td>
<td>Apply in 7-inch band or in furrow.</td>
<td>21</td>
<td>24</td>
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<tr>
<td></td>
<td>clothianidin</td>
<td>Poncho 600</td>
<td>0.25-0.5 mg ai/kernel</td>
<td></td>
<td>Seed treatment</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cyfluthrin + phostebupirim (R)</td>
<td>Aztec or Defcon 2.1 G</td>
<td>6.7 oz/1,000 ft of row</td>
<td>0.12</td>
<td>Apply in 7-inch band or in furrow.</td>
<td>30</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>imidacloprid</td>
<td>Senator/Axcess 5 FS</td>
<td>0.16-0.6 mg ai/kernel</td>
<td></td>
<td>Seed treatment</td>
<td>12</td>
<td></td>
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<tr>
<td></td>
<td>terbufos (R)</td>
<td>Counter 15 G</td>
<td>8 oz/1,000 ft of row</td>
<td>1.0</td>
<td>Apply in furrow or in 7-inch band behind planter shoe in front of the press wheel.</td>
<td>48</td>
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<tr>
<td></td>
<td>tefluthrin (R)</td>
<td>Force 3 G</td>
<td>4-5 oz/1,000 ft of row</td>
<td>0.1-0.16</td>
<td>Apply in 7-inch band or in furrow.</td>
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</tr>
<tr>
<td></td>
<td>thiamethoxam</td>
<td>Cruiser 5 FS</td>
<td>0.25-0.8 mg ai/kernel</td>
<td></td>
<td>Seed treatment</td>
<td>12</td>
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</table>
## FIELD CORN INSECT CONTROL

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (REI) Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Wireworm, White Grub</strong></td>
<td>terbufos (R)</td>
<td>Counter 15 G</td>
<td>8 oz/1,000 ft of row</td>
<td>1.0</td>
<td>Apply in furrow or in 7-inch band behind planter shoe in front of the press wheel.</td>
<td>48</td>
<td></td>
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<tr>
<td></td>
<td>thiamethoxam</td>
<td>Cruiser 5 FS</td>
<td>0.25-0.8 mg ai/kernel</td>
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<td>Seed treatment.</td>
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<tr>
<td></td>
<td>clothianidin</td>
<td>Poncho 600</td>
<td>0.25-0.5 mg ai/kernel</td>
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<td>Seed treatment.</td>
<td>12</td>
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<tr>
<td></td>
<td>cyantraniliprole</td>
<td>Fortenza 5 FS</td>
<td>0.125-0.25 mg ai/kernel</td>
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<td>Seed treatment.</td>
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<tr>
<td></td>
<td>imidacloprid (Axcess/Senator) 5 FS Conc.</td>
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<td>0.16-0.72 mg ai/kernel</td>
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<td>Seed treatment.</td>
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<td></td>
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<tr>
<td><strong>Fire Ants</strong></td>
<td>chlorpyrifos (R)</td>
<td>Lorsban 15 G</td>
<td>8 oz/1,000 ft of row</td>
<td></td>
<td>Apply in a “T” band application for best results.</td>
<td>21</td>
<td>24</td>
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<tr>
<td><strong>Cutworm</strong></td>
<td>beta-cyfluthrin (R)</td>
<td>Baythroid XL 1 EC</td>
<td>0.8-1.6 oz</td>
<td>0.007-0.013</td>
<td></td>
<td>80-160</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>2.1-6.4 oz</td>
<td>0.033-0.1</td>
<td></td>
<td>20-61</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos (R)</td>
<td>Lorsban Adv. 3.755 E</td>
<td>1-2 pt</td>
<td>0.5-1.0</td>
<td>Apply at planting in a 6- to 7-inch band. Direct sprays to base of plant. On 6-inch or smaller plants, band sprays over top.</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Lorsban 15 G</td>
<td></td>
<td>8 oz/1,000 ft of row</td>
<td></td>
<td>Seed treatment.</td>
<td>12</td>
<td></td>
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<tr>
<td></td>
<td>chlorpyrifos + lambda-cyhalothrin (R)</td>
<td>Cobalt Advanced</td>
<td>11-26 oz</td>
<td>0.23-0.52</td>
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<td>4.9-11.6</td>
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<tr>
<td></td>
<td>cyantraniliprole</td>
<td>Fortenza 5 FS</td>
<td>0.125-0.25 mg ai/kernel</td>
<td></td>
<td>Seed treatment.</td>
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<td></td>
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<tr>
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<td>cyfluthrin (R)</td>
<td>Tombstone 2 EC</td>
<td>0.8-1.6 oz</td>
<td>0.013-0.025</td>
<td></td>
<td>80-160</td>
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<tr>
<td></td>
<td>esfenvalerate (R)</td>
<td>Asana XL 0.66 EC</td>
<td>3.2-9.6 oz</td>
<td>0.016-0.05</td>
<td>Direct spray to lower portion of plants and to soil around base of plant.</td>
<td>13-40</td>
<td>21</td>
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<tr>
<td></td>
<td>gamma-cyhalothrin (R)</td>
<td>Proaxis 0.5 CS</td>
<td>1.92-3.20 oz</td>
<td>0.0075-0.0125</td>
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<td>40-66.7</td>
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<tr>
<td></td>
<td></td>
<td>Declare 1.25 CS</td>
<td>0.77-1.28 oz</td>
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<td></td>
<td>100-166</td>
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<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td>0.96-1.6 oz</td>
<td>0.015-0.025</td>
<td></td>
<td>80-133</td>
<td>21</td>
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<tr>
<td></td>
<td></td>
<td>(See Generic Insecticides)</td>
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</tr>
<tr>
<td></td>
<td>permethrin (R)</td>
<td>Ambush 2 EC</td>
<td>6.4-12.8 oz</td>
<td>0.1-0.2</td>
<td>prior to brown silk</td>
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<td>12</td>
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<tr>
<td></td>
<td></td>
<td>Pounce 25 WP</td>
<td>6.4-9.6 oz</td>
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</tr>
<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R)</td>
<td>(Mustang Maxx, Respect)</td>
<td>1.28-3.2 oz</td>
<td>0.008-0.02</td>
<td></td>
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<td>30</td>
</tr>
</tbody>
</table>

Cutworm pressure is higher when planting into a cover crop. Consider increasing seed treatment rates when planting directly into a cover crop.
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<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
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<th>Restricted Entry Interval (REI) Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Chinch Bug</strong></td>
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<tr>
<td></td>
<td>Treat when seedlings are dying to the point of reducing stand below an acceptable level and chinch bugs are found.</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (R)</td>
<td>Baythroid XL 1 EC</td>
<td>1.6-2.8 oz</td>
<td>0.013-0.022</td>
<td>45.7-80</td>
<td></td>
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<tr>
<td></td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>2.1-6.4 oz</td>
<td>0.033-0.1</td>
<td>20-61</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>carbaryl</td>
<td>Sevin 80 S</td>
<td>2 1/2 lb</td>
<td>2</td>
<td></td>
<td>Direct spray to base of plant. Use a minimum of 20 gal final spray volume per acre.</td>
<td>48 (grain)</td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos (R)</td>
<td>Lorsban Adv. 3.755 EC</td>
<td>1-2 pt</td>
<td>0.47-0.94</td>
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<tr>
<td></td>
<td>chlorpyrifos + lambda-cyhalothrin (R)</td>
<td>Cobalt Advanced</td>
<td>16-38 oz</td>
<td>0.33-0.76</td>
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<tr>
<td></td>
<td>estenvalerate (R)</td>
<td>Asana XL 0.66 EC</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
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<td>21</td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (R)</td>
<td>Proaxis 0.5 CS</td>
<td>3.84 oz</td>
<td>0.015</td>
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<tr>
<td></td>
<td></td>
<td>Declare 1.25 CS</td>
<td>1.54 oz</td>
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<td>21</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td>1.92 oz</td>
<td>0.03</td>
<td></td>
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<td>21</td>
</tr>
<tr>
<td></td>
<td>terbufos (R)</td>
<td>Counter 15 G</td>
<td>8 oz/1,000 ft of row</td>
<td>1.3 lb</td>
<td></td>
<td>DO NOT use more than 8.7 lb of Counter per acre. Counter only controls early season, light to moderate populations of chinch bugs.</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td></td>
<td>hero 1.24 EC</td>
<td>4-10.3 oz</td>
<td>0.04-0.1</td>
<td></td>
<td></td>
<td>30</td>
</tr>
</tbody>
</table>
### FIELD CORN INSECT CONTROL

<table>
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<tr>
<th>Insect</th>
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<th>Acres/Gallon</th>
<th>Application/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Green and Southern Stink Bug</strong></td>
<td>beta-cyfluthrin (R)</td>
<td>Baythroid XL 1 EC</td>
<td>0.013-0.022</td>
<td>45.7-80</td>
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</tr>
<tr>
<td></td>
<td>Treat when 10% of plants are infested and plants are less than 2 ft tall. During early ear formation, treat when 25% of plants are infested. Consider using a higher seed treatment rate when planting into a cover crop to reduce potential stink bug damage.</td>
<td></td>
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<tr>
<td></td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>0.033-0.1</td>
<td>20-61</td>
<td></td>
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<tr>
<td></td>
<td>gamma-cyhalothrin (R)</td>
<td>Declare 1.25 CS</td>
<td>0.01-0.015</td>
<td>21</td>
<td>Restricted Entry Interval (REI) Hours</td>
</tr>
<tr>
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<td>Proaxis 0.5 CS</td>
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<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
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<td>(See Generic Insecticides)</td>
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<td>24</td>
<td></td>
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<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R)</td>
<td>Hero 1.25 EC</td>
<td>0.017-0.025</td>
<td>32-47</td>
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<tr>
<td><strong>Brown Stink Bug</strong></td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>0.033-0.1</td>
<td>20-61</td>
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<tr>
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<td>(See Generic Insecticides)</td>
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<tr>
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<td>zeta-cypermethrin + bifenthrin (R)</td>
<td>Hero 1.25 EC</td>
<td>0.04-0.1</td>
<td>12.4-32</td>
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</tr>
<tr>
<td><strong>Fall Armyworm</strong></td>
<td>carbaryl</td>
<td>Sevin 80 S</td>
<td>2 1/2 lb</td>
<td>2</td>
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<tr>
<td></td>
<td>chlorantraniliprole</td>
<td>Prevathon 0.43 SC</td>
<td>0.047-0.067</td>
<td>6.4-9.1</td>
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<tr>
<td></td>
<td>Sevin XLR</td>
<td>2 qt</td>
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<td>flubendiamide</td>
<td>Belt 4 SC</td>
<td>0.063-0.094</td>
<td>42.7-64</td>
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<td>lambda-cyhalothrin + chlorantraniliprole (R)</td>
<td>Besiege</td>
<td>0.06-0.097</td>
<td>12.8-21</td>
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<td>methomyl (R)</td>
<td>Lannate 2.4 LV</td>
<td>0.22-0.45</td>
<td>5.3-10.7</td>
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<tr>
<td></td>
<td>spinosad</td>
<td>Blackhawk</td>
<td>0.038-0.075</td>
<td>1.67-3.3 oz</td>
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<tr>
<td></td>
<td>DO NOT apply more than 8.3 oz of Blackhawk per year.</td>
<td></td>
<td></td>
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</tbody>
</table>

Minimum Days From Last Application to Harvest | Restricted Entry Interval (REI) Hours

- **Green and Southern Stink Bug**
  - 21 days
  - 12 hours
- **Brown Stink Bug**
  - 30 days
  - 12 hours
- **Fall Armyworm**
  - 48 days (grain)
  - 14 days (forage)

For each application, please ensure to follow the application rates and timing as specified.
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<tr>
<th>Insect</th>
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<tbody>
<tr>
<td><strong>Flea Beetle</strong></td>
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<td>beta-cyfluthrin (R)</td>
<td>Baythroid XL 1 EC</td>
<td>0.013-0.022</td>
<td>45.7-80</td>
<td></td>
<td>21</td>
<td>12</td>
</tr>
<tr>
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<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>0.033-0.1</td>
<td>20-61</td>
<td></td>
<td>30</td>
<td>12</td>
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<tr>
<td></td>
<td>carbaryl</td>
<td></td>
<td>1-2</td>
<td></td>
<td>48 (grain)</td>
<td>14 (forage)</td>
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<td>terbufos (R)</td>
<td>Counter 20 G</td>
<td>0.027-0.067</td>
<td>6.4-16</td>
<td>DO NOT apply at intervals closer than 7 days apart.</td>
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<td>4</td>
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<tr>
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<td>zeta-cypermethrin 0.8 EC (R)</td>
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<td>0.017-0.025</td>
<td>32-47</td>
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<td>12</td>
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<tr>
<td><strong>Grasshopper</strong></td>
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<td>chlorpyrifos (R)</td>
<td>Lorsban Adv. 3.755 EC</td>
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<tr>
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<td>chlorpyrifos + lambda-cyhalothrin (R)</td>
<td>Cobalt Advanced</td>
<td>0.12-0.26</td>
<td>9.8-21.3</td>
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<td>24</td>
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<tr>
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<td>esfenvalerate (R)</td>
<td>Asana XL 0.66 EC</td>
<td>0.03-0.05</td>
<td>13-22</td>
<td></td>
<td>21</td>
<td>12</td>
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<tr>
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<td>gamma-cyhalothrin (R)</td>
<td>Proaxis 0.5 CS</td>
<td>0.01-0.015</td>
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<td>24</td>
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<td>Declare 1.25 CS</td>
<td>2.56-3.84</td>
<td>83-125.5</td>
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<td>1.02-1.54</td>
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<tr>
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<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td>0.02-0.03</td>
<td>66.7-100</td>
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<td>24</td>
</tr>
<tr>
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<td>lambda-cyhalothrin + chlorantraniliprole (R)</td>
<td>Besiege</td>
<td>0.06-0.098</td>
<td>12.8-21.3</td>
<td></td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R)</td>
<td></td>
<td>0.017-0.025</td>
<td>32-47</td>
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<td>30</td>
<td>12</td>
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### FIELD CORN INSECT CONTROL

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (REI) Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>European Corn Borer</strong>&lt;br&gt; <em>Bt</em> corn hybrids&lt;br&gt; Early planting will help avoid problems with this insect. Treat in late whorl stage when 50% of plants have feeding damage (shotholes).</td>
<td>beta-cyfluthrin (R)&lt;br&gt; Baythroid XL 1 EC</td>
<td>1.6-2.8 oz</td>
<td>0.013-0.022</td>
<td>45.7-80</td>
<td>Field corn expressing the Bt toxin has proven to be very effective.</td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (R)&lt;br&gt; Brigade 2 EC&lt;br&gt; <em>(See Generic Insecticides)</em></td>
<td>2.1-6.4 oz</td>
<td>0.033-0.1</td>
<td>20-61</td>
<td></td>
<td>30</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole&lt;br&gt; Prevathon 0.43 SC</td>
<td>14-20 oz</td>
<td>0.047-0.067</td>
<td>6.4-9.1</td>
<td>DO NOT apply at intervals closer than 7 days apart.</td>
<td>14</td>
<td>4</td>
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<tr>
<td></td>
<td>chlorpyrifos + lambdacyhalothrin (R)&lt;br&gt; Cobalt Advanced</td>
<td>16-38 oz</td>
<td>0.47-0.94</td>
<td>3.4-8</td>
<td></td>
<td>21</td>
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<tr>
<td></td>
<td>chlorpyrifos (R)&lt;br&gt; Lorsban Adv. 3.755 EC&lt;br&gt; <em>(See Generic Insecticides)</em></td>
<td>1-2 pt</td>
<td>0.47-0.94</td>
<td>4-8</td>
<td></td>
<td>21</td>
<td>24</td>
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<tr>
<td></td>
<td>esfenvalerate (R)&lt;br&gt; Asana XL 0.66 EC&lt;br&gt; <em>(See Generic Insecticides)</em></td>
<td>7.8-9.6 oz</td>
<td>0.04-0.05</td>
<td>13-16</td>
<td></td>
<td>21</td>
<td>12</td>
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<tr>
<td></td>
<td>flubendiamide&lt;br&gt; Belt 4 SC</td>
<td>2.0-3.0 oz</td>
<td>0.063-0.094</td>
<td>42.7-64</td>
<td></td>
<td>28 (grain)</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (R)&lt;br&gt; Proaxis 0.5 CS&lt;br&gt; Declare 1.25 CS&lt;br&gt; <em>(See Generic Insecticides)</em></td>
<td>2.56-3.84 oz&lt;br&gt; 1.02-1.54 oz</td>
<td>0.01-0.015&lt;br&gt; 0.01-0.015</td>
<td>33-50&lt;br&gt; 83-125.5</td>
<td>Use of insecticides applied to foliage for management of second-generation corn borers in early July has reduced stalk tunneling and lodging. However, yield increases have not been common with early-planted field corn.</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R)&lt;br&gt; Warrior II 2.08 CS&lt;br&gt; <em>(See Generic Insecticides)</em></td>
<td>1.28-1.92 oz</td>
<td>0.02-0.03</td>
<td>66.7-100</td>
<td></td>
<td>21</td>
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<tr>
<td></td>
<td>lambda-cyhalothrin + chlorantraniliprole (R)&lt;br&gt; Besiege&lt;br&gt; <em>(See Generic Insecticides)</em></td>
<td>6-10 oz</td>
<td>0.06-0.098</td>
<td>12.8-21.3</td>
<td></td>
<td>21</td>
<td>24</td>
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<tr>
<td></td>
<td>methoxyfenozide&lt;br&gt; Intrepid 2 F, Troubadour 2 F</td>
<td>4.0-16 oz</td>
<td>0.06-0.12</td>
<td>8-32</td>
<td></td>
<td>21</td>
<td>4</td>
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<tr>
<td></td>
<td>methoxyfenozide + spinetoram&lt;br&gt; Intrepid Edge</td>
<td>4-12 oz</td>
<td>0.09-0.28</td>
<td>10.7-32</td>
<td></td>
<td>28</td>
<td>4</td>
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<tr>
<td></td>
<td>permethrin (R)&lt;br&gt; Ambush 2 EC&lt;br&gt; Pounce 25 WP&lt;br&gt; Pounce 1.5 G&lt;br&gt; Blackhawk</td>
<td>6.4-12.8 oz&lt;br&gt; 6.4-9.6 oz&lt;br&gt; 6.7-13.3 lb&lt;br&gt; 1.67-3.3 oz</td>
<td>0.1-0.2&lt;br&gt; 0.06-0.12&lt;br&gt; 0.09-0.28&lt;br&gt; 0.038-0.075</td>
<td>10-20&lt;br&gt; 8-32&lt;br&gt; 10.7-32&lt;br&gt; 10-20</td>
<td>Apply Ambush and Pounce prior to ear formation. Granules are best for first-generation larvae. Use foliar sprays on second-generation larvae. Apply granules by aircraft or by ground equipment directing granules into whorls. DO NOT apply more than 8.3 oz of Blackhawk per year. prior to brown silk</td>
<td>28 (grain)</td>
<td>12</td>
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<tr>
<td></td>
<td>spinosad&lt;br&gt; Blackhawk</td>
<td>1.67-3.3 oz</td>
<td>0.038-0.075</td>
<td>10-20</td>
<td></td>
<td>30</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>spinosad&lt;br&gt; Blackhawk&lt;br&gt; Mustang Maxx, Respect (Mustang Maxx, Respect)</td>
<td>2.72-4.0 oz&lt;br&gt; 6.4-9.6 oz&lt;br&gt; 6.7-13.3 lb</td>
<td>0.017-0.025&lt;br&gt; 0.09-0.28&lt;br&gt; 0.038-0.075</td>
<td>32-47&lt;br&gt; 8-32&lt;br&gt; 10-20</td>
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<td>spinosad&lt;br&gt; Blackhawk&lt;br&gt; Mustang Maxx, Respect</td>
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<td>spinosad&lt;br&gt; Mustang Maxx, Respect</td>
<td>2.72-4.0 oz&lt;br&gt; 6.4-9.6 oz&lt;br&gt; 6.7-13.3 lb</td>
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<td>Insect</td>
<td>Insecticide</td>
<td>Formulation/Acre</td>
<td>Lb ai/Acre</td>
<td>Acres/Gallon</td>
<td>Application/Comments</td>
<td>Minimum Days From Last Application to Harvest</td>
<td>Restricted Entry Interval (REI) Hours</td>
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<tr>
<td>Southwestern Corn Borer</td>
<td><strong>Bt</strong> corn hybrids</td>
<td></td>
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<td>Field corn expressing the Bt toxin has proven to be very effective.</td>
<td>21</td>
<td>12</td>
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<tr>
<td></td>
<td>beta-cyfluthrin (R)</td>
<td>Baythroid XL 1 EC</td>
<td>1.6-2.8 oz</td>
<td>0.013-0.022</td>
<td>Apply when 10% of plants show shothole feeding in whorl. If using pheromone traps, make treatment at the following levels: 1st generation borers – 50 months per week, 2nd generation borers – 100 moths per week. Plant early to avoid damage.</td>
<td>45.7-80</td>
<td></td>
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<tr>
<td></td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>2.1-6.4 oz</td>
<td>0.033-0.1</td>
<td>Apply high-volume coarse spray so that spray will run into whorls.</td>
<td>20-61</td>
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<td></td>
<td>carbaryl</td>
<td>Sevin 80 S</td>
<td>2.5 lb</td>
<td>0.047-0.067</td>
<td>Do not apply at intervals closer than 7 days apart.</td>
<td>34.8-8</td>
<td>14</td>
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<tr>
<td></td>
<td></td>
<td>Sevin XLR</td>
<td>2 qt</td>
<td></td>
<td><strong>chlorantraniliprole</strong></td>
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<td></td>
<td>Prevathon 0.43 SC</td>
<td>0.047-0.067</td>
<td>14-20 oz</td>
<td><strong>chlorpyrifos +</strong></td>
<td>6.4-9.1</td>
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<tr>
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<td></td>
<td>Cobalt Advanced</td>
<td>0.03-0.05</td>
<td>16-38 oz</td>
<td><strong>esfenvalerate (R)</strong></td>
<td>3.4-8</td>
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<td>Asana XL 0.66 EC</td>
<td>0.13-0.22</td>
<td>5.8-9.6 oz</td>
<td></td>
<td>13-22</td>
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<td>flubendiamide</td>
<td>Belt 4 SC</td>
<td>0.063-0.094</td>
<td>2.0-3.0 oz</td>
<td></td>
<td>42.7-64</td>
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</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (R)</td>
<td>Proxais 0.5 CS</td>
<td>0.01-0.015</td>
<td>2.56-3.84 oz</td>
<td>Use of insecticides applied to foliage for management of second-generation corn borers in early July has reduced stalk tunneling and lodging. However, yield increases have not been consistent with early-planted field corn.</td>
<td>33-50</td>
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<td>Declare 1.25 CS</td>
<td>0.01-0.1</td>
<td>1.02-1.54 oz</td>
<td></td>
<td>83-125.5</td>
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<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td>0.02-0.03</td>
<td>1.28-1.92 oz</td>
<td></td>
<td>66.7-100</td>
<td>24</td>
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<tr>
<td></td>
<td>lambda-cyhalothrin + chlorantraniliprole (R)</td>
<td>Besiege</td>
<td>0.06-0.098</td>
<td>6-10 oz</td>
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<td>12.8-21.3</td>
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<tr>
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<td>methoxyfenozide</td>
<td>Intrepid 2 F , Troubadour 2 F</td>
<td>0.06-0.012</td>
<td>4-16 oz</td>
<td></td>
<td>8-32</td>
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</tr>
<tr>
<td></td>
<td>methoxyfenozide + spinetoram</td>
<td>Intrepid Edge</td>
<td>0.09-0.26</td>
<td>4-12 oz</td>
<td></td>
<td>10.7-32</td>
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<td>permethrin (R)</td>
<td>Ambush 2 EC</td>
<td>0.1-0.2</td>
<td>6.4-12.8 oz</td>
<td>Apply Ambush and Pounce prior to ear formation. Apply granules for first-generation larvae by aircraft or by ground equipment directing granules into whorls. Sprays should be used for second-generation larvae. DO NOT apply more than 8.3 oz of Blackhawk per year.</td>
<td>10-20</td>
<td>12</td>
</tr>
<tr>
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<td>Pounce 25 WP</td>
<td></td>
<td>6.4-9.6 oz</td>
<td>prior to brown silk</td>
<td>20</td>
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<td>Pounce 1.5 G</td>
<td></td>
<td>6-7-13.3 lb</td>
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<tr>
<td></td>
<td>spinosad</td>
<td>Blackhawk</td>
<td>0.05-0.075</td>
<td>2.2-3.3 oz</td>
<td></td>
<td>7</td>
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<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R)</td>
<td>Mustang Maxx, Respect</td>
<td>0.017-0.025</td>
<td>2.7-4.0 oz</td>
<td>Use of insecticides applied to foliage for management of second-generation corn borers in early July has reduced stalk tunneling and lodging. However, yield increases have not been consistent with early-planted field corn.</td>
<td>32-47</td>
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<td>zeta-cypermethrin + bifenthrin (R)</td>
<td>Hero 1.24 EC</td>
<td>0.04-0.1</td>
<td>4-10.3 oz</td>
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<td>12.4-32</td>
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### COTTON INSECTICIDE PERFORMANCE RATING, 2019

<table>
<thead>
<tr>
<th>Rating Scale</th>
<th>Chemistry</th>
<th>Restricted External Entry (R)</th>
<th>Restricted Use (U)</th>
<th>Thrips</th>
<th>Western Flower Thrips</th>
<th>Tobacco Budworm</th>
<th>Bollworm</th>
<th>Aphids**</th>
<th>Spider Mites***</th>
<th>Cuthworm</th>
<th>Beet Armyworm</th>
<th>Fall Armyworm</th>
<th>Cabbage Looper</th>
<th>Soybean Looper</th>
<th>Saltmarsh Caterpillar</th>
<th>Green and Southern Green Stink Bug</th>
<th>Brown Stink Bug</th>
<th>Whitefly</th>
<th>Grasshopper</th>
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<td>0 = No control</td>
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<td>Overall Rating</td>
<td><strong>COTTON INSECTICIDE PERFORMANCE RATING, 2019</strong></td>
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<td><strong>Restricted Use (U)</strong></td>
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<td><strong>Tobacco Budworm</strong></td>
<td><strong>Bollworm</strong></td>
<td><strong>Aphids</strong></td>
<td><strong>Spider Mites</strong>*</td>
<td><strong>Cuthworm</strong></td>
<td><strong>Beet Armyworm</strong></td>
<td><strong>Fall Armyworm</strong></td>
<td><strong>Cabbage Looper</strong></td>
<td><strong>Soybean Looper</strong></td>
<td><strong>Saltmarsh Caterpillar</strong></td>
<td><strong>Green and Southern Green Stink Bug</strong></td>
<td><strong>Brown Stink Bug</strong></td>
<td><strong>Whitefly</strong></td>
<td><strong>Grasshopper</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Effective on nymphs only.

**Cotton aphids and spider mites can be flared by use of broad spectrum insecticides such as synthetic pyrethroids.

Shaded boxes indicate products recommended for specific pests in this guide.

The performance ratings in the chart are for comparison purposes only and are not necessarily a measure of percent control.
Insect Threshold Scouting Procedure

Tarnished plant bug (TPB) 3 TPB per 5 row feet or 2 TPB per 5 row feet (problem fields) or 8-12 per 100 sweeps from early squaring through cutout. After cutout (NAWF = 5), treat for 6 plant bugs per 5 row feet. At least 2 drop cloth samples per area.

Bollworm (BW) and Tobacco budworm (TBW) Non-Bt cotton: 1 BW or 1 TBW (< 0.25 inch) per 2 row feet Bollgard II/WideStrike/Twinlink: 25% eggs or 5% damaged fruit or 2-3 large (>0.25 inch) larva per 14 row feet. WideStrike III/Bollgard III/TwinLink Plus: 5% damaged fruit or 2-3 large (>0.25 inch) per larva 14 row feet. At least 3.5 row feet whole-plant samples per area.

Thrips 2-5 thrips per plant and damage present At least 5 plants per area sampled with a cup or box.

Aphids 50% of plants infested with actively growing colonies present, if no predators are present General visual observation, noting predator populations. See comments in aphid section.

Fall armyworm (FAW) 10-20 FAW per 100 plants Examine as with BW and TBW, supplementing with drop cloth observations and counts in blooms.

Spider mites 50% of plants infested with actively growing colonies present General visual observation, noting symptoms of feeding injury to leaves.

Stink bugs 1 stink bug per 6 row feet or 20% boll damage At least 2 drop cloth samples per area or sample at least 25 quarter-sized bolls per area.

\[
\begin{array}{|c|c|c|c|c|} \hline
\text{Insect} & \text{Threshold} & \text{Scouting Procedure} \\
\hline
\text{Tarnished plant bug (TPB)} & 3 \text{ TPB per 5 row feet or 2 TPB per 5 row feet (problem fields) or 8-12 per 100} & \text{At least 2 drop cloth samples per area.} \\
\text{TPB per 5 row feet (problem fields) or 8-12 per 100 sweeps from early} & \text{squaring through cutout. After cutout (NAWF = 5), treat for 6 plant bugs} & \text{per 5 row fees.} \\
\text{Bollworm (BW) and Tobacco budworm (TBW)} & \text{Non-Bt cotton: 1 BW or 1 TBW (< 0.25 inch) per 2 row feet} & \text{At least 3.5 row feet whole-plant samples per area.} \\
& \text{Bollgard II/WideStrike/Twinlink: 25% eggs or 5% damaged fruit or 2-3 large} & \text{ (>0.25 inch) larva per 14 row feet. WideStrike III/Bollgard III/TwinLink Plus:} \\
& \text{5% damaged fruit or 2-3 large (>0.25 inch) per larva 14 row feet.} & \text{At least 3.5 row feet whole-plant samples per area.} \\
\text{Thrips} & 2-5 \text{ thrips per plant and damage present} & \text{At least 5 plants per area sampled with a cup or box.} \\
\text{Aphids} & 50\% \text{ of plants infested with actively growing colonies present, if no} & \text{General visual observation, noting predator populations. See comments in} \\
& \text{predators are present} & \text{aphid section.} \\
\text{Fall armyworm (FAW)} & 10-20 \text{ FAW per 100 plants} & \text{Examine as with BW and TBW, supplementing with drop cloth} \\
& \text{observations and counts in blooms.} & \text{observations and counts in blooms.} \\
\text{Spider mites} & 50\% \text{ of plants infested with actively growing colonies present} & \text{General visual observation, noting symptoms of feeding injury to leaves.} \\
& \text{General visual observation, noting symptoms of feeding injury to leaves.} & \text{General visual observation, noting symptoms of feeding injury to leaves.} \\
\text{Stink bugs} & 1 \text{ stink bug per 6 row feet or 20\% boll damage} & \text{At least 2 drop cloth samples per area or sample at least 25 quarter-sized bolls} \\
& \text{per 5 row fees} & \text{per area.} \\
\hline
\end{array}
\]
## COTTON INSECT CONTROL

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (REI) Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Thrips (cont.)</strong></td>
<td>Foliar Sprays</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>acephate</td>
<td></td>
<td>0.2</td>
<td></td>
<td>Avoid tank-mixing organophosphate insecticides (acephate, Bidrin, dimethoate) with certain herbicides (Staple, Warrant, Dual, Liberty) as foliar burn may occur.</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Acephate 90 S</td>
<td>0.22 lb</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Orthene 97</td>
<td>0.21 lb</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>(See Generic Insecticides)</td>
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</tr>
<tr>
<td></td>
<td>dicrotophos (R)</td>
<td>0.2</td>
<td>3.2 oz</td>
<td>40</td>
<td>DO NOT apply more than 3.2 oz pre-bloom.</td>
<td>30</td>
<td>144</td>
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<tr>
<td></td>
<td>Bidrin/Dicromax 8 EC</td>
<td>6.4 oz</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>dimethoate</td>
<td>0.2</td>
<td>0.07-0.14</td>
<td>21.3-42.7</td>
<td>Intrepid Edge will also control cutworm.</td>
<td>28</td>
<td>4</td>
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<tr>
<td></td>
<td>Dimethoate 4 EC</td>
<td>3-6 oz</td>
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<tr>
<td></td>
<td>methoxyfenozide + spinetoram</td>
<td>0.0117-0.0234</td>
<td>1.5-3.0 oz</td>
<td>42.7-85.3</td>
<td>DO NOT use without an adjuvant.</td>
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<tr>
<td></td>
<td>Intrepid Edge 3F</td>
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<td></td>
<td>spinetoram</td>
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<tr>
<td></td>
<td>Radiant 1 SC</td>
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</tr>
</tbody>
</table>

| **Western Flower Thrips** | acephate             |                  | 0.2        |              | Avoid tank-mixing organophosphate insecticides with certain herbicides (Staple, Warrant, Dual, Liberty) as foliar burn may occur. | 21                                            | 24                                 |
|                          | Acephate 90 S        | 0.56 lb          |            |              |                                                                                        |                                               |                                    |
|                          | Orthene 97           | 0.52 lb          |            |              |                                                                                        |                                               |                                    |
|                          | (See Generic Insecticides) |              |            |              |                                                                                        |                                               |                                    |
|                         | methoxyfenozide + spinetoram | 0.07-0.14  | 3-6 oz     | 21.3-42.7    | Intrepid Edge will also control cutworm.                                                | 28                                            | 4                                  |
|                         | Intrepid Edge 3F     |                  |            |              |                                                                                        |                                               |                                    |
|                         | spinetoram           |                  |            |              |                                                                                        |                                               |                                    |
|                         | Radiant 1 SC         |                  |            |              |                                                                                        |                                               |                                    |

| **Tarnished Plant Bug/Flea hopper** | acephate             |                  | 0.5-0.75   |              | First two weeks of squaring, treat for plant bugs if square set is 75% or less and plant bugs are present. | 21                                            | 24                                 |
|                                   | Acephate 90 S        | 0.56-0.83 lb     |            |              |                                                                                        |                                               |                                    |
|                                   | Orthene 97           | 0.31-0.77 lb     |            |              |                                                                                        |                                               |                                    |
|                                   | (See Generic Insecticides) |              |            |              |                                                                                        |                                               |                                    |
|                                   | acetamiprid          |                  | 3.0-3.5 oz |              | DO NOT make more than 2 applications/season.                                           | 28                                            | 12                                 |
|                                   | Strafer 70 WSP       | 0.13-0.15        |            |              |                                                                                        |                                               |                                    |
|                                   | clothianidin         |                  | 3-6 oz     |              | DO NOT apply less than 7 days apart.                                                    | 21                                            | 12                                 |
|                                   | Belay 50WDG          | 0.05-0.1         |            |              |                                                                                        |                                               |                                    |
|                                   | dicrotophos (R)      | 4.8-8.0 oz       |            | 16-26.7      | DO NOT apply more than 3.2 oz pre-bloom.                                                | 30                                            | 144                                |
|                                   | Bidrin/Dicromax 8 EC | 6 oz             |            |              |                                                                                        |                                               |                                    |
|                                   | dimethoate           | 0.25             |            | 16           |                                                                                        | 14                                            | 48                                 |
|                                   | Dimethoate 4 E       | 0.053-0.089      |            |              |                                                                                        | 30                                            | 12                                 |
|                                   | flonicamid           |                  |            |              |                                                                                        |                                               |                                    |
|                                   | Carbine 50 WG        | 1.7-2.85 oz      |            |              |                                                                                        |                                               |                                    |
### Tarnished Plant Bug/Fleahopper (cont.)

Treat for 3 plant bugs per 5 row feet on normal fruiting fields. If small square set is less than 75%, treat for 2 plant bugs per 5 row feet. After last week of June in north Arkansas and the first week of July in south Arkansas, if small square set is less than 85%, treat for 2 plant bugs on 5 row feet. Treat for 8-12 per 100 sweeps when sampling with a sweep net. After cutout (NAWF=5), treat when 6 plant bugs per 5 row feet are found.

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Formulation/ Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (REI) Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>imidacloprid</td>
<td>Admire Pro 4.6 SC</td>
<td>1.7 oz</td>
<td>0.062</td>
<td>75</td>
<td>14</td>
<td>12</td>
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<tr>
<td></td>
<td>Alias/Couraze 4 F</td>
<td>2 oz</td>
<td>0.062</td>
<td>64</td>
<td>14</td>
<td>12</td>
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<tr>
<td></td>
<td>Couraze 2 F</td>
<td>4 oz</td>
<td>0.0625</td>
<td>32</td>
<td>14</td>
<td>12</td>
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<tr>
<td></td>
<td>Couraze 1.6 F</td>
<td>5 oz</td>
<td>0.0625</td>
<td>25.6</td>
<td>14</td>
<td>12</td>
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<tr>
<td>oxamyl (R)</td>
<td>Vydate 3.77 CLV</td>
<td>10.5-17 oz</td>
<td>0.31-0.5</td>
<td>7.5-12.2</td>
<td>14</td>
<td>48</td>
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<tr>
<td>thiamethoxam</td>
<td>Centric 40 WG</td>
<td>1.75-2.5 oz</td>
<td>0.044-0.0625</td>
<td></td>
<td>21</td>
<td>12</td>
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<tr>
<td>sulfoxaflor</td>
<td>Transform 50 WG</td>
<td>1.5-2.25 oz</td>
<td>0.047-0.071</td>
<td>Pending Section 18 Approval Follow pollinator warnings on label.</td>
<td>14</td>
<td>24</td>
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</table>

### Pyrethroids

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Formulation/ Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (REI) Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>beta-cyfluthrin (R)</td>
<td>Baythroid XL 1 EC</td>
<td>1.6-2.6 oz</td>
<td>0.012-0.013</td>
<td>49-80</td>
<td>0</td>
<td>12</td>
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<tr>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>2.56-6.4 oz</td>
<td>0.04-0.1</td>
<td>20-50</td>
<td>14</td>
<td>12</td>
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<tr>
<td>cyfluthrin (R)</td>
<td>Tombstone 2 EC</td>
<td>1.6-2.6 oz</td>
<td>0.025-0.041</td>
<td>49-80</td>
<td>0</td>
<td>12</td>
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<tr>
<td>cypermethrin (R)</td>
<td>Ammo 2.5 EC</td>
<td>2-5 fl oz</td>
<td>0.04-0.1</td>
<td>25-62.5</td>
<td>14</td>
<td>12</td>
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<tr>
<td>esfenvalerate (R)</td>
<td>Asana XL 0.66 EC</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td>13-22</td>
<td>21</td>
<td>12</td>
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<tr>
<td>Insect</td>
<td>Insecticide</td>
<td>Formulation/Acre</td>
<td>Lb ai/Acre</td>
<td>Acres/Gallon</td>
<td>Application/Comments</td>
<td>Minimum Days From Last Application to Harvest</td>
</tr>
<tr>
<td>---------------------</td>
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<tr>
<td><strong>Bollworm (cont.)</strong></td>
<td><strong>Pyrethroids</strong></td>
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<tr>
<td></td>
<td>gamma-cyhalothrin 1.25 (R)</td>
<td>Proaxis 0.5 CS</td>
<td>3.2-5.12 oz</td>
<td>0.0125-0.02</td>
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<td></td>
<td>Declare 1.25 CS</td>
<td>1.28-2.05 oz</td>
<td>0.025-0.04</td>
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<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td>1.6-2.56 oz</td>
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<td></td>
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<td>(See Generic Insecticides)</td>
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<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R)</td>
<td>Mustang Maxx, Respect</td>
<td>2.64-4.0 oz</td>
<td>0.0165-0.025</td>
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<tr>
<td><strong>Carbamates</strong></td>
<td>methomyl (R)</td>
<td>Lannate 2.4 LV</td>
<td>1.5-2.25 pt</td>
<td>0.45-0.675</td>
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<tr>
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<td>Lannate 90 SP</td>
<td>0.5-0.75 lb</td>
<td>0.7-0.9</td>
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<tr>
<td></td>
<td>thiodicarb (R)</td>
<td>Larvin 3.2 F</td>
<td>1.75-2.25 pt</td>
<td>0.7-0.9</td>
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<tr>
<td><strong>Other Classes of Insecticides</strong></td>
<td>chlorantraniliprole</td>
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<tr>
<td></td>
<td>Prevathon 0.43 SC</td>
<td></td>
<td>14-27 oz</td>
<td>0.045-0.088</td>
<td></td>
<td>21</td>
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<tr>
<td></td>
<td>emamectin benzoate</td>
<td>Denim 0.16 EC</td>
<td>8-12 oz</td>
<td>0.01-0.015</td>
<td></td>
<td>21</td>
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<tr>
<td></td>
<td>flubendiamide</td>
<td>Belt 4 SC</td>
<td>2-3 oz</td>
<td>0.062-0.094</td>
<td></td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>indexacarb</td>
<td>Steward 1.25 SC</td>
<td>9.2-11.3 fl oz</td>
<td>0.09-0.11</td>
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<tr>
<td></td>
<td>lambda-cyhalothrin + chlorantraniliprole (R)</td>
<td>Besiege 1.25 SC</td>
<td>6.5-12.5 oz</td>
<td>0.417-0.835</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>methoxyfenozide + spinetoram</td>
<td>Intrepid Edge 3 F</td>
<td>6-8 oz</td>
<td>0.14-0.188</td>
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<td>28</td>
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<tr>
<td></td>
<td>spinosad</td>
<td>Blackhawk</td>
<td>2.4-3.2 oz</td>
<td>0.054-0.07</td>
<td></td>
<td>28</td>
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</tbody>
</table>

| **Tobacco Budworm** | **Bt Cotton**                        |                  |            |              |                      |                                              |                                 |
| See notes on the following page. | Bollgard II, WideStrike, WideStrike III, TwinLink, Bollgard III, TwinLink Plus |                  |            |              |                      |                                              |                                 |
| **Carbamates**      | methomyl (R)                         | Lannate 2.4 LV    | 1.5-2.25 pt | 0.45-0.675   |                      | 15                                           | 48                              |
|                     |                                      | Lannate 90 SP     | 0.5-0.75 lb | 0.7-0.9      |                      | 15                                           | 48                              |
|                     | thiodicarb (R)                       | Larvin 3.2 F      | 1.75-2.25 pt| 3.5-4.6      |                      | 28                                           | 48                              |
## Cotton Insect Control

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation/ Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (REI) Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco Budworm (cont.)</td>
<td>chlorantraniliprole</td>
<td></td>
<td>0.045-0.088</td>
<td>4.7-9.1</td>
<td>Use higher rates with heavy infestations.</td>
<td>21</td>
<td>4</td>
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<tr>
<td></td>
<td>Prevathion 0.43 SC</td>
<td>14-27 oz</td>
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<td>emamectin benzoate</td>
<td></td>
<td>0.01-0.015</td>
<td>10.7-16</td>
<td></td>
<td>21</td>
<td>12</td>
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<tr>
<td></td>
<td>Denim 0.16 EC</td>
<td>8-12 oz</td>
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<td></td>
<td>0.062-0.094</td>
<td>42.7-64</td>
<td></td>
<td>28</td>
<td>12</td>
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<tr>
<td></td>
<td>Belt 4 SC</td>
<td>2-3 oz</td>
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<tr>
<td></td>
<td>indoxacarb</td>
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<td>0.09-0.11</td>
<td>11-14</td>
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<td></td>
<td>Steward 1.25 SC</td>
<td>9.2-11.3 oz</td>
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<td>lambda-cyhalothrin + chlorantraniliprole (R)</td>
<td></td>
<td>0.417-0.835</td>
<td>10-20</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>methoxyfenozide + spinetoram</td>
<td></td>
<td>0.14-0.188</td>
<td>16-21.3</td>
<td></td>
<td>28</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Intrepid Edge 3 F</td>
<td>6-8 oz</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>spinosad</td>
<td></td>
<td>0.054-0.07</td>
<td></td>
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<td>28</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Blackhawk</td>
<td>2.4-3.2 oz</td>
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<tr>
<td></td>
<td><strong>Other Classes of Insecticides</strong></td>
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<tr>
<td></td>
<td><strong>Time insecticide application to egg hatch.</strong></td>
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<td></td>
<td><strong>Under heavy pressure, do not reduce rates.</strong></td>
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<td></td>
<td><strong>Treat for 7,000 (1 per 2 row ft) small larvae (less than 1/4-inch) per acre.</strong></td>
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<td></td>
<td><strong>If larger larvae begin to develop in fields, treat for 3,500 (1 per 4 row ft) larvae per acre.</strong></td>
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<td></td>
<td><strong>Terminate sprays after NAWF=5 + 350 heat units or 350 heat units past the last effective boll date for your area.</strong></td>
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<td></td>
<td><strong>Aphid Management and Control</strong></td>
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<tr>
<td></td>
<td><strong>Treatment for aphids alone seldom results in a yield increase.</strong></td>
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<tr>
<td></td>
<td><strong>1. Resistance to neonicotinoid insecticides (imidacloprid, Intruder, Centric) has developed. Avoid unnecessary/automatic applications of these insecticides when aphids are present.</strong></td>
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<td><strong>2. Threshold: When populations are building and aphid colonies are present on approximately 50% of the plants:</strong></td>
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<tr>
<td></td>
<td><strong>a. If there are less than 0.3 lady beetle adults AND less than 0.2 lady beetle larvae (per row-ft), treat</strong></td>
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<td></td>
<td><strong>b. If there are at least 0.3 lady beetle adults OR 0.2 lady beetle larvae (per row-ft), do not treat, but resample within 7 days.</strong></td>
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<td></td>
<td><strong>3. The aphid fungus is very effective in reducing aphid populations in early to mid-July. Fields should be checked for fungus before treatments are applied. If confident the fungus is present in 15% of the aphid population, do not treat.</strong></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>acetamiprid</td>
<td></td>
<td>0.035-0.05</td>
<td></td>
<td></td>
<td>28</td>
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<tr>
<td></td>
<td>Intruder/Strafer 70 WP</td>
<td>0.8-1.1 oz</td>
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<tr>
<td></td>
<td>flonicamid</td>
<td></td>
<td>0.044-0.063</td>
<td></td>
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<td>30</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Dicofol 4 E</td>
<td>1.5-3 pt</td>
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</tbody>
</table>

### Aphid

Treatment for aphids alone seldom results in a yield increase.

1. Resistance to neonicotinoid insecticides (imidacloprid, Intruder, Centric) has developed. Avoid unnecessary/automatic applications of these insecticides when aphids are present.

2. Threshold: When populations are building and aphid colonies are present on approximately 50% of the plants:
   a. If there are less than 0.3 lady beetle adults AND less than 0.2 lady beetle larvae (per row-ft), treat.
   b. If there are at least 0.3 lady beetle adults OR 0.2 lady beetle larvae (per row-ft), do not treat, but resample within 7 days.

3. The aphid fungus is very effective in reducing aphid populations in early to mid-July. Fields should be checked for fungus before treatments are applied. If confident the fungus is present in 15% of the aphid population, do not treat.

- **Acetamiprid**
  - Formulation: Intruder/Strafer 70 WP
  - Concentration: 0.8-1.1 oz
  - Interval: 28 days

- **Flonicamid**
  - Formulation: Dicofol 4 E
  - Concentration: 1.5-3 pt
  - Interval: 30 days

### Spider Mites

Treat when 50% of plants are infested. Early-season spot treatments may be beneficial in preventing spread of mites across the field.

- **Abamectin (R)**
  - Formulation: Agri-Mek 0.7 SS
  - Concentration: 1.3-2.6 fl oz
  - Interval: 20 days

- **Dicofol**
  - Formulation: Dicofol 4 E
  - Concentration: 1.5-3 pt
  - Interval: 30 days
<table>
<thead>
<tr>
<th><strong>COTTON INSECT CONTROL</strong></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Insect</strong></th>
<th><strong>Insecticide</strong></th>
<th><strong>Formulation/Acre</strong></th>
<th><strong>Lb ai/Acre</strong></th>
<th><strong>Acres/Gallon</strong></th>
<th><strong>Application/Comments</strong></th>
<th><strong>Minimum Days From Last Application to Harvest</strong></th>
<th><strong>Restricted Entry Interval (REI) Hours</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Spider Mites (cont.)</td>
<td>fenpyroximate Portal XLO 0.4EC</td>
<td>0.75-2 pt</td>
<td>0.0375-0.1</td>
<td>4-10.7</td>
<td>DO NOT apply more than 2 pints per season.</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (R) Brigade 2 EC (See Generic Insecticides)</td>
<td>3.8-6.4 oz</td>
<td>0.06-0.1</td>
<td>20-33</td>
<td>Avoid unnecessary use of pyrethroid insecticides as they can flare spider mite populations.</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>etoxazole Zeal WDG Zeal 2.88 SC propargite Comite 6.55</td>
<td>0.66-1.0 oz 1.33-2 oz 1.5-2 pt</td>
<td>0.03-0.045 0.06-0.1</td>
<td>64-96 4-33</td>
<td></td>
<td>28</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>spiromesifen Oberon 2 SC</td>
<td>8-16 oz</td>
<td>0.125-0.25</td>
<td>8-16</td>
<td></td>
<td>30</td>
<td>12</td>
</tr>
<tr>
<td>Cutworm</td>
<td>acephate Acephate 90 S Orthene 97 (See Generic Insecticides)</td>
<td>1.0 lb 0.93 lb</td>
<td>0.9</td>
<td>2-3</td>
<td>Maintain 2-3 plants per row ft. Cutworm control is most effective when ground applications are made and sprays are directed (banded) to the base and lower portion of the plant.</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (R) Baythroid XL 1 EC (See Generic Insecticides)</td>
<td>0.8-1.6 oz</td>
<td>0.007-0.013</td>
<td>80-160</td>
<td></td>
<td>21</td>
<td>24</td>
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<tr>
<td></td>
<td>bifenthrin (R) Brigade 2 EC (See Generic Insecticides)</td>
<td>2.56-6.4 oz</td>
<td>0.04-0.1</td>
<td>20-50</td>
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<tr>
<td></td>
<td>cyfluthrin (R) Tombstone 2 EC (See Generic Insecticides)</td>
<td>0.8-1.6 oz</td>
<td>0.013-0.025</td>
<td>80-160</td>
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<td>0</td>
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<tr>
<td></td>
<td>cypermethrin (R) Ammo 2.5 EC (See Generic Insecticides)</td>
<td>1.3-5.0 oz</td>
<td>0.025-0.1</td>
<td>25-100</td>
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<tr>
<td></td>
<td>esfenvalerate (R) Asana XL 0.66 EC (See Generic Insecticides)</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td>13-22</td>
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<tr>
<td></td>
<td>gamma-cyhalothrin 1.25 (R) Proaxis 0.5 CS Declare 1.25 CS (See Generic Insecticides)</td>
<td>1.92-2.56 0.77-1.02 oz</td>
<td>0.0675-0.01</td>
<td>25-40 125-166</td>
<td></td>
<td>14</td>
<td>24</td>
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<tr>
<td></td>
<td>lambda-cyhalothrin (R) Warrior II 2.08 CS (See Generic Insecticides)</td>
<td>0.96-1.28 oz</td>
<td>0.015-0.02</td>
<td>100-133</td>
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<td>24</td>
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<tr>
<td></td>
<td>thiodicarb (R) Larvin 3.2 F</td>
<td>24 oz</td>
<td>0.6</td>
<td>5.3</td>
<td></td>
<td>28</td>
<td>48</td>
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<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R) Mustang Maxx, Respect</td>
<td>1.28-1.92 oz</td>
<td>0.008-0.012</td>
<td>67-100</td>
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<td>14</td>
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</tbody>
</table>
# COTTON INSECT CONTROL

<table>
<thead>
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<th>Insect</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Beet Armyworm</strong></td>
<td>chlorantraniliprole</td>
<td>14-27 oz</td>
<td>0.045-0.09</td>
<td>4.1-9.7</td>
<td></td>
<td>21</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Prevathon 0.43 SC</td>
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<tr>
<td></td>
<td>emamectin benzoate</td>
<td>6-8 oz</td>
<td>0.0075-0.01</td>
<td>4.7-9.1</td>
<td></td>
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<td>12</td>
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<tr>
<td></td>
<td>Denim 0.16 EC</td>
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<tr>
<td></td>
<td>flubendiamide</td>
<td>2-3 oz</td>
<td>0.062-0.094</td>
<td>42.7-64</td>
<td>DO NOT apply Belt more than 3 times per season.</td>
<td>28</td>
<td>12</td>
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<tr>
<td></td>
<td>Belt 4 SC</td>
<td></td>
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<tr>
<td></td>
<td>indoxacarb</td>
<td>9.2-11.3 fl oz</td>
<td>0.09-0.11</td>
<td>11-14</td>
<td></td>
<td>14</td>
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<tr>
<td></td>
<td>Steward 1.25 SC</td>
<td></td>
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<tr>
<td></td>
<td>lambda-cyhalothrin + flubendiamide</td>
<td>6.5-12.5 oz</td>
<td>0.417-0.835</td>
<td>10-20</td>
<td></td>
<td>21</td>
<td>24</td>
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<tr>
<td></td>
<td>(R) Besiege 1.25 SC</td>
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<td></td>
<td>methoxyfenozide</td>
<td>4-10 oz</td>
<td>0.06-0.16</td>
<td>12.8-32</td>
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<tr>
<td></td>
<td>Intrepid 2 F</td>
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<tr>
<td></td>
<td>methoxyfenozide + spinetoram</td>
<td>6-8 oz</td>
<td>0.14-0.188</td>
<td>16-21.3</td>
<td>DO NOT apply at closer than 4-day intervals.</td>
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<td>Intrepid Edge 3 F</td>
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<tr>
<td></td>
<td>spinosad</td>
<td>2.4-3.2 oz</td>
<td>0.054-0.07</td>
<td>6.7-14</td>
<td>DO NOT apply more than 20 oz of Blackhawk per year.</td>
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<td></td>
<td>Blackhawk</td>
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<tr>
<td></td>
<td><strong>Fall Armyworm</strong></td>
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<tr>
<td></td>
<td>chlorantraniliprole</td>
<td>14-27 oz</td>
<td>0.045-0.088</td>
<td>4.7-9.1</td>
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<td></td>
<td>Prevathon 0.43 SC</td>
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<tr>
<td></td>
<td>emamectin benzoate</td>
<td>8-12 oz</td>
<td>0.01-0.015</td>
<td>10.7-16</td>
<td></td>
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<tr>
<td></td>
<td>Denim 0.16 EC</td>
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<tr>
<td></td>
<td>flubendiamide</td>
<td>2-3 oz</td>
<td>0.062-0.094</td>
<td>42.7-64</td>
<td>DO NOT apply Belt more than 3 times per season.</td>
<td>28</td>
<td>12</td>
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<td>Belt 4 SC</td>
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<td></td>
<td>indoxacarb</td>
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<td>Steward 1.25 SC</td>
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<td>(R) Besiege 1.25 SC</td>
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<tr>
<td></td>
<td>methomyl (R)</td>
<td>1.5-2.25 pt</td>
<td>0.45-0.675</td>
<td>3.6-5.3</td>
<td>Lannate may redden cotton. If excessive, stop use or alternate with other insecticides.</td>
<td>15</td>
<td>48</td>
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<td>Lannate 2.4 LV</td>
<td>0.5-0.75 lb</td>
<td>3.6-5.3</td>
<td>15</td>
<td>Use Lannate as an occasional spray in regular schedule but not more than every 10 days.</td>
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<td>Lannate 90 SP</td>
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<td></td>
<td>methoxyfenozide</td>
<td>4-10 oz</td>
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<td>12.8-32</td>
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<td>Intrepid 2 F</td>
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<td></td>
<td>methoxyfenozide + spinetoram</td>
<td>6-8 oz</td>
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<td>DO NOT apply at closer than 4-day intervals.</td>
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<td>Intrepid Edge 3 F</td>
<td></td>
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<td></td>
<td>novaluron</td>
<td>6-12 oz</td>
<td>0.039-0.078</td>
<td>10.7-21.3</td>
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<td></td>
<td>Diamond 0.83 EC</td>
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<td><strong>spinosad</strong></td>
<td>Blackhawk</td>
<td>2.4-3.2 oz</td>
<td>0.054-0.07</td>
<td>DO NOT apply more than 20 oz per year.</td>
<td>28</td>
<td>4</td>
</tr>
<tr>
<td>(cont.)</td>
<td><strong>thiodicarb (R)</strong></td>
<td>Larvin 3.2 F</td>
<td>1.75-2.25 pt</td>
<td>0.7-0.9</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>3.5-4.6</td>
<td></td>
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<tr>
<td><strong>Cabbage Looper</strong></td>
<td><strong>Bacillus thuringiensis</strong></td>
<td>Check label.</td>
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<tr>
<td><strong>Soybean Looper</strong></td>
<td><strong>chlorantraniliprole</strong></td>
<td>Prevathon 0.43 SC</td>
<td>20-29 oz</td>
<td>0.067-0.097</td>
<td></td>
<td>21</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><strong>emamectin benzoate</strong></td>
<td>Denim 0.16 EC</td>
<td>8-12 oz</td>
<td>0.01-0.015</td>
<td></td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td><strong>flubendiamide</strong></td>
<td>Belt 4 SC</td>
<td>2-3 oz</td>
<td>0.062-0.094</td>
<td>DO NOT apply Belt more than 3 times per season.</td>
<td>28</td>
<td>12</td>
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<tr>
<td></td>
<td><strong>indoxacarb</strong></td>
<td>Steward 1.25 SC</td>
<td>6.7-9.2 fl oz</td>
<td>0.065-0.09</td>
<td></td>
<td>14</td>
<td>12</td>
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<tr>
<td></td>
<td><strong>lambda-cyhalothrin +</strong></td>
<td>Besiege 1.25 SC</td>
<td>10.5-12.5 oz</td>
<td>0.1-0.12</td>
<td></td>
<td>21</td>
<td>24</td>
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<tr>
<td></td>
<td><strong>methoxyfenozide</strong></td>
<td>Intrepid 2 F</td>
<td>4-10 oz</td>
<td>0.06-0.16</td>
<td></td>
<td>14</td>
<td>4</td>
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<tr>
<td></td>
<td><strong>methoxyfenozide +</strong></td>
<td>Intrepid Edge 3 F</td>
<td>4-8 oz</td>
<td>0.094-0.188</td>
<td>DO NOT apply at closer than 4-day intervals.</td>
<td>28</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><strong>spinosad</strong></td>
<td>Blackhawk</td>
<td>2.4-3.2 oz</td>
<td>0.054-0.07</td>
<td>DO NOT apply more than 20 oz per year.</td>
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<td>4</td>
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<tr>
<td></td>
<td><strong>thiodicarb (R)</strong></td>
<td>Larvin 3.2 F</td>
<td>1.5-2.25</td>
<td>0.6-0.9</td>
<td></td>
<td>28</td>
<td>48</td>
</tr>
<tr>
<td><strong>Stink Bugs</strong></td>
<td><strong>acephate</strong></td>
<td>Acephate 90</td>
<td>0.83 lb</td>
<td>0.75</td>
<td></td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td>(Green and Southern Green)</td>
<td><strong>Acephate 90</strong></td>
<td>Orthene 97</td>
<td>0.77 lb</td>
<td></td>
<td>(See Generic Insecticides)</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td><strong>beta-cyfluthrin (R)</strong></td>
<td>Tombstone 2 EC</td>
<td>1.6-2.6 oz</td>
<td>0.013-0.021</td>
<td></td>
<td>14</td>
<td>12</td>
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<tr>
<td></td>
<td><strong>cyfluthrin (R)</strong></td>
<td>Tombstone 2 EC</td>
<td>3.8-6.4 oz</td>
<td>0.06-0.1</td>
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<td>14</td>
<td>12</td>
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<tr>
<td></td>
<td><strong>cyfluthrin (R)</strong></td>
<td>Baythroid XL 1 EC</td>
<td>1.6-2.6 oz</td>
<td>0.025-0.041</td>
<td></td>
<td>14</td>
<td>12</td>
</tr>
</tbody>
</table>
| **Treat when stink bugs exceed 1 bug per 5 row feet or when 20% of medium bolls display internal signs of feeding and stink bugs are observed.** | | | | | | | | | | **(cont. next page)**
## COTTON INSECT CONTROL

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (REI) Hours</th>
</tr>
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<tbody>
<tr>
<td><strong>Stink Bugs</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>(Green and Southern Green)</td>
<td>dicrotophos (R)</td>
<td>Bidrin/Dicromax 8 EC</td>
<td>4.8-8.0 oz</td>
<td>0.3-0.5</td>
<td></td>
<td>30</td>
<td>144</td>
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<td></td>
<td>esfenvalerate (R)</td>
<td>Asana XL 0.66 EC</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
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<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td>1.6-2.56 oz</td>
<td>0.025-0.04</td>
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<td></td>
<td>oxamyl (R)</td>
<td>Vydate 3.77 CLV</td>
<td>13.6 oz</td>
<td>0.4</td>
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<td>zeta-cypermethrin 0.8 EC (R)</td>
<td>Mustang Maxx, Respect</td>
<td>2.64-3.6 oz</td>
<td>0.016-0.022</td>
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<td><strong>Brown Stink Bug</strong></td>
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<tr>
<td></td>
<td>acarate</td>
<td>Acephate 90 S</td>
<td>0.83 lb</td>
<td>0.75</td>
<td></td>
<td>21</td>
<td>24</td>
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<tr>
<td></td>
<td></td>
<td>Orthene 97</td>
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<tr>
<td></td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>3.8-6.4 oz</td>
<td>0.06-0.1</td>
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<td>14</td>
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<td>dicrotophos (R)</td>
<td>Bidrin/Dicromax 8 EC</td>
<td>8 oz</td>
<td>0.5</td>
<td></td>
<td>30</td>
<td>144</td>
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<td><strong>Whitefly</strong></td>
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<tr>
<td></td>
<td>acarate</td>
<td>Acephate 90 S</td>
<td>0.56-1.1 lb</td>
<td>0.5-1.0</td>
<td></td>
<td>21</td>
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<td>Orthene 97</td>
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<td></td>
<td>acetamiprid</td>
<td>Intruder/Strafer 70 WP</td>
<td>1.7-2.3 oz</td>
<td>0.75-0.1</td>
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<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>3.8-6.4 oz</td>
<td>0.06-0.1</td>
<td></td>
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<tr>
<td></td>
<td>thiamethoxam</td>
<td>Centric 40 WG</td>
<td>2 oz</td>
<td>0.05</td>
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<td>Insect</td>
<td>Insecticide</td>
<td>Formulation/Acre</td>
<td>Lb ai/Acre</td>
<td>Acres/Gallon</td>
<td>Application/Comments</td>
<td>Minimum Days From Last Application to Harvest</td>
<td>Restricted Entry Interval (REI) Hours</td>
</tr>
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<td>--------</td>
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<tr>
<td>Multiple Pests</td>
<td>For control of multiple pests exceeding thresholds.</td>
<td>acephate + bifenthrin (R)</td>
<td>Acenthrin 80 S</td>
<td>6-21 oz</td>
<td>0.3-1.05</td>
<td>Plant bugs, Bollworm, Stink Bugs, Whitefly.</td>
<td>21</td>
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<tr>
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<td>bifenthrin (R) + avermectin</td>
<td>Athena 0.87 E</td>
<td>10-17 oz</td>
<td>0.068-0.116</td>
<td>Bollworm, Stink Bugs, Spider Mites.</td>
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<tr>
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<td>bifenthrin (R) + acetameprid</td>
<td>Argyle 1.52 OD</td>
<td>5-9 oz</td>
<td>0.06-0.11</td>
<td>Aphids, Plant bugs, Bollworm, Stink Bugs, Whitefly.</td>
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<tr>
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<td>chlorpyrifos + lambda-cyhalothrin (R)</td>
<td>Cobalt Advanced 2.63 EC</td>
<td>16-38 oz</td>
<td>0.33-0.76</td>
<td>Plant bugs, Bollworm, Stink Bugs, Whitefly.</td>
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<tr>
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<td></td>
<td>cyantraniliprole + abamectin</td>
<td>Minecto Pro</td>
<td>6-10 oz</td>
<td>12.8-21.3</td>
<td>Bollworm, Armyworms, Saltmarsh Caterpillar, Spider Mites.</td>
<td>20</td>
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<tr>
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<td>dicrotophos (R) + bifenthrin</td>
<td>Bidrin XP II</td>
<td>8-12.8 oz</td>
<td>0.31-0.5</td>
<td>Plant bugs, Bollworm, Stink Bugs, Whitefly.</td>
<td>30</td>
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<tr>
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<td>gamma-cyhalothrin + spinosad (R)</td>
<td>Conservo 5.25 SC</td>
<td>2.8-4 oz</td>
<td>0.054-0.083</td>
<td>Bollworm, Tobacco Budworm, Green Stink Bugs, Armyworms, Loopers.</td>
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<tr>
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<td>imidacloprid/beta-cyfluthrin (R)</td>
<td>Leverage 360 SC</td>
<td>2.8-3.2 oz</td>
<td>0.067-0.075</td>
<td>Plant bugs, Bollworm, Stink Bugs, Whitefly.</td>
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<td>imidacloprid/bifenthrin (R)</td>
<td>Brigadier 2 SC</td>
<td>3.8-7.7 oz</td>
<td>0.06-0.12</td>
<td>Plant bugs, Bollworm, Stink Bugs, Whitefly.</td>
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<td>lambda-cyhalothrin + chlorantraniliprole (R)</td>
<td>Besiege 1.25 SC</td>
<td>6.5-12.5 oz</td>
<td>0.417-0.835</td>
<td>Plant bugs, Bollworm, Stink Bugs, Whitefly.</td>
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<td>lambda-cyhalothrin + thiameethoxam (R)</td>
<td>Endigo 2.06 ZC</td>
<td>4.5-5.5 oz</td>
<td>0.072-0.09</td>
<td>Plant bugs, Bollworm, Stink Bugs, Whitefly.</td>
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<td>novaluron + acetameprid</td>
<td>Cormoran 1.51 DC</td>
<td>6-12 oz</td>
<td>0.06-0.12</td>
<td>Plant bugs, Fall Armyworm, Stink Bugs, Whitefly, Aphids.</td>
<td>30</td>
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<td>zeta-cypermethrin + bifenthrin + imidacloprid (R)</td>
<td>Triple Crown 2.25</td>
<td>4.5-6.4 oz</td>
<td>0.079-0.112</td>
<td>Plant bugs, Bollworm, Stink Bugs, Whitefly.</td>
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<tr>
<td>Insect</td>
<td>Insecticide</td>
<td>Formulation/Acre</td>
<td>Lb ai/Acre</td>
<td>Acres/Gallon</td>
<td>Application/Comments</td>
<td>Restricted Entry Interval (hours)</td>
<td>Minimum Days From Last Application to Harvest</td>
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<tr>
<td><strong>ALFALFA</strong></td>
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<tr>
<td>Alfalfa Weevil</td>
<td>beta-cyfluthrin (R)</td>
<td>Baythroid XL 1 EC</td>
<td>1.6-2.8 oz</td>
<td>45.5-80</td>
<td>DO NOT apply more than once per cutting.</td>
<td>12</td>
<td>7 alfalfa</td>
</tr>
<tr>
<td></td>
<td>carbaryl</td>
<td>Sevin 80 S</td>
<td>1.875 lb</td>
<td></td>
<td>DO NOT apply during bloom.</td>
<td>12</td>
<td>7 alfalfa</td>
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<td></td>
<td>carbofuran</td>
<td>Furadan 4 LFR</td>
<td>1-2 pt</td>
<td>4-8</td>
<td>Highly toxic; use only once per cutting. Follow label directions carefully. DO NOT apply more than twice per season. Furadan is NOT LABELED for pastures.</td>
<td>14 days</td>
<td>14 (low rate) 28 (high rate)</td>
</tr>
<tr>
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<td>chlorpyrifos (R)</td>
<td>Lorsban Adv. 3.755 EC</td>
<td>1-2 pt</td>
<td>4-8</td>
<td>DO NOT apply more than once per cutting. Lorsban and Chlorpyrifos are NOT LABELED for pastures.</td>
<td>24</td>
<td>14 (low rate) 21 (high rate)</td>
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<tr>
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<td>dimethoate (R)</td>
<td>Dimethoate 4 EC</td>
<td>1 pt</td>
<td>8</td>
<td>DO NOT apply to alfalfa in the bloom period. Make 1 application per cutting. Dimethoate is NOT LABELED for pastures.</td>
<td>48</td>
<td>10</td>
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<tr>
<td></td>
<td>gamma-cyhalothrin (R)</td>
<td>Proaxis 0.5 EC</td>
<td>2.56-3.84 oz</td>
<td>33-50</td>
<td>DO NOT apply more than 0.015 lb ai per acre per cutting. DO NOT apply more than 0.06 lb ai per acre per season.</td>
<td>24</td>
<td>1 (forage) alfalfa 7 (hay)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Declare 1.25 EC</td>
<td>1.02-1.54 oz</td>
<td>83-125.5</td>
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<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td>1.28-1.92 oz</td>
<td>66.7-100</td>
<td>DO NOT apply more than 0.03 lb ai per acre per cutting. DO NOT apply more than 0.12 lb ai per acre per season.</td>
<td>24</td>
<td>1 (forage) alfalfa 0 (grazing) pasture 7 (hay)</td>
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<tr>
<td></td>
<td></td>
<td>Other 1.0 CS formulations (See Generic Insecticides)</td>
<td>2.56-3.84 oz</td>
<td>33-50</td>
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<td></td>
<td>malathion</td>
<td>Fylanon/Malathion 5 EC</td>
<td>1 qt</td>
<td>4</td>
<td>Very short residual; control for 3-7 days; can be applied by ground rig. Highly toxic. DO NOT apply to dormant or semidormant alfalfa when temperature is below 50 degrees F.</td>
<td>12</td>
<td>5 alfalfa 0 pasture</td>
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<tr>
<td></td>
<td>Methomyl (R)</td>
<td>Lannate 90SP</td>
<td>1 lb</td>
<td>2.7</td>
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<td>Lannate 2.4 LV</td>
<td>3 pt</td>
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<td>permethrin (R)</td>
<td>Permethrin 3.2 EC</td>
<td>4-8 oz</td>
<td>16-32</td>
<td>DO NOT apply more than 0.2 lb ai per acre per cutting. DO NOT apply when honeybees are actively foraging. Ambush and Pounce are NOT LABELED for pastures.</td>
<td>12</td>
<td>14 alfalfa</td>
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<td>Ambush 2 EC</td>
<td>6.4-12.8 oz</td>
<td>10-20</td>
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<td>Pounce 25 WP</td>
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<td>phosmet</td>
<td>Imidan 70 WP</td>
<td>1.33 lb</td>
<td>1.0</td>
<td>DO NOT apply to alfalfa during the bloom period. DO NOT apply more than once per cutting. Imidan is NOT LABELED for pastures.</td>
<td>12</td>
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<td>zeta-cypermethrin (R)</td>
<td>Mustang Maxx 0.8 EC</td>
<td>2.24-4.0 oz</td>
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<td></td>
<td>Respect 0.8 EC</td>
<td>2.24-4.0 oz</td>
<td>32-57</td>
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### FORAGES (ALFALFA AND PASTURE) INSECT CONTROL

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<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Restricted Entry Interval (hours)</th>
<th>Minimum Days From Last Application to Harvest</th>
</tr>
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<tbody>
<tr>
<td><strong>Blister Beetle</strong></td>
<td>carbaryl</td>
<td>Sevin 4 F</td>
<td>1-2 pt</td>
<td>0.67-1.25 lb</td>
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<td>7 alfalfa</td>
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<tr>
<td></td>
<td>Sevin 80 S</td>
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<td></td>
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<td></td>
<td></td>
<td>14 pasture</td>
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<td></td>
<td>gamma-cyhalothrin (R)</td>
<td>Proaxis 0.5 EC</td>
<td>2.56-3.84 oz</td>
<td>33-50</td>
<td>DO NOT apply more than 0.015 lb ai per acre per cutting. DO NOT apply more than 0.06 lb ai per acre per season.</td>
<td>24</td>
<td>1 (forage) alfalfa</td>
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<tr>
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<td>Declare 1.25 EC</td>
<td>1.02-1.54 oz</td>
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<td>83-125.5</td>
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<td></td>
<td>0 (forage) pasture</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>7 (hay)</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td>1.28-1.92 oz</td>
<td>66.7-100</td>
<td>DO NOT apply more than 0.03 lb ai per acre per cutting. DO NOT apply more than 0.12 lb ai per acre per season.</td>
<td>24</td>
<td>1 (forage) alfalfa</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other 1.0 CS formulations (See Generic Insecticides)</td>
<td>2.56-3.84 oz</td>
<td>33-50</td>
<td></td>
<td></td>
<td>0 (forage) pasture</td>
</tr>
<tr>
<td><strong>Fall Armyworm, Armyworm</strong></td>
<td>beta-cyfluthrin (R)</td>
<td>Baythroid XL 1EC</td>
<td>2.6-2.8 oz</td>
<td>45.7-49.2</td>
<td>DO NOT apply more than 0.089 lb ai per acre per cutting.</td>
<td>12</td>
<td>7 alfalfa</td>
</tr>
<tr>
<td></td>
<td>carbaryl</td>
<td>Sevin 4 F</td>
<td>2-3 pt</td>
<td>1.0-1.5</td>
<td></td>
<td></td>
<td>0 pasture</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.7-4.0</td>
<td></td>
<td></td>
<td>14 pasture</td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole</td>
<td>Prevaition</td>
<td>0.047-0.067</td>
<td>6-9</td>
<td>DO NOT apply more than 0.2 lb ai per acre per crop.</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole +</td>
<td></td>
<td>0.059-0.088</td>
<td>14-21</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Besiege/Volliam Xpress</td>
<td>6-9 oz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>flubendiamide</td>
<td>Belt 4 SC</td>
<td>0.0625-0.125</td>
<td>32-64</td>
<td>DO NOT reapply within 14 days. Belt is NOT LABELED on pastures.</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td>1.28-1.92 oz</td>
<td>66.7-100</td>
<td>DO NOT apply more than 0.03 lb ai per acre per cutting. DO NOT apply more than 0.12 lb ai per acre per season.</td>
<td>24</td>
<td>1 (forage) alfalfa</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other 1.0 CS formulations (See Generic Insecticides)</td>
<td>2.56-3.84 oz</td>
<td>33-50</td>
<td></td>
<td></td>
<td>0 (forage) pasture</td>
</tr>
<tr>
<td></td>
<td>methoxyfenozide</td>
<td>Intrepid 2 F</td>
<td>0.06-0.12</td>
<td>16-32</td>
<td>Livestock can graze on treated area immediately after application of Intrepid.</td>
<td>4</td>
<td>7 (hay)</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin (R)</td>
<td>Mustang Maxx 0.8 EC</td>
<td>0.0175-0.025</td>
<td>32-45</td>
<td>No grazing restriction for grass forage or hay. DO NOT apply within 3 days for non-grass forage.</td>
<td>12</td>
<td>7 alfalfa</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Respect 0.8 EC</td>
<td>2.8-4.0 oz</td>
<td>32-45</td>
<td></td>
<td></td>
<td>0 (grazing)</td>
</tr>
<tr>
<td><strong>Potato Leafhopper</strong></td>
<td>beta-cyfluthrin (R)</td>
<td>Baythroid XL 1EC</td>
<td>0.8-1.6 oz</td>
<td>80-160</td>
<td>DO NOT apply more than 0.089 lb ai per acre per cutting.</td>
<td>12</td>
<td>7 alfalfa</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0 pasture</td>
</tr>
<tr>
<td></td>
<td>carbaryl</td>
<td>Sevin 4 F</td>
<td>1-2 pt</td>
<td>0.67-1.25 lb</td>
<td></td>
<td>12</td>
<td>7 alfalfa</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>14 pasture</td>
</tr>
</tbody>
</table>

---

**Potato Leafhopper**

The treatment threshold for potato leafhoppers varies with the height of the alfalfa. For alfalfa 3 inches in height, the threshold is 4 per 20 sweeps; for 6-inch alfalfa, the threshold is 10 per 20 sweeps; and for 12-inch or greater alfalfa, the threshold is 40 per 20 sweeps. Before treating, consider yield potential and the age of the alfalfa stand.

- beta-cyfluthrin (R) Baythroid XL 1EC
  - 0.8-1.6 oz
  - 80-160
- carbaryl
  - Sevin 4 F
    - 1-2 pt
    - 0.67-1.25 lb
  - Sevin 80 S
    - 0.5-1.0
    - 4-8
  - DO NOT apply during bloom.

---

FORAGES
<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Restricted Entry Interval (hours)</th>
<th>Minimum Days From Last Application to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ALFALFA</strong></td>
<td><strong>Potato Leafhopper</strong> (cont.)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The treatment threshold for potato leafhoppers varies with the height of the alfalfa. For alfalfa 3 inches in height, the threshold is 4 per 20 sweeps; for 6-inch alfalfa, the threshold is 10 per 20 sweeps; and for 12-inch or greater alfalfa, the threshold is 40 per 20 sweeps. Before treating, consider yield potential and the age of the alfalfa stand.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>chlorantraniliprole +</td>
<td>lambda-cyhalothrin (R)</td>
<td>5-8 oz</td>
<td>0.049-0.078</td>
<td>16-25.6</td>
<td></td>
<td>24</td>
<td>1 forage</td>
</tr>
<tr>
<td>Besiege/Voliam Xpress</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>chlorpyrifos (R)</td>
<td>Lorsban Adv. 3.755 EC</td>
<td>0.5-1 pt</td>
<td>0.25-0.5</td>
<td>8-16</td>
<td></td>
<td>24</td>
<td>7 (0.5 pint rate)</td>
</tr>
<tr>
<td>Chlorpyrifos 4 EC</td>
<td>1-2 pt</td>
<td>0.5-1.0</td>
<td>4-8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dimethoate (R)</td>
<td>Dimethoate 4 EC</td>
<td>0.5-1.0 pt</td>
<td>0.25-0.5</td>
<td>8-16</td>
<td></td>
<td>48</td>
<td>10</td>
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<tr>
<td>Dimethoate 2.67 EC</td>
<td>0.75-1.5 pt</td>
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<tr>
<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td>0.96-1.60 oz</td>
<td>0.015-0.025</td>
<td>80-133</td>
<td></td>
<td>24</td>
<td>1 (forage) alfalfa 7 (hay)</td>
</tr>
<tr>
<td>Other 1.0 CS formulations</td>
<td>(See Generic Insecticides)</td>
<td>2.92-3.20 oz</td>
<td></td>
<td>40-44</td>
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</tr>
<tr>
<td>permethrin (R)</td>
<td>Permethrin 3.2 EC</td>
<td>4-8 oz</td>
<td>0.1-0.2</td>
<td>16-32</td>
<td></td>
<td>12</td>
<td>14 alfalfa</td>
</tr>
<tr>
<td>Ambush Z EC</td>
<td>3.2-12.8 oz</td>
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<tr>
<td>Pounce 25 WP</td>
<td>6.4-12.8 oz</td>
<td>1.25-2.5/lb</td>
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<tr>
<td>zeta-cypermethrin (R)</td>
<td>Mustang Maxx 0.8 EC</td>
<td>2.24-4.0 oz</td>
<td>0.014-0.025</td>
<td>32-57</td>
<td></td>
<td>12</td>
<td>7 alfalfa</td>
</tr>
<tr>
<td>Respect 0.8 EC</td>
<td>2.24-4.0 oz</td>
<td></td>
<td></td>
<td>32-57</td>
<td></td>
<td></td>
<td>0 grasses</td>
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<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 non-grass pasture</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Grasshopper</strong></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (R)</td>
<td>2.6-2.8 oz</td>
<td>0.02-0.022</td>
<td>45.7-49.2</td>
<td></td>
<td>12</td>
<td>7 alfalfa</td>
</tr>
<tr>
<td>Baythroid XL 1EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0 pasture</td>
</tr>
<tr>
<td>chlorantraniliprole</td>
<td>Prevathon 0.43 SC</td>
<td>8-20 oz</td>
<td>0.027-0.067</td>
<td>6.4-16</td>
<td></td>
<td>4</td>
<td>0 grazing</td>
</tr>
<tr>
<td>chlorthraniliprole +</td>
<td>lambda-cyhalothrin (R)</td>
<td>8-20 oz</td>
<td>0.059-0.097</td>
<td>14-21</td>
<td></td>
<td>24</td>
<td>1 forage</td>
</tr>
<tr>
<td>Besiege/Voliam Xpress</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7 hay</td>
</tr>
<tr>
<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td>1.28-1.92 oz</td>
<td>0.02-0.03</td>
<td>66.7-100</td>
<td></td>
<td>24</td>
<td>1 (forage) alfalfa 7 (hay)</td>
</tr>
<tr>
<td>Other 1.0 CS formulations</td>
<td>(See Generic Insecticides)</td>
<td>2.56-3.84 oz</td>
<td></td>
<td>33-50</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>zeta-cypermethrin (R)</td>
<td>Mustang Maxx 0.8 EC</td>
<td>2.8-4.0 oz</td>
<td>0.0175-0.025</td>
<td>32-45</td>
<td></td>
<td>12</td>
<td>7 alfalfa</td>
</tr>
<tr>
<td>Respect 0.8 EC</td>
<td>2.8-4.0 oz</td>
<td></td>
<td></td>
<td>32-45</td>
<td></td>
<td></td>
<td>0 grasses</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3 non-grass pasture</td>
</tr>
</tbody>
</table>

FORAGES (ALFALFA AND PASTURE) INSECT CONTROL
### PASTURE

#### Armyworm

Control is usually needed when 2 or more worms per square foot or 1 worm per sweep with a 15-inch sweep net are found.

- **Fall Armyworm:**
  - Control is usually needed when 2 or more worms per square foot or 1 worm per sweep with a 15-inch sweep net are found.

Products containing anthranilic diamides, IGRs and the tank mix of diflubenzuron plus a pyrethroid exhibit longer residual activity than pyrethroids alone, spinosyns or the carbamate against armyworms.

#### Anthranilic diamide

- **chlorantraniliprole**
  - **Prevathon 0.43 SC**
    - Formulation/Acre: 10-13 oz
    - Lb/ai/Acre: 0.034-0.044
    - Acres/Gallon: 9.8-12.8
  - **Coragen 1.67 SC**
    - Formulation/Acre: 3.5-5.0 oz
    - Lb/ai/Acre: 0.045-0.065
    - Acres/Gallon: 25.6-36.6

**Applications/Comments:**

- DO NOT apply more than 0.2 lb ai per acre per crop.
- 4
- 0 grazing
- 0 hay

#### Anthranilic diamide + pyrethroid

- **chlorantraniliprole + lambda-cyhalothrin (R)**
  - **Besiege/Voliam Xpress**
    - Formulation/Acre: 6-9 oz
    - Lb/ai/Acre: 0.059-0.088
    - Acres/Gallon: 14-21

**Applications/Comments:**

- DO NOT apply more than 9 fl oz per acre per cutting.
- 24
- 7 hay
- 0 grazing

#### Pyrethroids

- **cyfluthrin (R)**
  - **Tombstone 2 EC**
    - Formulation/Acre: 1.6-1.9 oz
    - Lb/ai/Acre: 0.025-0.03
    - Acres/Gallon: 67.4-80

**Applications/Comments:**

- DO NOT apply more than 0.044 lb ai per 5-day interval.
- 12
- 0 grazing
- 0 hay

- **lambda-cyhalothrin (R)**
  - **Warrior II 2.08 CS**
    - Formulation/Acre: 1.28-1.92 oz
    - Lb/ai/Acre: 0.0175-0.022
    - Acres/Gallon: 45.7-49.2

**Applications/Comments:**

- No grazing restriction for grass forage or hay.
- 32-45
- 0 grazing

#### Insect Growth Regulator (IGR)

- **methoxyfenozide (22.6%)**
  - **Intrepid 2 F and generics - Troubadour 2F, WithStand, TurnStyle, Intervid 2F**
    - Formulation/Acre: 4-8 oz
    - Lb/ai/Acre: 0.066-0.12
    - Acres/Gallon: 16-32

**Applications/Comments:**

- Livestock can graze on treated area immediately after application of Intrepid.
- 4
- 7 hay
- 0 grazing

#### Spinosyn

- **spinosad**
  - **Blackhawk**
    - Formulation/Acre: 1.1-2.2 oz
    - Lb/ai/Acre: 0.033-0.066
    - Acres/Gallon: 7.3-14.6/lb

**Applications/Comments:**

- No grazing restriction (spray should dry before cattle graze in treated areas). Entrust is OMRI listed for organic production.
- 4
- 3 hay
- 0 grazing

#### Carbamate

- **carbaryl**
  - **Sevin 80 S**
    - Formulation/Acre: 1.25-1.8 lb
    - Lb/ai/Acre: 2-3 pt
    - Acres/Gallon: 2.7-4.0

**Applications/Comments:**

- Sevin does not kill armyworms quickly. Allow 2-3 days for control to become effective. Must remove cattle.
- 12
- 14

#### Tank mix

- **Diminil 2I or Unforgiven (22% diflubenzuron) plus one of the pyrethroids listed above. Ex. 1.0 CS lambda-cyhalothrin**
  - Formulation/Acre: 4 oz./acre
    - Lb/ai/Acre: 0.062
    - Acres/Gallon: 32

**Applications/Comments:**

- Follow the more stringent grazing restriction of the pyrethroid.
- For example lambda-cyhalothrin has no grazing restriction for grazing and 7 days post-harvest restriction for hay.
- 7 hay
- 0 grazing

---

Bermudagrass stem maggots – Because no currently available product is effective against bermudagrass stem maggot larvae occurring in the grass stem, bermudagrass stem maggot control is directed at the egg-laying adults. Timing of an insecticide application is crucial to obtain effective control of bermudagrass stem maggot adults. For maximum efficacy, insecticide application should be made seven to ten days following bermudagrass hay harvest. The seven to ten day interval allows for the emergence of adults that pupated at the time of cutting and for application before the grass canopy gets too thick to allow insecticide penetration of the canopy where the adults occur. Adults bermudagrass stem maggots are easily killed, so the low rate of a pyrethroid insecticide labeled for use against armyworms on pasture or hay is effective (ex. lambda-cyhalothrin). Control of bermudagrass stem maggots in moderately grazed bermudagrass is usually unnecessary. See pyrethroids listed in the armyworm/pasture section above for product options.
## Forages (Alfalfa and Pasture) Insect Control

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb/ai/Acre</th>
<th>Acres/Gallon</th>
<th>Applications/Comments</th>
<th>Restricted Entry Interval (hours)</th>
<th>Minimum Days From Last Application to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pasture</strong></td>
<td><strong>Grasshopper</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>22% diflubenzuron (R)</td>
<td>Dimilin 2L</td>
<td>0.031</td>
<td>64</td>
<td>Apply when grasshoppers are small (1/2 inch). Once grasshoppers reach 4th instar nymphs, survival increases. Allow at least 1 day after treatment before cutting hay. DO NOT exceed a total of 2 fl oz Dimilin 2L or Unforgiven per acre per cutting. DO NOT exceed a total of 6 fl oz Dimilin 2L or Unforgiven per acre per year. DO NOT apply more than 0.022 lb ai per 5-day interval.</td>
<td>12</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unforgiven</td>
<td>2 oz</td>
<td>64</td>
<td></td>
<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (R)</td>
<td>Baythroid XL 1EC</td>
<td>0.02-0.022</td>
<td>45.7-49.2</td>
<td>DO NOT apply more than 0.2 lb ai per acre per crop. * **(ee) recommendation rate for Prevathon.</td>
<td>12</td>
<td>0 grazing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.6-2.8 oz</td>
<td></td>
<td></td>
<td></td>
<td>0 hay</td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole</td>
<td>Prevathon 0.43 SC</td>
<td>0.027-0.054</td>
<td>8-16</td>
<td>DO NOT apply more than 9 fl oz per acre per cutting.</td>
<td>24</td>
<td>7 hay</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8-16 oz*</td>
<td></td>
<td></td>
<td></td>
<td>0 grazing</td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole + lambda-cyhalothrin (R)</td>
<td>Besiege/Voliam Xpress</td>
<td>0.059-0.088</td>
<td>14-21</td>
<td>DO NOT apply more than 0.02 lb ai per acre per 5-day interval.</td>
<td>12</td>
<td>0 grazing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>6-9 oz</td>
<td></td>
<td></td>
<td></td>
<td>0 hay</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin (R)</td>
<td>Tombstone 2 EC</td>
<td>0.04-0.044</td>
<td>45.7-49.2</td>
<td>DO NOT apply more than 0.044 lb ai per 5-day interval.</td>
<td>12</td>
<td>0 grazing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.6-2.8 oz</td>
<td></td>
<td></td>
<td></td>
<td>0 hay</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td>0.02-0.03</td>
<td>66.7-100</td>
<td>DO NOT apply more than 0.03 lb ai per acre per cutting. DO NOT apply more than 0.09 lb ai per acre per season.</td>
<td>24</td>
<td>7 hay</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Other 1.0 CS formulations (See Generic Insecticides)</td>
<td></td>
<td>33-50</td>
<td></td>
<td></td>
<td>0 grazing</td>
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<tr>
<td></td>
<td>zeta-cypermethrin (R)</td>
<td>Mustang Maxx 0.8 EC</td>
<td>0.0175-0.025</td>
<td>32-45</td>
<td>No grazing restriction for grass forage or hay. DO NOT apply within 3 days for non-grass forage.</td>
<td>12</td>
<td>0 grasses</td>
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<tr>
<td></td>
<td></td>
<td>Respect 0.8 EC</td>
<td>2.8-4.0 oz</td>
<td>32-45</td>
<td></td>
<td></td>
<td>3 non-grass pasture</td>
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<tr>
<td><strong>Red Imported</strong></td>
<td>Fire Ant</td>
<td>hydramethylnon (Amdro Pro)</td>
<td>2-5 Tbsp/mound</td>
<td>1.0-1.5 lb/A</td>
<td>Mound-to-mound treatment rate. Broadcast rate.</td>
<td>12</td>
<td>7 hay</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.0-1.5 lb/A</td>
<td></td>
<td></td>
<td></td>
<td>0 grazing</td>
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<tr>
<td></td>
<td></td>
<td>hydramethylnon + methoprene (Extinguish Plus)</td>
<td>3-5 Tbsp/mound</td>
<td>1.0-1.5 lb/A</td>
<td>Apply ALL FIRE ANT BAITS when ants are active and soil temperature is above 60 degrees F. DO NOT treat if rain is anticipated within 6 hours. DO NOT cut and bale hay treated with Amdro Pro or Extinguish Plus until 7 days after application.</td>
<td>12</td>
<td>7 hay</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3-5 Tbsp/mound</td>
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<td></td>
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<td>0 grazing</td>
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<tr>
<td></td>
<td></td>
<td>pyriproxyfen (Esteem)</td>
<td>2-4 Tbsp/mound</td>
<td>1.5-2 lb/A</td>
<td>DO NOT harvest hay within 24 hours of treatment with Esteem.</td>
<td>12</td>
<td>1 hay</td>
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<td></td>
<td></td>
<td></td>
<td>2-4 Tbsp/mound</td>
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<td>0 grazing</td>
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<td></td>
<td>S-Methoprene (Extinguish)</td>
<td>3-5 Tbsp/mound</td>
<td>1.0-1.5 lb/A</td>
<td>Mound-to-mound treatment rate. Broadcast rate.</td>
<td>4</td>
<td>0 hay</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>3-5 Tbsp/mound</td>
<td></td>
<td></td>
<td></td>
<td>0 grazing</td>
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## PEANUT INSECT CONTROL

<table>
<thead>
<tr>
<th>Insect</th>
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<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thrips</td>
<td>acephate</td>
<td>Orthene 97</td>
<td>6-12 oz</td>
<td>0.375-0.75</td>
<td>DO NOT graze or feed vines treated with Acephate.</td>
<td>14</td>
<td>24</td>
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<tr>
<td></td>
<td>gamma-cyhalothrin (R)</td>
<td>Proaxis 0.5 CS</td>
<td>2.56-3.84 oz</td>
<td>33.3-50</td>
<td>14</td>
<td>24</td>
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<td></td>
<td></td>
<td>Declare 1.25 CS</td>
<td>1.02-1.54 oz</td>
<td>83-125</td>
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<td></td>
<td>imidacloprid</td>
<td>Admire Pro 4.6 F (at planting)</td>
<td>7-10.5 fl oz</td>
<td>107</td>
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<td></td>
<td>Admire Pro 4.6 F (folar)</td>
<td>1.2 oz</td>
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<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS (See Generic Insecticides)</td>
<td>1.28-1.92 oz</td>
<td>66.6-100</td>
<td>14</td>
<td>24</td>
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<tr>
<td></td>
<td>phorate (R)</td>
<td>Thimet 20 G</td>
<td>5.5 oz/1,000 ft of row</td>
<td>0.01-0.019</td>
<td>DO NOT graze or feed vines to livestock.</td>
<td>90</td>
<td>48</td>
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<tr>
<td></td>
<td></td>
<td>Orthene 97</td>
<td>6-12 oz</td>
<td>0.75</td>
<td>DO NOT graze or feed vines treated with Acephate.</td>
<td>14</td>
<td>24</td>
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<tr>
<td></td>
<td>carbayl</td>
<td>Sevin XLR or 4 F</td>
<td>1 qt</td>
<td>1</td>
<td>DO NOT apply during bloom.</td>
<td>14</td>
<td>12</td>
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<tr>
<td></td>
<td></td>
<td>Sevin 80 S</td>
<td>1.25 lb</td>
<td>4</td>
<td>DO NOT apply during bloom.</td>
<td>14</td>
<td>12</td>
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<tr>
<td></td>
<td>esfenvalerate (R)</td>
<td>Asana XL 0.66 EC (See Generic Insecticides)</td>
<td>2.9-5.8 oz</td>
<td>22-44</td>
<td>21</td>
<td>12</td>
<td></td>
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<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS (See Generic Insecticides)</td>
<td>0.96-1.6 oz</td>
<td>80-133</td>
<td>14</td>
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<tr>
<td>Potato Leaf Hopper</td>
<td>acephate</td>
<td>Orthene 97</td>
<td>0.77 lb</td>
<td>0.75</td>
<td>DO NOT graze or feed vines treated with Acephate.</td>
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<td>24</td>
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<tr>
<td></td>
<td>carbayl</td>
<td>Sevin XLR or 4 F</td>
<td>1 qt</td>
<td>1</td>
<td>DO NOT apply during bloom.</td>
<td>14</td>
<td>12</td>
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<td>Sevin 80 S</td>
<td>1.25 lb</td>
<td>4</td>
<td>DO NOT apply during bloom.</td>
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<td>esfenvalerate (R)</td>
<td>Asana XL 0.66 EC (See Generic Insecticides)</td>
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<td>21</td>
<td>12</td>
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<tr>
<td></td>
<td>gamma-cyhalothrin (R)</td>
<td>Proaxis 0.5 CS</td>
<td>1.92-3.2 oz</td>
<td>40-66.7</td>
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<tr>
<td></td>
<td></td>
<td>Declare 1.25 CS</td>
<td>0.77-1.28 oz</td>
<td>100-167</td>
<td>14</td>
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## PEANUT INSECT CONTROL

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<tbody>
<tr>
<td><strong>Potato Leaf Hopper</strong></td>
<td><strong>lambda-cyhalothrin (R)</strong></td>
<td></td>
<td>0.96-1.6 oz</td>
<td>0.015-0.025</td>
<td>DO NOT graze or feed vines to livestock.</td>
<td>14</td>
<td>24</td>
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<tr>
<td></td>
<td><strong>Warrior II 2.08 CS</strong></td>
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<td><em>(See Generic Insecticides)</em></td>
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<tr>
<td></td>
<td><strong>methomyl (R)</strong></td>
<td></td>
<td>12 oz</td>
<td>0.35</td>
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<td><strong>Lannate 2.4 LV</strong></td>
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<tr>
<td><strong>Cutworm</strong></td>
<td><strong>beta-cyfluthrin (R)</strong></td>
<td>1.0-1.8 oz</td>
<td>0.008-0.014</td>
<td>71-128</td>
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<td></td>
<td><strong>Baythroid XL 1 EC</strong></td>
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<td></td>
<td><strong>bifenthrin (R)</strong></td>
<td>2.1-6.4 oz</td>
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<td><strong>Brigade 2 EC</strong></td>
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<tr>
<td></td>
<td><strong>carbaryl</strong></td>
<td>2.5 lb</td>
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<td><strong>Sevin XLR or 4 F</strong></td>
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<tr>
<td></td>
<td><strong>chlorantraniliprole</strong></td>
<td>20 oz</td>
<td>0.067</td>
<td>6.4</td>
<td></td>
<td>1</td>
<td>4</td>
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<td></td>
<td><strong>Prevathon 0.43 SC</strong></td>
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<td><strong>esfenvalerate (R)</strong></td>
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<tr>
<td></td>
<td><strong>Asana XL 0.66 EC</strong></td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td>13-22</td>
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<td><strong>gamma-cyhalothrin (R)</strong></td>
<td>1.92-3.2 oz</td>
<td>0.0075-0.0125</td>
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<td><strong>Proaxis 0.5 CS</strong></td>
<td>0.77-1.28 oz</td>
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<td>100-166</td>
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<td></td>
<td><strong>Declare 1.25 CS</strong></td>
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<tr>
<td></td>
<td><strong>indoxacarb</strong></td>
<td>9.2-11.3 oz</td>
<td>0.09-0.11</td>
<td>11-14</td>
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<td><strong>Steward 1.25 SC</strong></td>
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<td><strong>lambda-cyhalothrin (R)</strong></td>
<td>0.96-1.6 oz</td>
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<td>80-133</td>
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<tr>
<td></td>
<td><strong>Warrior II 2.08 CS</strong></td>
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<tr>
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<td><strong>zeta-cypermethrin 0.8 EC (R)</strong></td>
<td>1.28-4.0 oz</td>
<td>0.008-0.025</td>
<td>32-100</td>
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<tr>
<td></td>
<td><strong>Mustang Maxx/Respect</strong></td>
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<tr>
<td><strong>Corn Earworm</strong></td>
<td><strong>beta-cyfluthrin (R)</strong></td>
<td>1.8-2.4 oz</td>
<td>0.014-0.019</td>
<td>53.3-71</td>
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<td><strong>Baythroid XL 1 EC</strong></td>
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<td><strong>bifenthrin (R)</strong></td>
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<tr>
<td></td>
<td><strong>carbaryl</strong></td>
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<td><strong>Sevin 80 S</strong></td>
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<td><strong>Sevin XLR or 4 F</strong></td>
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<td></td>
<td><strong>chlorantraniliprole</strong></td>
<td>14-20 oz</td>
<td>0.047-0.067</td>
<td>6.4-9</td>
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<td>1</td>
<td>4</td>
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<td></td>
<td><strong>Prevathon 0.43 SC</strong></td>
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<td><strong>esfenvalerate (R)</strong></td>
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<td><strong>Asana XL 0.66 EC</strong></td>
<td>2.9-5.8 oz</td>
<td>0.015-0.03</td>
<td>22-44</td>
<td></td>
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<td><em>(See Generic Insecticides)</em></td>
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<td>0.01-0.015</td>
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<td>14</td>
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<td></td>
<td>Declare 1.25 CS</td>
<td></td>
<td>1.02-1.54 oz</td>
<td>0.09-0.11</td>
<td></td>
<td>14</td>
<td>14</td>
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<tr>
<td></td>
<td>indoxacarb</td>
<td>Steward 1.25 SC</td>
<td>9.2-11.3 oz</td>
<td>0.02-0.03</td>
<td>DO NOT graze or feed vines to livestock.</td>
<td>14</td>
<td>12</td>
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<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td>1.28-1.92 oz</td>
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<tr>
<td></td>
<td>lambda-cyhalothrin + chlorantraniliprole (R)</td>
<td>Besiege 1.25 SC</td>
<td>6-10 oz</td>
<td>0.06-0.1</td>
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<tr>
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<td>methomyl (R)</td>
<td>Lannate 2.4 LV</td>
<td>0.75-3 pt</td>
<td>0.22-0.9</td>
<td>DO NOT graze or feed vines to livestock.</td>
<td>21</td>
<td>48</td>
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<tr>
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<td>methoxyfenozide + spinetoram</td>
<td>Intrepid Edge 3 F</td>
<td>4-8 oz</td>
<td>0.0975-0.187</td>
<td>DO NOT graze or feed vines to livestock.</td>
<td>7</td>
<td>4</td>
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<td>methoxyfenozide + spinetoram</td>
<td>Intrepid 2 F</td>
<td>3.2-4.0 oz</td>
<td>0.02-0.025</td>
<td>DO NOT graze or feed vines to livestock.</td>
<td>7</td>
<td>4</td>
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<tr>
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<td>methoxyfenozide + spinetoram</td>
<td>Intrepid Edge 3 F</td>
<td>4-8 oz</td>
<td>0.0975-0.187</td>
<td>DO NOT graze or feed vines to livestock.</td>
<td>7</td>
<td>4</td>
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<tr>
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<td>zeta-cypermethrin 0.8 EC (R)</td>
<td>Mustang Maxx, Respect</td>
<td>3.2-4.0 oz</td>
<td>0.02-0.025</td>
<td>DO NOT graze or feed vines to livestock.</td>
<td>7</td>
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<tr>
<td><strong>Beet Armyworm</strong></td>
<td>chlorantraniliprole</td>
<td>Prevathon 0.43 SC</td>
<td>14-20 oz</td>
<td>0.047-0.067</td>
<td></td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>indoxacarb</td>
<td>Steward 1.25 SC</td>
<td>9.2-11.3 oz</td>
<td>0.09-0.11</td>
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<td>14</td>
<td>12</td>
</tr>
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<td></td>
<td>lambda-cyhalothrin + chlorantraniliprole (R)</td>
<td>Besiege 1.25 SC</td>
<td>10 oz</td>
<td>0.1</td>
<td>DO NOT graze or feed vines to livestock.</td>
<td>14</td>
<td>24</td>
</tr>
<tr>
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<td>methomyl (R)</td>
<td>Lannate 2.4 LV</td>
<td>1.5-3.0 pt</td>
<td>0.45-0.9</td>
<td>DO NOT graze or feed vines to livestock.</td>
<td>21</td>
<td>48</td>
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<tr>
<td></td>
<td>methoxyfenozide</td>
<td>Intrepid 2 F</td>
<td>6-10 oz</td>
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<td>4</td>
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<td></td>
<td>methoxyfenozide + spinetoram</td>
<td>Intrepid Edge 3 F</td>
<td>4-8 oz</td>
<td>0.0975-0.187</td>
<td>DO NOT graze or feed vines to livestock.</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>spinosad</td>
<td>Blackhawk</td>
<td>1.7-3.3 oz</td>
<td>0.038-0.075</td>
<td></td>
<td>14</td>
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</tr>
<tr>
<td><strong>Fall Armyworm</strong></td>
<td>carbaryl</td>
<td>Sevin XLR or 4 F</td>
<td>1.0-1.5 qt</td>
<td>1.0-1.5</td>
<td>DO NOT apply during bloom.</td>
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<td>12</td>
</tr>
<tr>
<td></td>
<td>carbayl</td>
<td>Sevin 80 S</td>
<td>1.25-1.875 lb</td>
<td>1.25-1.875 lbs</td>
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<td>12</td>
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<tr>
<td></td>
<td>chlorantraniliprole</td>
<td>Prevathon 0.43 SC</td>
<td>14-20 oz</td>
<td>0.047-0.067</td>
<td></td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Insect</td>
<td>Insecticide</td>
<td>Formulation/Acre</td>
<td>Lb ai/Acre</td>
<td>Acres/Gallon</td>
<td>Application/Comments</td>
<td>Minimum Days From Last Application to Harvest</td>
<td>Restricted Entry Interval (hours)</td>
</tr>
<tr>
<td>------------------------</td>
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<tr>
<td><strong>Fall Armyworm</strong></td>
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<tr>
<td>Consider treatment</td>
<td>indoaxacarb</td>
<td>Steward 1.25 SC</td>
<td>9.2-11.3 oz</td>
<td>0.09-0.11</td>
<td></td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>when total worms</td>
<td>lambda-cyhalothrin +</td>
<td>Besiege 1.25 SC</td>
<td>6-10 oz</td>
<td>0.06-0.1</td>
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<td>14</td>
<td>24</td>
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<tr>
<td>exceed 4 per row</td>
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<td></td>
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<tr>
<td>foot and foliage loss</td>
<td>methomyl (R)</td>
<td>Lannate 2.4 LV</td>
<td>0.75-3 pt</td>
<td>0.22-0.9</td>
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<tr>
<td>exceeds 15%.</td>
<td>methoxyfenozide + spinetoram</td>
<td>Intrepid Edge 3 F</td>
<td>4-8 oz</td>
<td>0.0975-0.187</td>
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<td>7</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>spinosad</td>
<td></td>
<td>1.7-3.3 oz</td>
<td>0.038-0.075</td>
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<td><strong>Velvetbean</strong></td>
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</tr>
<tr>
<td>Caterpillar</td>
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<tr>
<td>Consider treatment</td>
<td>beta-cyfluthrin (R)</td>
<td>Baythroid XL 1 EC</td>
<td>1.0-1.8 oz</td>
<td>0.008-0.014</td>
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<tr>
<td>when total foliage</td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>2.1-6.4 oz</td>
<td>0.033-0.1</td>
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<tr>
<td>loss exceeds 15% and</td>
<td>carbaryl</td>
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<tr>
<td>worms are present.</td>
<td>Sevin 80 S</td>
<td></td>
<td>1.25 lb</td>
<td>0.015-0.03</td>
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<tr>
<td></td>
<td>Sevin XLR or 4 F</td>
<td></td>
<td>2 pt</td>
<td>0.047-0.067</td>
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<td></td>
<td>chlorantraniliprole</td>
<td>Prevathon 0.43 SC</td>
<td>14-20 oz</td>
<td>0.015-0.03</td>
<td></td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>esfenvalerate (R)</td>
<td>Asana XL 0.66 EC</td>
<td>2.9-5.8 oz</td>
<td>0.015-0.03</td>
<td></td>
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<tr>
<td></td>
<td>(See Generic Insecticides)</td>
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<tr>
<td></td>
<td>gamma-cyhalothrin (R)</td>
<td>Proaxis 0.5 CS</td>
<td>1.92-3.2 oz</td>
<td>0.0075-0.0125</td>
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<td>14</td>
<td>24</td>
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<tr>
<td></td>
<td></td>
<td>Declare 1.25 CS</td>
<td>0.77-1.28 oz</td>
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<td>14</td>
<td>24</td>
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<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td>0.96-1.6 oz</td>
<td>0.015-0.025</td>
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<td>24</td>
</tr>
<tr>
<td></td>
<td>(See Generic Insecticides)</td>
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</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin +</td>
<td>Besiege 1.25 SC</td>
<td>6-10 oz</td>
<td>0.06-0.1</td>
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<td>24</td>
</tr>
<tr>
<td>chlorantraniliprole (R)</td>
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<tr>
<td></td>
<td>methoxyfenozide + spinetoram</td>
<td>Intrepid Edge 3 F</td>
<td>4-8 oz</td>
<td>0.0975-0.187</td>
<td></td>
<td>7</td>
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</tr>
<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R)</td>
<td>Mustang Maxx,Respect</td>
<td>3.2-4.0 oz</td>
<td>0.02-0.025</td>
<td></td>
<td>7</td>
<td>12</td>
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</table>
## PEANUT INSECT CONTROL

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Red-Necked Peanut Worm</strong></td>
<td><strong>Treat when 50% of plants are infested.</strong></td>
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<tr>
<td></td>
<td>bifenfrin (R)</td>
<td>2.1-6.4 oz</td>
<td>0.033-0.1</td>
<td>20-61</td>
<td>DO NOT graze or feed vines to livestock.</td>
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<tr>
<td></td>
<td>Brigade 2 EC</td>
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<td>(See Generic Insecticides)</td>
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<tr>
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<td>esfenvalerate (R)</td>
<td>2.9-5.8 oz</td>
<td>0.015-0.03</td>
<td>22-44</td>
<td>DO NOT graze or feed vines to livestock.</td>
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<tr>
<td></td>
<td>Asana XL 0.66 EC</td>
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<td>(See Generic Insecticides)</td>
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<tr>
<td></td>
<td>gamma-cyhalothrin (R)</td>
<td>1.92-3.2 oz</td>
<td>0.0075-0.0125</td>
<td>40-66.7</td>
<td>DO NOT graze or feed vines to livestock.</td>
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<td>24</td>
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<tr>
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<td>Proaxis 0.5 CS</td>
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<tr>
<td></td>
<td>Declare 1.25 CS</td>
<td>0.77-1.28 oz</td>
<td>0.015-0.025</td>
<td>80-133</td>
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</tr>
<tr>
<td></td>
<td>Warrior II 2.08 CS</td>
<td>0.96-1.6 oz</td>
<td>0.015-0.025</td>
<td>80-133</td>
<td></td>
<td>14</td>
<td>24</td>
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<tr>
<td></td>
<td>lambda-cyhalothrin + chlorantraniliprole (R)</td>
<td>0.06-0.1</td>
<td></td>
<td>13-21</td>
<td>DO NOT graze or feed vines to livestock.</td>
<td>14</td>
<td>24</td>
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<tr>
<td></td>
<td>Besiege 1.25 SC</td>
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<td>(See Generic Insecticides)</td>
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<tr>
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<td>methoxyfenozide + spinetoram</td>
<td>4-8 oz</td>
<td>0.0975-0.187</td>
<td>16-32</td>
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<td>4</td>
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<tr>
<td></td>
<td>Intrepid Edge 3 F</td>
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<td></td>
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<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R)</td>
<td>3.2-4.0 oz</td>
<td>0.02-0.025</td>
<td>32-40</td>
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<tr>
<td></td>
<td>Mustang Maxx/Respect</td>
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<td></td>
<td>DO NOT graze or feed vines to livestock.</td>
<td></td>
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<tr>
<td><strong>Lesser Cornstalk Borer, Southern Corn Rootworm</strong></td>
<td><strong>chlorpyrifos</strong></td>
<td></td>
<td>1-2</td>
<td></td>
<td></td>
<td>21</td>
<td>24</td>
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<tr>
<td></td>
<td>Lorsban 15 G at planting</td>
<td>7.5-15 oz banded/1,000 row feet</td>
<td></td>
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<td>DO NOT graze or feed vines to livestock.</td>
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<tr>
<td></td>
<td>Lorsban 15 G post planting</td>
<td>7.5-15 oz/1,000 row feet in 10&quot;-18&quot; band over fruiting zone</td>
<td></td>
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<tr>
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<td>lambda-cyhalothrin + chlorantraniliprole (R)</td>
<td>0.1</td>
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</tr>
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<td>Besiege 1.25 SC</td>
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<tr>
<td><strong>Spider Mite</strong></td>
<td><strong>bifenfrin (R)</strong></td>
<td>5.12-6.4 oz</td>
<td>0.08-0.1</td>
<td>25-60</td>
<td>DO NOT graze or feed vines to livestock.</td>
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<td>12</td>
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<tr>
<td></td>
<td>Brigade 2 EC</td>
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<td>(See Generic Insecticides)</td>
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<td>propargite</td>
<td>32 oz</td>
<td>1.64</td>
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<tr>
<td></td>
<td>Comite 6.55 EC</td>
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<td>(See Generic Insecticides)</td>
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<td></td>
<td>Omit 30 W</td>
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</table>

*DO NOT graze or feed vines to livestock.*
## RICE INSECTICIDE PERFORMANCE RATING, 2019

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Chemistry</th>
<th>Restricted Entry Interval (hours)</th>
<th>Restrict Ed Entry Use (R)</th>
<th>Chinch Bug</th>
<th>Fall Armyworm</th>
<th>True Armyworm</th>
<th>Short Horned Grasshopper</th>
<th>Rice Stink Bug</th>
<th>Rice Water Weevil (adult)</th>
<th>Rice Water Weevil (egg)</th>
<th>Midge Larvae</th>
<th>Rice Stalk Borer</th>
<th>Aphids (Greenbug, Oat Bird, Cherry Aphid)</th>
<th>Grape Colasps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cruiser</td>
<td>NEO</td>
<td>12</td>
<td>X</td>
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<td>Demecor X-100</td>
<td>DM</td>
<td>4</td>
<td>X</td>
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<td>NipsIt Inside</td>
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<td>Dimilin 2L</td>
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<td>Karate Z/Warrior</td>
<td>SyP</td>
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<tr>
<td>Mustang Maxx</td>
<td>SyP</td>
<td>12</td>
<td>X</td>
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<td>Prolex/Proaxis/Declare</td>
<td>SyP</td>
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<td>X</td>
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</tbody>
</table>

**Rating Scale:** 0 = no control, 10 = excellent

The performance ratings in the chart are for comparison purposes only and are not necessarily a measure of percent control. Shaded boxes indicate products recommended for specific pests in this guide.

### QUICK VIEW THRESHOLD GUIDE

#### Insect | Threshold | Scouting Procedure
--- | --- | ---
Chinch Bug | Treat when bugs are causing plant injury and bugs are present. | Check seedling rice, particularly fields bordering wheat.
Fall Armyworm, True Armyworm | Treat when 10 armyworms per 10 sweeps, or when considerable damage is detected early season. Late season treat when fall armyworms are damaging flag leaf. | Early season watch rice bordering wheat for migration of true armyworms into field (damage can occur quickly when armyworms move in).
Grasshopper | Treat when damage is evident. | Watch field borders, particularly near grassy areas.
Greenbug | 2 to 3 greenbugs per plant on 1- to 2-leaf stage rice. | General visual observation.
Stink Bug | 5 stink bugs per 10 sweeps during first 2 weeks of panicle emergence. 10 stink bugs per 10 sweeps after first 2 weeks of panicle emergence. Terminate insecticide applications at 60% hard dough. For more information see MP192, Rice Production Handbook. | Sample for stink bugs during the morning hours or late evening. Stink bug levels are difficult to estimate during high daytime temperatures.
Rice Water Weevil | Leaf Feeding Scar Method – Total Number Plants With Feeding Scars on New Leaves | Inspect the youngest leaf on 40 rice plants at each stop for adult feeding scars. Avoid areas with thin stand. DO NOT count older leaves with scars.

---

1. No decision
2. 11
3. 28
4. 44
5. 61
6. 78
7. 94
8. 111

---

Stop No. | Don't Treat – Stop Scouting When Total Is Less Than | No Decision – Keep Scouting When Total Is | Treat – Stop Scouting When Total Is More Than
--- | --- | --- | ---
1 | Between | Between | 40
2 | Between | Between | 56
3 | Between | Between | 72
4 | Between | Between | 89
5 | Between | Between | 105
6 | Between | Between | 122
7 | Between | Between | 139
8 | Between | Between | 156

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96
## RICE INSECT CONTROL

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (REI) Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chinch Bug</strong></td>
<td>carbaryl</td>
<td>Sevin 80 S</td>
<td>1.25-1.875 lb</td>
<td>1.0-1.5</td>
<td>DO NOT use prior to or within 15 days after propanil.</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sevin XLR</td>
<td>2-3 pt</td>
<td>2.7-4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlothianidin</td>
<td>Belay 2.13 F</td>
<td>4.5 oz</td>
<td>0.075</td>
<td>DO NOT apply after 3rd tiller initiation. DO NOT apply to rice that has NipIt Inside seed treatment. Hold water for 14 days after treatment.</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (R)</td>
<td>Proaxis 0.5 CS</td>
<td>3.2-5.12 oz</td>
<td>0.0125-0.02</td>
<td>DO NOT release flood water within 7 days after application.</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Declare 1.25 CS</td>
<td>1.28-2.05 oz</td>
<td>25-40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td>1.6-2.56 oz</td>
<td>0.025-0.04</td>
<td>DO NOT release flood water within 7 days after application.</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>(See Generic Insecticides)</td>
<td></td>
<td></td>
<td>50-80</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R)</td>
<td>Mustang Maxx, Respect</td>
<td>2.64-4 oz</td>
<td>0.0165-0.025</td>
<td>DO NOT release flood water within 7 days after application.</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td><strong>Fall Armyworm, True Armyworm</strong></td>
<td>gamma-cyhalothrin (R)</td>
<td>Proaxis 0.5 CS</td>
<td>3.2-5.12 oz</td>
<td>0.0125-0.02</td>
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<td>(See Generic Insecticides)</td>
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<td>50-80</td>
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<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R)</td>
<td>Mustang Maxx, Respect</td>
<td>3.2-4.0 oz</td>
<td>0.02-0.025</td>
<td>DO NOT release flood water within 7 days after application.</td>
<td>14</td>
<td>12</td>
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<tr>
<td><strong>Short-Horned Grasshopper</strong></td>
<td>gamma-cyhalothrin (R)</td>
<td>Proaxis 0.5 CS</td>
<td>3.2-5.12 oz</td>
<td>0.0125-0.02</td>
<td>DO NOT release flood water within 7 days after application.</td>
<td>21</td>
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</tr>
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<td></td>
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<td>Declare 1.25 CS</td>
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<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td>1.6-2.56 oz</td>
<td>0.025-0.04</td>
<td>DO NOT release flood water within 7 days after application.</td>
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<td>(See Generic Insecticides)</td>
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<td></td>
<td>50-80</td>
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</tr>
<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R)</td>
<td>Mustang Maxx, Respect</td>
<td>3.2-4.0 oz</td>
<td>0.02-0.025</td>
<td>DO NOT release flood water within 7 days after application.</td>
<td>14</td>
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</table>
## RICE INSECT CONTROL

<table>
<thead>
<tr>
<th>Insect Stink Bug</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
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<tbody>
<tr>
<td></td>
<td>carbaryl</td>
<td></td>
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<tr>
<td></td>
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<td></td>
<td>Sevin XLR</td>
<td>2-3 pt</td>
<td>2.7-4.0</td>
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<tr>
<td></td>
<td>dinotefuran</td>
<td></td>
<td>0.094-0.13</td>
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<td>Tenchu 20 SG</td>
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<td>malathion</td>
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<td>0.625-0.94</td>
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<td>Malathion 57% EC</td>
<td>1-1.5 pt</td>
<td>5.3-8.0</td>
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<td>24</td>
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<td>Warrior II 2.08 CS</td>
<td>1.6-2.56 oz</td>
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<td>zeta-cypermethrin 0.8 EC (R)</td>
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<td>12</td>
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<td>2.64-4.0 oz</td>
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<table>
<thead>
<tr>
<th>Rice Water Weevil (Adults)</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
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<tbody>
<tr>
<td></td>
<td>chlothianidin</td>
<td></td>
<td>0.075</td>
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<tr>
<td></td>
<td>Belay 2.13 F</td>
<td>4.5 oz</td>
<td>28.4</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>gamma-cyhalothrin (R)</td>
<td></td>
<td>0.0125-0.02</td>
<td></td>
<td>DO NOT release flood water within 7 days after application.</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Proaxis 0.5 CS</td>
<td>3.2-5.12 oz</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td></td>
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<td>1.28-2.05 oz</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td></td>
<td>0.025-0.04</td>
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<td>21</td>
<td>24</td>
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<tr>
<td></td>
<td>Warrior II 2.08 CS</td>
<td>1.6-2.56 oz</td>
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<tr>
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<td>(See Generic Insecticides)</td>
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<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R)</td>
<td></td>
<td>0.0165-0.025</td>
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<td></td>
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<td>2.64-4.0 oz</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Rice Water Weevil (Eggs)</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (REI) Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>diflubenzuron (R)</td>
<td></td>
<td>0.125-0.25</td>
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<td>DO NOT release flood water within 7 days after application.</td>
<td>21</td>
<td>24</td>
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<tr>
<td></td>
<td>Dimilin 2 L</td>
<td>12-16 fl oz</td>
<td>8.0-10.6</td>
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<tr>
<td></td>
<td>gamma-cyhalothrin (R)</td>
<td></td>
<td>0.0125-0.02</td>
<td></td>
<td>DO NOT release flood water within 7 days after application.</td>
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<td></td>
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<tr>
<td></td>
<td>Declare 1.25 CS</td>
<td>1.28-2.05 oz</td>
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<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td></td>
<td>0.025-0.04</td>
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<td>21</td>
<td>24</td>
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<tr>
<td></td>
<td>Warrior II 2.08 CS</td>
<td>1.6-2.56 oz</td>
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<tr>
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<td>(See Generic Insecticides)</td>
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<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R)</td>
<td></td>
<td>0.0165-0.025</td>
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<td>14</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Mustang Maxx, Respect</td>
<td>2.64-4.0 oz</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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1. During first 2 weeks of panicle emergence treat for 5 stink bugs per 10 sweeps, treat for 10 stink bugs per 10 sweeps thereafter. Terminate insecticide applications at 60% hard dough.

2. DO NOT release flood water within 7 days after application.
## RICE INSECT CONTROL

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<tr>
<th>Insect</th>
<th>Insecticide</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Rice Water Weevil</strong> (Larvae)</td>
<td>chlorantraniliprole</td>
<td>1.5-6.0 oz/100 lb seed (see label)</td>
<td>0.06-0.08</td>
<td></td>
<td>Use only on dry-seeded rice. DO NOT spray crop with another neonicotinoid insecticide after using NipsIt Inside. DO NOT use near fish or crawfish farms.</td>
<td>4</td>
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</tr>
<tr>
<td></td>
<td>Dermacor X-100</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>clothianidin</td>
<td>1.92 oz/100 lb seed</td>
<td>0.075/100 lb seed</td>
<td></td>
<td>Use only on dry-seeded rice. DO NOT spray crop with another neonicotinoid insecticide after using NipsIt Inside. DO NOT use near fish or crawfish farms.</td>
<td>12</td>
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<tr>
<td></td>
<td>NipsIt Inside 5 FS</td>
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<tr>
<td></td>
<td>thiamethoxam</td>
<td>0.03 mg ai/seed</td>
<td></td>
<td></td>
<td>DO NOT plant or sow Cruiser-treated seed by aerial application. Cruiser is NOT labeled for use in water-seeded rice. DO NOT use treated fields for aquaculture of edible fish or crustaceans. DO NOT exceed 120 lb seed per acre.</td>
<td>12</td>
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<tr>
<td></td>
<td>Cruiser 5 FS</td>
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<tr>
<td><strong>Midge Larvae</strong></td>
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<td>There are currently no insecticides available for midge control in rice.</td>
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<tr>
<td><strong>Rice Stalk Borer</strong></td>
<td>gamma-cyhalothrin (R)</td>
<td>3.2-5.12 oz</td>
<td>0.0125-0.02</td>
<td>25-40</td>
<td>DO NOT release flood water within 7 days after application.</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Proaxis 0.5 CS</td>
<td>1.28-2.05 oz</td>
<td></td>
<td>62-100</td>
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<td></td>
<td>Declare 1.25 CS</td>
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<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>1.92-2.56 oz</td>
<td>0.03-0.04</td>
<td>50-67</td>
<td>DO NOT release flood water within 7 days after application.</td>
<td>21</td>
<td>24</td>
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<tr>
<td></td>
<td>Warrior II 2.08 CS (See Generic Insecticides)</td>
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<tr>
<td><strong>Aphids, Greenbug, Birdcherry-Oat Aphid</strong></td>
<td>chlothianidin</td>
<td>4.5 oz</td>
<td>0.075</td>
<td>28.4</td>
<td>DO NOT apply after 3rd tiller initiation. DO NOT apply to rice that has NipsIt Inside seed treatment. Hold water for 14 days after treatment.</td>
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<tr>
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<td>Belay 2.13F</td>
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<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>1.6-2.56 oz</td>
<td>0.025-0.04</td>
<td>50-80</td>
<td>DO NOT release flood water within 7 days after application.</td>
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<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R)</td>
<td>3.2-4.0 oz</td>
<td>0.02-0.025</td>
<td>32-40</td>
<td>DO NOT release flood water within 7 days after application.</td>
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<td></td>
<td>Mustang Maxx, Respect</td>
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</tr>
<tr>
<td><strong>Grape Colaspis</strong></td>
<td>thiamethoxam</td>
<td>0.03 mg ai/seed</td>
<td></td>
<td></td>
<td>DO NOT plant or sow Cruiser-treated seed by aerial application. Cruiser is NOT labeled for use in water-seeded rice. DO NOT use treated fields for aquaculture of edible fish or crustaceans. DO NOT exceed 120 lb seed per acre.</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cruiser 5 FS</td>
<td>0.03 mg ai/seed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>clothianidin</td>
<td>1.92 oz/100 lb seed</td>
<td>0.075/100 lb seed</td>
<td></td>
<td>Use only on dry-seeded rice. DO NOT spray crop with another neonicotinoid insecticide after using NipsIt Inside. DO NOT use near fish or crawfish farms.</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NipsIt Inside 5 FS</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
### SMALL GRAIN INSECTICIDE PERFORMANCE RATING, 2019
*(Barley, Wheat, Oats and Rye)*

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Chemistry</th>
<th>Restricted Entry Interval (hours)</th>
<th>Restricted Use (R)</th>
<th>Armyworm</th>
<th>Greenbug/Aphid</th>
<th>Grasshopper</th>
<th>Hessian Fly</th>
<th>Cereal Leaf Beetle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cruiser</td>
<td>NEO</td>
<td>12</td>
<td></td>
<td></td>
<td>8</td>
<td></td>
<td>7</td>
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<tr>
<td>Gaucho/Axcess/Senator</td>
<td>NEO</td>
<td>12</td>
<td></td>
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<td>8</td>
<td></td>
<td>7</td>
<td></td>
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<tr>
<td>NipsIt Inside</td>
<td>NEO</td>
<td>12</td>
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<td>7</td>
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<tr>
<td>Dimethoate</td>
<td>OP</td>
<td>48</td>
<td></td>
<td></td>
<td>7</td>
<td>6</td>
<td></td>
<td></td>
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<tr>
<td>Baythroid XL</td>
<td>SyP</td>
<td>12</td>
<td>X</td>
<td>8</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Lannate</td>
<td>Car</td>
<td>48</td>
<td>X</td>
<td>7</td>
<td>7</td>
<td>3</td>
<td></td>
<td>8</td>
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<tr>
<td>Malathion/Fyfanon</td>
<td>OP</td>
<td>12</td>
<td></td>
<td></td>
<td>6</td>
<td>6</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Mustang Maxx/Respect</td>
<td>SyP</td>
<td>12</td>
<td>X</td>
<td>8</td>
<td>8</td>
<td>7</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Proaxis/Declare</td>
<td>SyP</td>
<td>24</td>
<td>X</td>
<td>8</td>
<td>8</td>
<td>7</td>
<td></td>
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</tr>
<tr>
<td>Sevin</td>
<td>Car</td>
<td>12</td>
<td></td>
<td></td>
<td>6</td>
<td>0</td>
<td></td>
<td>7</td>
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<tr>
<td>Blackhawk</td>
<td>SP</td>
<td>4</td>
<td></td>
<td></td>
<td>7</td>
<td>0</td>
<td></td>
<td>2</td>
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<tr>
<td>Karate/Silencer/Lambda-Cy/Warrior</td>
<td>SyP</td>
<td>24</td>
<td>X</td>
<td>8</td>
<td>8</td>
<td>7</td>
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<tr>
<td>Transform</td>
<td>SX</td>
<td>24</td>
<td></td>
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<td></td>
<td>9</td>
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</tbody>
</table>

**Rating Scale:** 0 = no control, 10 = excellent

The performance ratings in the chart are for comparison purposes only and are not necessarily a measure of percent control. Shaded boxes indicate products recommended for specific pests in this guide.
# SMALL GRAIN INSECT CONTROL

## (Barley, Wheat, Oats and Rye)

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest (PHI)</th>
<th>Restricted Entry Interval (REI) Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Armyworm</strong></td>
<td>beta-cyfluthrin (R)</td>
<td>Baythroid XL 1 EC</td>
<td>1.0-1.8 oz</td>
<td>0.008-0.014</td>
<td>30 (grain)</td>
<td>3 (grazing)</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>carbaryl</td>
<td>1-2</td>
<td>0.008-0.014</td>
<td>71-128</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sevin XLR or 4F</td>
<td>1-2 qt</td>
<td>0.005-0.01</td>
<td>1-2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sevin 80 S</td>
<td>1.2-2.5</td>
<td>0.006-0.01</td>
<td>1-2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (R)</td>
<td>Proaxis 0.5 CS</td>
<td>2.56-3.84 oz</td>
<td>0.01-0.015</td>
<td>33.3-50</td>
<td>NOT labeled on barely, oats or rye.</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Declare 1.25 CS</td>
<td>1.02-1.54 oz</td>
<td>0.015-0.025</td>
<td>67-100</td>
<td>NOT labeled on barely, oats or rye.</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td>1.28-1.92 oz</td>
<td>0.015-0.025</td>
<td>67-100</td>
<td>NOT labeled on barely, oats or rye.</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>methomyl (R)</td>
<td>Lannate 2.4 LV</td>
<td>0.75-1.5 pt</td>
<td>0.22-0.45</td>
<td>5.3-10.6</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>spinosad</td>
<td>Blackhawk</td>
<td>1.7-3.3 oz</td>
<td>0.038-0.075</td>
<td></td>
<td></td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R)</td>
<td>Mustang Maxx, Respect</td>
<td>1.76-4.0 oz</td>
<td>0.011-0.025</td>
<td>32-73</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest (PHI)</th>
<th>Restricted Entry Interval (REI) Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Army Cutworm</strong></td>
<td>dimethoate</td>
<td>Dimethoate 4 E</td>
<td>0.75 pt</td>
<td>0.375</td>
<td>10.6</td>
<td>Labeled on wheat only.</td>
<td>35 (grain)</td>
</tr>
<tr>
<td></td>
<td>malathion</td>
<td>Fyfanon 5 lb</td>
<td>1.5 pt</td>
<td>5.3</td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>methomyl (R)</td>
<td>Lannate 2.4 LV</td>
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<td>0.22-0.45</td>
<td>5.3-10.6</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (R)</td>
<td>Baythroid XL 1 EC</td>
<td>1.8-2.4 oz</td>
<td>0.014-0.019</td>
<td>53-71</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (R)</td>
<td>Proaxis 0.5 CS</td>
<td>2.56-3.84 oz</td>
<td>0.01-0.015</td>
<td>33.3-50</td>
<td>NOT labeled on barely, oats or rye.</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Declare 1.25 CS</td>
<td>1.02-1.54 oz</td>
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<td>67-100</td>
<td>NOT labeled on barely, oats or rye.</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td>1.28-1.92 oz</td>
<td>0.015-0.025</td>
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<td>NOT labeled on barely, oats or rye.</td>
<td>14</td>
</tr>
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<td></td>
<td>methomyl (R)</td>
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<tr>
<td></td>
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<td>10.6</td>
<td>Labeled on wheat only.</td>
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<td></td>
<td>malathion</td>
<td>Fyfanon 5 lb</td>
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<td>5.3</td>
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<td>7</td>
</tr>
<tr>
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<td>methomyl (R)</td>
<td>Lannate 2.4 LV</td>
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<td></td>
<td>gamma-cyhalothrin (R)</td>
<td>Proaxis 0.5 CS</td>
<td>2.56-3.84 oz</td>
<td>0.01-0.015</td>
<td>33.3-50</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Declare 1.25 CS</td>
<td>1.02-1.54 oz</td>
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<td>NOT labeled on barely, oats or rye.</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td>1.28-1.92 oz</td>
<td>0.015-0.025</td>
<td>67-100</td>
<td>NOT labeled on barely, oats or rye.</td>
<td>14</td>
</tr>
</tbody>
</table>

## Greenbug and Other Aphids

**Barley Yellow Dwarf Virus (BYD):**
The most effective method of preventing BYD is to avoid planting early, which increases the risk of developing fall BYD infections. If planting early, using an insecticide seed treatment or foliar application in late fall or early spring may reduce incidence of BYD.

<table>
<thead>
<tr>
<th>Plant Height</th>
<th>Linear Foot of Drill</th>
<th>Number per Plant Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-6 inches</td>
<td>50</td>
<td>35 (grain)</td>
</tr>
<tr>
<td>6-10 inches</td>
<td>200</td>
<td>7 (grain)</td>
</tr>
<tr>
<td>10-20 inches</td>
<td>300</td>
<td>14 (grain)</td>
</tr>
<tr>
<td>30+ inches</td>
<td>800</td>
<td>7 (grazing)</td>
</tr>
</tbody>
</table>

**Greenbug Treatment Level:**

- If blooming vegetation is present 12 feet out from the downwind edge of the field, a 12-foot in-field buffer must be observed.
- Not labeled on barely, oats or rye.
# SMALL GRAIN INSECT CONTROL

**(Barley, Wheat, Oats and Rye)**

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest (PHI)</th>
<th>Restricted Entry Interval (REI) Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grasshopper</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treat when damage is occurring.</td>
<td>beta-cyfluthrin (R) Baythroid XL 1 EC</td>
<td>1.8-2.4 oz</td>
<td>0.014-0.019</td>
<td>53-71</td>
<td></td>
<td>30 (grain)</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>dimethoate Dimethoate 4 E</td>
<td>0.75 pt</td>
<td>0.375</td>
<td>10.6</td>
<td></td>
<td>35 (grain)</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (R) Proaxis 0.5 CS Declare 1.25 CS</td>
<td>2.56-3.84 oz</td>
<td>0.01-0.015</td>
<td>33-50</td>
<td>NOT labeled on barely, oats or rye.</td>
<td>14</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R) Warrior II 2.08 CS (See Generic Insecticides)</td>
<td>1.28-1.92 fl oz</td>
<td>0.015-0.025</td>
<td>67-100</td>
<td></td>
<td>14</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>malathion Fyfanon 5 EC (See Generic Insecticides)</td>
<td>1.5 pt</td>
<td>1</td>
<td>5.3</td>
<td></td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R) Mustang Maxx, Respect</td>
<td>3.2-4.0 oz</td>
<td>0.02-0.025</td>
<td>32-40</td>
<td></td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td><strong>Hessian Fly (Wheat)</strong></td>
<td>clothianidin NipsIt Inside 5 FS</td>
<td>1.79 oz/100 lb</td>
<td>0.008-0.014</td>
<td>71-128</td>
<td>Preventative treatment for Hessian fly is not typically recommended in Arkansas. Hessian fly can be controlled by cultural methods: a. Burn wheat stubble and disc under. b. Destroy volunteer wheat. c. Plant late in fall, mid October or early November. d. Plant resistant varieties. e. Consider a seed treatment if wheat is planted early.</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>imidacloprid Gaucho 600 F Axxcess 5 F Senator 5 FS</td>
<td>1.2-2.4 oz/100 lb</td>
<td>0.75-1.33 oz/100 lb</td>
<td>0.011-0.025</td>
<td>32-73</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam Cruiser 5 FS</td>
<td>1.2-2.4 oz/100 lb</td>
<td>0.75-1.33 oz/100 lb</td>
<td>0.011-0.025</td>
<td>32-73</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td><strong>Cereal Leaf Beetle</strong></td>
<td>beta-cyfluthrin (R) Baythroid XL 1 EC</td>
<td>1.0-1.8 oz</td>
<td>0.008-0.014</td>
<td>71-128</td>
<td></td>
<td>30 (grain)</td>
<td>12</td>
</tr>
<tr>
<td>Treat when an average of 1 beetle per stem is found.</td>
<td>gamma-cyhalothrin (R) Proaxis 0.5 CS Declare 1.25 CS</td>
<td>2.56-3.84 oz</td>
<td>0.01-0.015</td>
<td>33-50</td>
<td>NOT labeled on barely, oats or rye.</td>
<td>14</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R) Warrior II 2.08 CS (See Generic Insecticides)</td>
<td>1.28-1.92 fl oz</td>
<td>0.015-0.025</td>
<td>67-100</td>
<td></td>
<td>14</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>methomyl (R) Lannate 2.4 LV</td>
<td>0.75-1.5 pt</td>
<td>0.22-0.45</td>
<td>5.3-10.6</td>
<td></td>
<td>7 (grain)</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R) Mustang Maxx, Respect</td>
<td>1.76-4.0 oz</td>
<td>0.011-0.025</td>
<td>32-73</td>
<td></td>
<td>14</td>
<td>12</td>
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</table>
### GRAIN SORGHUM INSECTICIDE PERFORMANCE RATING, 2019

<table>
<thead>
<tr>
<th>Insect</th>
<th>Chemistry</th>
<th>Restricted Entry Interval (hours)</th>
<th>Restricted Use (R)</th>
<th>Chinch Bug</th>
<th>Sorghum Webworm</th>
<th>Corn Earworm</th>
<th>Fall Armyworm</th>
<th>Fire Ants</th>
<th>Greenbug/Yellow Sugarcane Aphid/ Corn Leaf Aphid</th>
<th>Sugarcane Aphid</th>
<th>Sorghum Midge</th>
<th>Stink Bug</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cruiser</strong></td>
<td>NEO</td>
<td>12</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
<td>7</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gaucho/Axcess/Senator</strong></td>
<td>NEO</td>
<td>12</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
<td>7</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>NipSil Inside/Poncho</strong></td>
<td>NEO</td>
<td>12</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7</td>
<td>8</td>
<td>8</td>
<td></td>
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</tr>
<tr>
<td><strong>Asana XL/Adjourn</strong></td>
<td>SyP</td>
<td>12</td>
<td>X</td>
<td>7</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>8</td>
<td>0</td>
<td>8</td>
<td>7</td>
<td></td>
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<tr>
<td><strong>Baythroid XL</strong></td>
<td>SyP</td>
<td>12</td>
<td>X</td>
<td>7</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>8</td>
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<td>7</td>
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<td><strong>Belt</strong></td>
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</tr>
<tr>
<td><strong>Besiege</strong></td>
<td>DM+SyP</td>
<td>24</td>
<td>X</td>
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<tr>
<td><strong>Blackhawk</strong></td>
<td>SP</td>
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<tr>
<td><strong>Dimethoate</strong></td>
<td>OP</td>
<td>48</td>
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<td></td>
<td></td>
<td>5</td>
<td>4</td>
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<tr>
<td><strong>Karate Z/Silencer/Lambda-Cy/Warrior</strong></td>
<td>SyP</td>
<td>24</td>
<td>X</td>
<td>7</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>8</td>
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<td><strong>Heligen</strong></td>
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<tr>
<td><strong>Lannate</strong></td>
<td>Car</td>
<td>48</td>
<td>X</td>
<td>5</td>
<td>8</td>
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<td>7</td>
<td>3</td>
<td>6</td>
<td>5</td>
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<tr>
<td><strong>Lorsban/Chlorpyrifos/Nufos</strong></td>
<td>OP</td>
<td>24</td>
<td>X</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>7</td>
<td>7</td>
<td>8</td>
<td>4</td>
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<td>5</td>
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<tr>
<td><strong>Mustang Maxx/Respect</strong></td>
<td>SyP</td>
<td>12</td>
<td>X</td>
<td>7</td>
<td>5</td>
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<td><strong>Prevathon</strong></td>
<td>DM</td>
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<tr>
<td><strong>Prolex/Declare</strong></td>
<td>SyP</td>
<td>24</td>
<td>X</td>
<td>7</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>8</td>
<td>0</td>
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<tr>
<td><strong>Sevin</strong></td>
<td>Car</td>
<td>12</td>
<td></td>
<td></td>
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<td>7</td>
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<td>6</td>
<td>7</td>
<td>5</td>
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<tr>
<td><strong>Sivanto</strong></td>
<td>BU</td>
<td>4</td>
<td></td>
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<td>8</td>
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</tbody>
</table>

**Rating Scale:** 0 = no control, 10 = excellent
Shaded boxes indicate products recommended for specific pests in this guide.

The performance ratings in the chart are for comparison purposes only and are not necessarily a measure of percent control.

### QUICK-VIEW THRESHOLD GUIDE

<table>
<thead>
<tr>
<th>Insect</th>
<th>Threshold</th>
<th>Scouting Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugarcane Aphid</td>
<td>25% infestation with at least 50 aphids per leaf</td>
<td>Scout field edges first – watch closely for expanding infestations</td>
</tr>
<tr>
<td>Whorl Feeders</td>
<td>3-6 larvae per whorl</td>
<td>Examine 25 plants in 4 spots (100/field)</td>
</tr>
<tr>
<td>Chinch Bug</td>
<td>When stand is threatened</td>
<td>Watch for yellowing/reddening and/or twisting of leaves</td>
</tr>
<tr>
<td></td>
<td>Plants up to 6 inches – visible damage with colonies present</td>
<td>Check under leaf sheath near soil line for chinch bugs</td>
</tr>
<tr>
<td>Greenbug</td>
<td>6 inches to preboot – treat before entire leaves die</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Preboot to hard dough – treat when 2 or more entire leaves die</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Examine 25 plants in 4 spots (100/field)</td>
<td></td>
</tr>
<tr>
<td>Yellow Sugarcane Aphid</td>
<td>1 aphid per seedling</td>
<td></td>
</tr>
<tr>
<td>Sorghum Midge</td>
<td>1 adult midge per head when 25%-30% of plants are flowering</td>
<td></td>
</tr>
<tr>
<td>Corn Earworm/Fall Armyworm</td>
<td>1 larve 1/2-inch long or longer per head</td>
<td></td>
</tr>
<tr>
<td>Sorghum Webworm</td>
<td>5 larvae per head</td>
<td></td>
</tr>
<tr>
<td>Stink Bug</td>
<td>5 per head from flowering to soft dough</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16 per head during hard dough</td>
<td></td>
</tr>
</tbody>
</table>
## GRAIN SORGHUM INSECT CONTROL

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (REI) Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Soil Pests</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Seed Corn Maggot, White Grubs</td>
<td>clothianidin Poncho 600</td>
<td>5.1-6.4 oz/100 lb seed</td>
<td>5.1-6.4</td>
<td></td>
<td></td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NipsIt Inside 5 F</td>
<td>5.1-6.4 oz/100 lb seed</td>
<td>5.1-6.4</td>
<td></td>
<td></td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Wireworms, Southern Corn Rootworm</td>
<td>imidacloprid Gauch 5 FS</td>
<td>6.4 oz/100 lb seed</td>
<td>6.4 oz/100</td>
<td></td>
<td>Do not graze or feed to livestock within 45 days of planting.</td>
<td>12</td>
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</tr>
<tr>
<td></td>
<td>Axcess 5 FS</td>
<td>6.4 oz/100 lb seed</td>
<td>6.4 oz/100</td>
<td></td>
<td></td>
<td>12</td>
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<tr>
<td></td>
<td>Senator 5 FS</td>
<td>6.4 oz/100 lb seed</td>
<td>6.4 oz/100</td>
<td></td>
<td></td>
<td>12</td>
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</tr>
<tr>
<td></td>
<td>thiamethoxam Cruiser 5 FS</td>
<td>5.1-7.6 oz/100 lb seed</td>
<td>5.1-7.6</td>
<td></td>
<td></td>
<td>12</td>
<td></td>
</tr>
<tr>
<td><strong>Chinch Bug</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On seedling grain sorghum (6&quot; or less), apply foliar sprays when stand is threatened. On taller plants, apply controls when immature and adult bugs infest 75% of the plants.</td>
<td>clothianidin Poncho 600</td>
<td>5.1-6.4 oz/100 lb seed</td>
<td>5.1-6.4</td>
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<td>12</td>
<td></td>
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<tr>
<td></td>
<td>NipsIt Inside 5 F</td>
<td>5.1-6.4 oz/100 lb seed</td>
<td>5.1-6.4</td>
<td></td>
<td></td>
<td>12</td>
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<tr>
<td></td>
<td>imidacloprid Gauch 5 FS</td>
<td>6.4 oz/100 lb seed</td>
<td>6.4 oz/100</td>
<td></td>
<td>Do not graze or feed to livestock within 45 days of planting.</td>
<td>12</td>
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<tr>
<td></td>
<td>Axcess 5 FS</td>
<td>6.4 oz/100 lb seed</td>
<td>6.4 oz/100</td>
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<td>12</td>
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<tr>
<td></td>
<td>Senator 5 FS</td>
<td>6.4 oz/100 lb seed</td>
<td>6.4 oz/100</td>
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<td></td>
<td>12</td>
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<tr>
<td></td>
<td>thiamethoxam Cruiser 5 FS</td>
<td>5.1-7.6 oz/100 lb seed</td>
<td>5.1-7.6</td>
<td></td>
<td></td>
<td>12</td>
<td></td>
</tr>
<tr>
<td><strong>Foliar-Applied Treatments:</strong></td>
<td>beta-cyfluthrin (R) Baythroid XL 1 EC</td>
<td>2.0-2.8 oz</td>
<td>0.019-0.022</td>
<td>45.7-98.5</td>
<td>Use 20-30 gal of water per acre. Direct sprays toward infested areas.</td>
<td>14</td>
<td>12</td>
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<tr>
<td></td>
<td>carbaryl Sevin 80 S</td>
<td>1.25-2.5 lb</td>
<td>1.0-2.0</td>
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<td></td>
<td>21 (grain)</td>
<td>14 (forage)</td>
</tr>
<tr>
<td></td>
<td>esfenvalerate (R) Asana XL 0.66 EC</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td>13-22</td>
<td></td>
<td>21</td>
<td>12</td>
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<tr>
<td>(See Generic Insecticides)</td>
<td>gamma-cyhalothrin 1.25 CS (R) Prelex 0.5 CS</td>
<td>3.84 oz</td>
<td>0.015</td>
<td>33</td>
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<td></td>
<td>Declar 1.25 CS</td>
<td>1.54 oz</td>
<td>83</td>
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<td>(See Generic Insecticides)</td>
<td>lambda-cyhalothrin (R) Warrior II 2.08 CS</td>
<td>1.92 oz</td>
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<td>zeta-cypermethrin 0.8 EC (R) Mustang Maxx Respect</td>
<td>3.2-4.0 oz</td>
<td>0.02-0.025</td>
<td>32-40</td>
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<td>14 (grain &amp; forage)</td>
<td>45 (fodder)</td>
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<tr>
<td><strong>Sugarcane Aphid</strong></td>
<td>At Planting Treatments: clothianidin Poncho 600</td>
<td>5.1-6.4 oz/100 lb seed</td>
<td>5.1-6.4</td>
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<td></td>
<td>12</td>
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<tr>
<td></td>
<td>NipsIt Inside 5 F</td>
<td>5.1-6.4 oz/100 lb seed</td>
<td>5.1-6.4</td>
<td></td>
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<tr>
<td></td>
<td>imidacloprid Gauch 5 FS</td>
<td>6.4 oz/100 lb seed</td>
<td>6.4 oz/100</td>
<td></td>
<td>Do not graze or feed to livestock within 45 days of planting.</td>
<td>12</td>
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<tr>
<td></td>
<td>Axcess 5 FS</td>
<td>6.4 oz/100 lb seed</td>
<td>6.4 oz/100</td>
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<td>12</td>
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<tr>
<td></td>
<td>Senator 5 FS</td>
<td>6.4 oz/100 lb seed</td>
<td>6.4 oz/100</td>
<td></td>
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<td>12</td>
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<tr>
<td></td>
<td>thiamethoxam Cruiser 5 FS</td>
<td>5.1 oz/100 lb seed</td>
<td>5.1 oz/100</td>
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<tr>
<td><strong>Foliar-Applied Treatments:</strong></td>
<td>flupyradifurone Sivanto 1.67 SL</td>
<td>4.0-7.0 oz</td>
<td>0.052-0.09</td>
<td>18.3-32</td>
<td>DO NOT apply more than 28 oz per acre per season.</td>
<td>14 (grain)</td>
<td>7 (forage)</td>
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</table>
# Grain Sorghum Insect Control

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (REI) Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Greenbug, Corn Leaf Aphid, Yellow Sugarcane Aphid</strong></td>
<td>clothianidin</td>
<td>Poncho 600</td>
<td>5.1-6.4 oz/100 lb seed</td>
<td>Cruiser, Gaucho, Axcess, Senator, NipsIt and Poncho will give early-season suppression of chinch bugs and aphids.</td>
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<td></td>
<td>Poncho Inside 5 F</td>
<td>5.1-6.4 oz/100 lb seed</td>
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<td>Do not graze or feed to livestock within 45 days of planting.</td>
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<tr>
<td></td>
<td>Gaucho 5 FS</td>
<td>6.4 oz/100 lb seed</td>
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<td>12</td>
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<tr>
<td></td>
<td>Axcess 5 FS</td>
<td>6.4 oz/100 lb seed</td>
<td>12</td>
<td></td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Senator 5 FS</td>
<td>6.4 oz/100 lb seed</td>
<td>12</td>
<td></td>
<td>12</td>
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</tr>
<tr>
<td></td>
<td>thiamethoxam</td>
<td>Cruiser 5 FS</td>
<td>5.1-7.6 oz/100 lb seed</td>
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<tr>
<td><strong>Foliar-Applied Treatments:</strong></td>
<td>Gaucho 5 FS</td>
<td>6.4 oz/100 lb seed</td>
<td>12</td>
<td></td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>chlorpyrifos (R)</td>
<td>Lorsban Adv. 3.755 EC</td>
<td>0.5-1.0 pt</td>
<td>0.23-0.47</td>
<td>8-16</td>
<td>Apply controls when 25%-30% of heads have begun to flower (yellow anthers) and the number of midge adults found averages one per head. If adults are found in similar number in 3-5 days after treatment and sorghum is still blooming, treat again.</td>
<td>30</td>
<td>24</td>
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<tr>
<td></td>
<td></td>
<td>Dimethoate 4 E</td>
<td>0.5-1.0 pt</td>
<td>8-16</td>
<td></td>
<td>28</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dimethoate 2.67 E</td>
<td>0.75-1.5 pt</td>
<td>5.3-10.7</td>
<td></td>
<td>28</td>
<td>48</td>
</tr>
<tr>
<td>Sorghum Midge</td>
<td>beta-cyfluthrin (R)</td>
<td>Baythroid XL 1 EC</td>
<td>1.0-1.3 oz</td>
<td>45.7-80</td>
<td></td>
<td>14</td>
<td>12</td>
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<tr>
<td>chlorpyrifos (R)</td>
<td>Lorsban Adv. 3.755 EC</td>
<td>0.5 pt</td>
<td>0.23</td>
<td>16</td>
<td></td>
<td>30</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dimethoate 4 E</td>
<td>0.25-0.5 pt</td>
<td>16-32</td>
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<td>48</td>
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<tr>
<td></td>
<td>Dimethoate 2.67 E</td>
<td>6-12 oz</td>
<td>0.125-0.25</td>
<td>10.7-21.3</td>
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<tr>
<td>esfenvalerate (R)</td>
<td>Asana XL 0.66 EC</td>
<td>2.9-5.8 oz</td>
<td>0.015-0.03</td>
<td>22-44</td>
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<td></td>
<td></td>
<td>Prolex 0.5 CS</td>
<td>1.92-2.56 oz</td>
<td>50-66.7</td>
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<td>24</td>
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<tr>
<td></td>
<td></td>
<td>Declare 1.25 CS</td>
<td>0.77-1.02 oz</td>
<td>125-167</td>
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<td>21</td>
<td>24</td>
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<tr>
<td>spinosad</td>
<td></td>
<td>Blackhawk</td>
<td>1.5-3.3 oz</td>
<td>0.034-0.075</td>
<td></td>
<td>21</td>
<td>4</td>
</tr>
</tbody>
</table>

*GRAIN SORGHUM INSECT CONTROL*
## GRAIN SORGHUM INSECT CONTROL

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (REI) Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sorghum Midge (cont.)</strong></td>
<td>lambda-cyhalothrin (R) Warrior II 2.08 CS</td>
<td>0.96-1.28 oz</td>
<td>0.015-0.02</td>
<td>100-133</td>
<td></td>
<td>30</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin + chlorantraniliprole (R) Besiege</td>
<td>5-6 oz</td>
<td>0.05-0.06</td>
<td>21-25.6</td>
<td></td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>methomyl (R) Lannate 2.4 LV</td>
<td>0.75-1.5 pt</td>
<td>0.22-0.45</td>
<td>5.3-10.6</td>
<td></td>
<td>14</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R) Mustang Maxx, Respect</td>
<td>1.28-4.0 oz</td>
<td>0.008-0.025</td>
<td>32-100</td>
<td></td>
<td>14 (grain &amp; forage) 45 (fodder)</td>
<td>12</td>
</tr>
<tr>
<td><strong>Corn Earworm</strong></td>
<td>Carbamates</td>
<td>methomyl (R) Lannate 2.4 LV</td>
<td>0.75-1.5 pt</td>
<td>0.22-0.45</td>
<td>5.3-10.6</td>
<td>14</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td>Carbamates</td>
<td>carbaryl Sevin 80 S Sevin XLR</td>
<td>1.25-2.5 lb 1-2 qt</td>
<td>1-2</td>
<td>2-4</td>
<td>21 (grain) 14 (forage)</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Other Chemistry</td>
<td>chlorantraniliprole Prevathon</td>
<td>14-20 oz</td>
<td>0.047-0.067</td>
<td>6.4-9.14</td>
<td>14</td>
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<tr>
<td></td>
<td></td>
<td>flubendiamide Belt 4 SC</td>
<td>2-4 oz</td>
<td>0.0625-0.125</td>
<td>32-64</td>
<td>14</td>
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<tr>
<td></td>
<td></td>
<td>lambda-cyhalothrin + chlorantraniliprole (R) Besiege</td>
<td>6-10 oz</td>
<td>0.06-0.097</td>
<td>12.8-21</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td></td>
<td>nucleopolyhedrovirus Heligen</td>
<td>0.7-1.4 oz</td>
<td>91.4-183</td>
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<tr>
<td></td>
<td></td>
<td>spinosad Blackhawk</td>
<td>1.67-3.3 oz</td>
<td>0.038-0.075</td>
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<td>21</td>
<td>4</td>
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<tr>
<td><strong>Fall Armyworm, Sorghum Webworm</strong></td>
<td>carbaryl Sevin 80 S Sevin XLR</td>
<td>1 1/4-2 1/2 lb 1-2 qt</td>
<td>1-2</td>
<td>2-4</td>
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<td>21 (grain) 14 (forage)</td>
<td>12</td>
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<tr>
<td>Whorl Stage: treat when 3-6 worms per plant.</td>
<td>chlorantraniliprole Prevathon</td>
<td>14-20 oz</td>
<td>0.047-0.067</td>
<td>6.4-9.14</td>
<td></td>
<td>14</td>
<td>4</td>
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<tr>
<td>Heading: 1 fall armyworm per head, 1/2-inch or larger in size. 5 sorghum webworms per head</td>
<td>flubendiamide Belt 4 SC</td>
<td>6-10 oz</td>
<td>0.0625-0.125</td>
<td>12.8-21</td>
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<td>14</td>
<td>48</td>
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<tr>
<td></td>
<td>methomyl (R) Lannate 2.4 LV</td>
<td>0.75-1.5 pt</td>
<td>0.022-0.45</td>
<td>5.3-10.7</td>
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<td>14</td>
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<tr>
<td></td>
<td></td>
<td>spinosad Blackhawk</td>
<td>1.67-3.3 oz</td>
<td>0.038-0.075</td>
<td></td>
<td>21</td>
<td>4</td>
</tr>
</tbody>
</table>

**Carbaryl**
- **Whorl Stage**: Treat when 3-6 worms per plant.
- **Heading**: 1 worm per head, 1/2 inch in size.
- **Minimum Days From Last Application to Harvest**: 21 (grain) 14 (forage)
- **Restricted Entry Interval (REI) Hours**: 12

**Sorghum Webworm**
- **Whorl Stage**: Treat when an average of 5 small larvae are found per head. Use higher rate for sorghum webworm.
- **Minimum Days From Last Application to Harvest**: 14
- **Restricted Entry Interval (REI) Hours**: 48

**Carbaryl**
- **Whorl Stage**: Treat when 3-6 worms per plant.
- **Heading**: 1 fall armyworm per head, 1/2-inch or larger in size. 5 sorghum webworms per head
- **Minimum Days From Last Application to Harvest**: 21 (grain) 14 (forage)
- **Restricted Entry Interval (REI) Hours**: 12

**Sorghum Webworm**
- **Minimum Days From Last Application to Harvest**: 14
- **Restricted Entry Interval (REI) Hours**: 48
<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (REI) Hours</th>
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<tbody>
<tr>
<td><strong>Stink Bugs</strong></td>
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<tr>
<td></td>
<td>Treat when 5 bugs per head from flowering to soft dough are found, or when 16 per head at hard dough are found.</td>
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<tr>
<td></td>
<td>beta-cyfluthrin (R)</td>
<td>Baythroid XL 1 EC</td>
<td>1.3-2.8 oz</td>
<td>0.01-0.022</td>
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<tr>
<td></td>
<td>gamma-cyhalothrin 1.25 CS (R)</td>
<td>Proaxis 0.5 CS</td>
<td>2.56-3.84 oz</td>
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<td></td>
<td>Declare 1.25 CS</td>
<td>1.02-1.54 oz</td>
<td>0.01-0.015</td>
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<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
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<td>(See Generic Insecticides)</td>
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<tr>
<td></td>
<td>lambda-cyhalothrin +</td>
<td>Besiege</td>
<td>6-10 oz</td>
<td>0.06-0.097</td>
<td>12.8-21</td>
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<td>chlorantraniliprole (R)</td>
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<td>zeta-cypermethrin 0.8 EC (R)</td>
<td>Mustang Maxx, Respect</td>
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<td>Axxcess 5 FS</td>
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## SOYBEAN INSECTICIDE PERFORMANCE RATING, 2019

<table>
<thead>
<tr>
<th>Chemistry</th>
<th>Rating Scale</th>
<th>Stem Feeders</th>
<th>Defoliators</th>
<th>Defoliators and Pod Feeders</th>
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<tr>
<td>Admire/Imidacloprid</td>
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<td>Gauchio</td>
<td>NEO 12</td>
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<td>Intego Suite</td>
<td>NEO 12</td>
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<td>Ambush/Pounce</td>
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<td>Asana XL/Adjourn</td>
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<td>Hero</td>
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<td>IGR+SP 4</td>
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<td>Karate/Silencer/Lambda-Cy/Warrior</td>
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<td>Lannate 2.4 LV</td>
<td>Car 48</td>
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<td>Leverance</td>
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<td>X 8 6 8 7</td>
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<tr>
<td>Lorsban/Nufos/Warhawk</td>
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<td>X 8 4 4 5 8 7 1 3 4 4 7 4 5 5 5 6 6 3</td>
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<td>Orthene/Acephate</td>
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<tr>
<td>Prevathon</td>
<td>DM 4</td>
<td>X 9 8 9 7</td>
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<td>4 2 8 8 8 1 1</td>
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</table>

The performance ratings in the chart are for comparison purposes only and are not necessarily a measure of percent control. Shaded boxes indicate products recommended for specific pests in this guide.
### Equivalen Economic Threshold Conversion Between Drop Cloth and Sweepnet

<table>
<thead>
<tr>
<th>Insect</th>
<th>Crop value ($/bu)</th>
<th>Larvae/25 sweeps</th>
<th>Control costs ($/acre)</th>
<th>Sampling Method Used at Four Random Areas Per 40 Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Drop Cloth (at least 8 shakes)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Number/Row Foot</td>
</tr>
<tr>
<td>Stink bugs – up to R6 growth stage</td>
<td>6</td>
<td>6.5</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>5.6</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Stink bugs – R6 to R6.5 growth stage (DO NOT treat after R6.5.)</td>
<td>8</td>
<td>5.0</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Red Banded stink bug – up through R6.5 (Raise threshold to 10 from R6.5-R7) (DO NOT treat after R7 if weather conditions are favorable.)</td>
<td>9</td>
<td>5.0</td>
<td>5</td>
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<tr>
<td>Soybean looper, cabbage looper, velvetbean caterpillar, green cloverworm, armyworm complex†</td>
<td>10</td>
<td>5.0</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Kudzu bug</td>
<td>12</td>
<td>5.0</td>
<td>8</td>
<td>7</td>
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<tr>
<td></td>
<td>13</td>
<td>5.0</td>
<td>7</td>
<td>9</td>
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<tr>
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<td>15</td>
<td>5.0</td>
<td>6</td>
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<table>
<thead>
<tr>
<th>Insect</th>
<th>Crop value ($/bu)</th>
<th>Larvae/row foot</th>
<th>Control costs ($/acre)</th>
<th>Sampling Method Used at Four Random Areas Per 40 Acres</th>
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<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td>Sweepnet (at least four 25-sweep samples)</td>
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<tr>
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<td></td>
<td></td>
<td>Number/100 Sweeps (at least four 25-sweep samples)</td>
</tr>
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<td></td>
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<td></td>
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<td>Number/Row Foot</td>
</tr>
<tr>
<td>Stink bugs – up to R6 growth stage</td>
<td>6</td>
<td>6 nymhs</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>5 nymhs</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Stink bugs – R6 to R6.5 growth stage (DO NOT treat after R6.5.)</td>
<td>8</td>
<td>5 nymhs</td>
<td>4</td>
<td>4</td>
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<tr>
<td>Red Banded stink bug – up through R6.5 (Raise threshold to 10 from R6.5-R7) (DO NOT treat after R7 if weather conditions are favorable.)</td>
<td>9</td>
<td>5 nymhs</td>
<td>6</td>
<td>5</td>
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<tr>
<td>Soybean looper, cabbage looper, velvetbean caterpillar, green cloverworm, armyworm complex†</td>
<td>10</td>
<td>5 nymhs</td>
<td>7</td>
<td>6</td>
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<tr>
<td>Kudzu bug</td>
<td>12</td>
<td>5 nymhs</td>
<td>8</td>
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<td>5 nymhs</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>5 nymhs</td>
<td>10</td>
<td>9</td>
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</table>

†Threshold numbers in association with 40 percent defoliation before bloom and 25 percent after bloom. Number represents medium and large larvae.

### Corn Earworm Dynamic Threshold

The tables below are the result of a collaborative research effort between five states in the Mid-South including three locations in Arkansas. To determine the treatment level, estimate the potential value of the crop and the cost of the insecticide application. For example, if the crop value is $8/bushel and the cost of control is $14/acre, the sweepnet threshold would be 8.6 earworm per 25 sweeps.

![Defoliation Levels on Soybean Leaves](image)
### SOYBEAN INSECT CONTROL

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (REI) Hours</th>
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<tbody>
<tr>
<td><strong>Cutworm</strong></td>
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<td></td>
<td>beta-cyfluthrin (R)</td>
<td>Baythroid XL 1 EC</td>
<td>0.8-1.6 oz</td>
<td>0.007-0.013</td>
<td>80-160</td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin + imidacloprid (R)</td>
<td>Leverage 360</td>
<td>2.8 oz</td>
<td>0.066</td>
<td>45.7</td>
<td>21</td>
<td>12</td>
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<tr>
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<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>2.1-6.4 oz</td>
<td>0.033-0.1</td>
<td>20-61</td>
<td>21</td>
<td>12</td>
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<td>(See Generic Insecticides)</td>
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<td></td>
<td>cyfluthrin (R)</td>
<td>Tombstone 2 EC</td>
<td>0.8-1.6 oz</td>
<td>0.013-0.025</td>
<td>80-160</td>
<td>45</td>
<td>12</td>
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<td>carbaryl</td>
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<td>1.0-1.5 qt</td>
<td>1.0-1.5</td>
<td>2.7-4.0</td>
<td>21</td>
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<tr>
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<td>chlorpyrifos (R)</td>
<td>Lorsban Adv. 3.755 EC</td>
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<td>0.066</td>
<td>45.7</td>
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<td>(See Generic Insecticides)</td>
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<td></td>
<td>esfenvalerate (R)</td>
<td>Asana XL 0.66 EC</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td>13-22</td>
<td>21</td>
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<tr>
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<td></td>
<td>gamma-cyhalothrin (R)</td>
<td>Proaxis 0.5 CS</td>
<td>1.92-3.2 oz</td>
<td>0.0075-0.0125</td>
<td>40-66.7</td>
<td>45</td>
<td>24</td>
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<td></td>
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<td>Declare 1.25 CS</td>
<td>0.77-1.28 oz</td>
<td>0.015-0.025</td>
<td>100-167</td>
<td>45</td>
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<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td></td>
<td>0.96-1.6 oz</td>
<td>80-133</td>
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<td>indoxacarb</td>
<td>Steward 1.25 SC</td>
<td>5.6-11.3 oz</td>
<td>0.055-0.11</td>
<td>11.5-22.8</td>
<td>21</td>
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<td>thiocarb (R)</td>
<td>Larvin 3.2 F</td>
<td>1.25-1.9 pt</td>
<td>0.5-0.75</td>
<td>4.3-6.4</td>
<td>28</td>
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<td></td>
<td>zeta-cypermethrin 0.8 EC (R)</td>
<td>Mustang Maxx, Respect</td>
<td>1.28-4.0 oz</td>
<td>0.008-0.025</td>
<td>32-100</td>
<td>45</td>
<td>24</td>
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<tr>
<td><strong>Kudzu Bug</strong></td>
<td>acephate (R)</td>
<td>Orthene/Acephate 97 S</td>
<td>0.75-1.0 lb</td>
<td>0.73-0.97</td>
<td>14</td>
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<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>6.4 oz</td>
<td>0.1</td>
<td>20</td>
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<td>(See Generic Insecticides)</td>
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<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
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<td>1.92 oz</td>
<td>67</td>
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<td>gamma-cyhalothrin (R)</td>
<td>Proaxis 0.5 CS</td>
<td>3.2-3.84 oz</td>
<td>0.0125-0.015</td>
<td>40-66.7</td>
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<td>Declare 1.25 CS</td>
<td>1.28-1.54 oz</td>
<td>0.025</td>
<td>83-100</td>
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<td>zeta-cypermethrin 0.8 EC (R)</td>
<td>Mustang Maxx, Respect</td>
<td>4.0 oz</td>
<td>32</td>
<td>DO NOT feed forage, hay or straw treated with Larvin. Use minimum 3 gal by air, 15 gal by ground finish spray.</td>
<td>28</td>
<td>48</td>
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<tr>
<td></td>
<td></td>
<td>zeta-cypermethrin +</td>
<td>6.4-10.3 oz</td>
<td>0.062-0.1</td>
<td>12.4-20</td>
<td>21</td>
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<td></td>
<td>bifenthrin (R)</td>
<td>Hero 1.24 EC</td>
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### SOYBEAN INSECT CONTROL

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (REI) Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Three cornered Alfalfa Hopper</em></td>
<td>beta-cyfluthrin (R) Baythroid XL 1 EC 1.6-2.8 oz</td>
<td>0.012-0.022</td>
<td>45-80</td>
<td></td>
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<td>21</td>
<td>12</td>
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<tr>
<td></td>
<td>beta-cyfluthrin + imidacloprid (R) Leverage 360 2.8 oz</td>
<td>0.066</td>
<td>45.7</td>
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<tr>
<td></td>
<td>clothianidin Belay 2.13 EC 3-6 oz</td>
<td>0.05-0.1</td>
<td>21.3-42.7</td>
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<tr>
<td></td>
<td>cyfluthrin (R) Tombstone 2 EC 1.6-2.8 oz</td>
<td>0.025-0.044</td>
<td>46-80</td>
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<td>12</td>
</tr>
<tr>
<td></td>
<td>estenvalerate (R) Asana XL 0.66 EC (See Generic Insecticides) 5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td>13-22</td>
<td></td>
<td></td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (R) Proaxis 0.5 CS 1.92-3.2 oz</td>
<td>0.0075-0.0125</td>
<td>40-66.7</td>
<td></td>
<td></td>
<td>45</td>
<td>24</td>
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<td></td>
<td>Declare 1.25 CS 0.77-1.28 oz</td>
<td>0.066</td>
<td>100-167</td>
<td></td>
<td></td>
<td>45</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R) Warrior II 2.08 CS (See Generic Insecticides) 0.96-1.6 oz</td>
<td>0.015-0.025</td>
<td>80-133</td>
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<td>30</td>
<td>24</td>
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<tr>
<td></td>
<td>lambda-cyhalothrin + chlorantraniliprole (R) Besiege 1.252 5.0-8.0 oz</td>
<td>0.049-0.08</td>
<td>16-25.6</td>
<td></td>
<td>DO NOT graze or feed hay to livestock. DO NOT exceed 20 fl oz per acre per season.</td>
<td>30</td>
<td>24</td>
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<tr>
<td></td>
<td>imidacloprid Gaucho 600 1.6 oz/100 lb seed</td>
<td>0.008-0.014</td>
<td>71-128</td>
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<td>24</td>
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<td></td>
<td>Senator 600 1.6 oz/100 lb seed</td>
<td>0.066</td>
<td>45.7</td>
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<tr>
<td></td>
<td>Axxcess 5 FS 1.6 oz/100 lb seed</td>
<td>0.033-0.1</td>
<td>20-61</td>
<td></td>
<td>DO NOT apply more than 0.3 lb ai of Brigade per season. DO NOT apply again for 30 days.</td>
<td>18</td>
<td>12</td>
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<tr>
<td></td>
<td>thiamethoxam Cruiser 5 FS 1.28 oz/100 lb seed</td>
<td>0.0175-0.025</td>
<td>32-45.7</td>
<td></td>
<td>DO NOT apply more than 0.4 lb ai of Hero per season. DO NOT apply again for 30 days.</td>
<td>21</td>
<td>12</td>
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<tr>
<td></td>
<td>Warden CX 3.38 oz/100 lb seed</td>
<td>0.04-0.1</td>
<td>12.4-32</td>
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<td></td>
<td>zeta-cypermethrin 0.8 EC (R) Mustang Maxx, Respect 2.8-4.0 oz</td>
<td>0.049-0.08</td>
<td>16-25.6</td>
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<td></td>
<td>30</td>
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<td>zeta-cypermethrin + bifenthrin (R) Hero 1.24 EC 4.0-10.3 oz</td>
<td>0.066</td>
<td>45.7</td>
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<tr>
<td><em>Blister Beetle</em></td>
<td>beta-cyfluthrin (R) Baythroid XL 1 EC 1.0-1.8 oz</td>
<td>0.008-0.014</td>
<td>71-128</td>
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<tr>
<td></td>
<td>beta-cyfluthrin + imidacloprid (R) Leverage 360 2.8 oz</td>
<td>0.066</td>
<td>45.7</td>
<td></td>
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<td>21</td>
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<tr>
<td></td>
<td>bifenthrin (R) Brigade 2 EC 2.1-6.4 oz (See Generic Insecticides)</td>
<td>0.033-0.1</td>
<td>20-61</td>
<td></td>
<td>DO NOT apply more than 0.3 lb ai of Brigade per season. DO NOT apply again for 30 days.</td>
<td>18</td>
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<tr>
<td></td>
<td>carbaryl Sevin XLR or 4F 2 qt</td>
<td>2</td>
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<td>cyfluthrin (R) Tombstone 2 EC (See Generic Insecticides)</td>
<td>45.7</td>
<td>21</td>
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## SOYBEAN INSECT CONTROL

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<th>Insect</th>
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<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
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<tbody>
<tr>
<td><strong>Blister Beetle (cont.)</strong></td>
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<tr>
<td></td>
<td>gamma-cyhalothrin (R)</td>
<td>Proaxis 0.5 CS</td>
<td>1.92-3.2 oz</td>
<td>0.0075-0.0125</td>
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<td></td>
<td></td>
<td>Declare 1.25 CS</td>
<td>0.77-1.28 oz</td>
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<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td>0.96-1.6 oz</td>
<td>0.015-0.025</td>
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<td>(See Generic Insecticides)</td>
<td>2.1-6.4 oz</td>
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<td>lambda-cyhalothrin + chlororantraniliprole (R)</td>
<td>Besiege 1.252</td>
<td>8.0-10.0 oz</td>
<td>32-45.7</td>
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<td>zeta-cypermethrin 0.8 EC (R)</td>
<td>Mustang Maxx, Respect</td>
<td>0.008-0.025</td>
<td>32-100</td>
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<td>zeta-cypermethrin + bifenthrin (R)</td>
<td>Hero 1.24 EC</td>
<td>0.04-0.1</td>
<td>12.4-32</td>
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<td><strong>Defoliating Caterpillars</strong></td>
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<tr>
<td>(Garden Webworm, Green Cloverworm, Saltmarsh Caterpillar, Cabbage Looper, Velvetbean Caterpillar, Silver-Spotted Skipper)</td>
<td>acephate (R)</td>
<td>Orthene/Acephate 90 S</td>
<td>0.83-1.1 lb</td>
<td>0.75-1.0 lb</td>
<td>0.75</td>
<td>1.0</td>
<td>Acephate is not labeled for garden webworm, saltmarsh caterpillar or silver-spotted skipper. DO NOT apply more than 1.5 lb ai acephate per season.</td>
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<td>Orthene/Acephate 97 S</td>
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<td>Bacillus thuringiensis</td>
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<td>beta-cyfluthrin (R)</td>
<td>Baythroid XL 1 EC</td>
<td>1.8-2.4 oz</td>
<td>0.014-0.019</td>
<td>53.3-71</td>
<td>Rate can be dropped to 0.8 oz for green cloverworm.</td>
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<td>beta-cyfluthrin + imidacloprid (R)</td>
<td>Leverage 360</td>
<td>2.8 oz</td>
<td>0.066</td>
<td>45.7</td>
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<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>2.1-6.4 oz</td>
<td>0.033-0.1</td>
<td>20-61</td>
<td>DO NOT apply more than 0.3 lb ai of Brigade per season. DO NOT apply again for 30 days.</td>
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<td>(See Generic Insecticides)</td>
<td>(See Generic Insecticides)</td>
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<td>carbaryl</td>
<td>Sevin XLR or 4F</td>
<td>2-3 pt</td>
<td>1.0-1.5</td>
<td>2.7-4</td>
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<td>chlorpyrifos (R)</td>
<td>Lorsban 4 E</td>
<td>1-2 pt</td>
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<td>(See Generic Insecticides)</td>
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<td>cyfluthrin (R)</td>
<td>Tombstone 2 EC</td>
<td>1.6-2.8 oz</td>
<td>0.025-0.044</td>
<td>45.7-80</td>
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<td>esfenvalerate (R)</td>
<td>Asana XL 0.66 EC</td>
<td>2.9-5.8 oz</td>
<td>0.015-0.03</td>
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<td></td>
<td>flubendiamide</td>
<td>Belt 4 SC</td>
<td>2-3 oz</td>
<td>0.0625-0.0937</td>
<td>42.7-64</td>
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<td>Insect</td>
<td>Insecticide</td>
<td>Formulation/Acre</td>
<td>Lb ai/Acre</td>
<td>Acres/Gallon</td>
<td>Application/Comments</td>
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<tr>
<td>Defoliating Caterpillars (cont.)</td>
<td>gamma-cyhalothrin (R)</td>
<td>Proaxis 0.5 CS</td>
<td>1.92-3.2 oz</td>
<td>0.0075-0.0125</td>
<td>Higher rate of 1.28-1.54 oz/acre required for garden webworm and silver-spotted skipper.</td>
<td>45</td>
<td>24</td>
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<tr>
<td></td>
<td></td>
<td>Declare 1.25 CS</td>
<td>0.77-1.28 oz</td>
<td>0.055-0.11</td>
<td>Rate for green cloverworm, saltmarsh caterpillar and cabbage looper can be lowered to 4.6 oz. Will provide suppression of velvetbean caterpillar. Steward is not labeled for silver-spotted skipper.</td>
<td>45</td>
<td>24</td>
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<td>indoxacarb</td>
<td>Steward 1.25 SC</td>
<td>5.6-11.3 oz</td>
<td>For garden webworm and silver-spotted skipper, raise rate to 1.6-1.92 oz/acre.</td>
<td>21</td>
<td>12</td>
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<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td>1.28-1.92 oz</td>
<td>0.02-0.03</td>
<td>DO NOT graze or feed hay to livestock. DO NOT exceed 20 fl oz per acre per season. Use 8-10 oz for silver-spotted skippers.</td>
<td>30</td>
<td>24</td>
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<tr>
<td></td>
<td></td>
<td>(See Generic Insecticides)</td>
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<tr>
<td></td>
<td>lambda-cyhalothrin + chlorantraniliprole (R)</td>
<td>Besiege 1.25</td>
<td>6-10 oz</td>
<td>0.06-0.1</td>
<td>100-167</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>methomyl (R)</td>
<td>Lannate 2.4 LV</td>
<td>0.75-3 pt</td>
<td>0.22-0.9</td>
<td>Lannate is not labeled for garden webworm.</td>
<td>14</td>
<td>48</td>
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<td>methoxyfenozide</td>
<td>Intrepid 2 F</td>
<td>4-8 oz</td>
<td>0.0625-0.125</td>
<td>Intrepid is not labeled for silver-spotted skipper.</td>
<td>14</td>
<td>12</td>
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<td>methoxyfenozide + spinetoram</td>
<td>Intrepid Edge 3F</td>
<td>4-6.4</td>
<td>0.0975-0.187</td>
<td>DO NOT make more than 4 applications per year.</td>
<td>28</td>
<td>4</td>
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<td>permethrin (R)</td>
<td>Ambush 2.0 E</td>
<td>3.2-12.8 oz</td>
<td>0.05-0.2</td>
<td>Use higher rates for garden webworm. Not labeled for silver-spotted skipper.</td>
<td>60</td>
<td>12</td>
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<td></td>
<td>Pounce 25 W</td>
<td>3.2-12.8 oz</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>spinosad</td>
<td>Blackhawk</td>
<td>1.1-2.2 oz</td>
<td>0.025-0.05</td>
<td>Blackhawk is not labeled for garden webworm or silver-spotted skipper. Raising rate to 1.7-2.2 oz for saltmarsh caterpillar. DO NOT apply more than 8.3 oz of Blackhawk per year. DO NOT feed treated forage to meat or dairy animals.</td>
<td>28</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>thiodicarb (R)</td>
<td>Larvin 3.2 F</td>
<td>10-30 oz</td>
<td>0.25</td>
<td>Larvin is not labeled for garden webworm or silver-spotted skipper. For cabbage looper, raise rate to 18-30 oz.</td>
<td>28</td>
<td>48</td>
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<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R)</td>
<td>Mustang Maxx</td>
<td>2.8-4.0 oz</td>
<td>0.0175-0.025</td>
<td>For saltmarsh caterpillar and silver-spotted skipper, the rate can be lowered to 1.28 oz. Raise rate to 3.2-4 oz for cabbage loopers.</td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin (R)</td>
<td>Hero 1.24 EC</td>
<td>4.0-10.3 oz</td>
<td>0.04-0.1</td>
<td>DO NOT apply more than 0.4 lb ai of Hero per season. DO NOT apply again for 30 days. For green cloverworm and silver-spotted skipper, rate can be dropped to 2.6-6.1 oz.</td>
<td>21</td>
<td>12</td>
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</tbody>
</table>
## SOYBEAN INSECT CONTROL

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (REI) Hours</th>
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<tbody>
<tr>
<td><strong>Grasshopper</strong></td>
<td></td>
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<tr>
<td></td>
<td><strong>beta-cyfluthrin</strong> (R) Baythroid XL 1 EC</td>
<td>2.0-2.8 oz</td>
<td>0.016-0.022</td>
<td>45-64</td>
<td></td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td><strong>beta-cyfluthrin + imidacloprid</strong> (R) Leverage 360</td>
<td>2.8 oz</td>
<td>0.066</td>
<td></td>
<td></td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td><strong>bifenthrin</strong> (R) Brigade 2 EC</td>
<td>2.1-6.4 oz</td>
<td>0.033-0.1</td>
<td>20-61</td>
<td>DO NOT apply more than 0.3 lb ai of Brigade per season.</td>
<td>18</td>
<td>12</td>
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<tr>
<td></td>
<td><strong>bifenthrin</strong> (R)</td>
<td></td>
<td></td>
<td></td>
<td>DO NOT apply again for 30 days.</td>
<td></td>
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</tr>
<tr>
<td></td>
<td><strong>chlorantraniliprole</strong> Prevathon 0.43</td>
<td>8-20 oz</td>
<td>0.027-0.067</td>
<td>6.4-16</td>
<td>Make no more than 4 applications per year.</td>
<td>1</td>
<td>4</td>
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<tr>
<td></td>
<td><strong>chlorpyrifos</strong> (R) Lorsban 4 E</td>
<td>0.5-1.0 pt</td>
<td>0.25-0.5</td>
<td>8-16</td>
<td>For best results, add MSO at 1% v/v.</td>
<td>28</td>
<td>12</td>
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<tr>
<td></td>
<td><strong>cyfluthrin</strong> (R) Tombstone 2 EC</td>
<td>2.0-2.8 oz</td>
<td>0.031-0.044</td>
<td>68-80</td>
<td></td>
<td>45</td>
<td>12</td>
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<tr>
<td></td>
<td><strong>diflubenzuron</strong> (R) Dimilin 2L</td>
<td>2 oz</td>
<td>0.031</td>
<td>64</td>
<td>Apply Dimilin when majority of grasshoppers have reached the 2nd to 3rd nymphal stage. Dimilin is not effective against adults.</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>dimethoate</strong> Dimethoate 4 E</td>
<td>1 pt</td>
<td>0.5</td>
<td>8</td>
<td></td>
<td>21</td>
<td>48</td>
</tr>
<tr>
<td></td>
<td><strong>esfenvalerate</strong> (R) Asana XL 0.66 EC</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td>13-22</td>
<td></td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td><strong>gamma-cyhalothrin</strong> (R) Proaxis 0.5 CS</td>
<td>3.2-3.84 oz</td>
<td>0.0125-0.015</td>
<td>40-66.7</td>
<td></td>
<td>45</td>
<td>24</td>
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<tr>
<td></td>
<td><strong>lambda-cyhalothrin</strong> (R) Warrior II 2.08 CS</td>
<td>1.6-1.92 oz</td>
<td>0.025-0.03</td>
<td>67-80</td>
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<td>24</td>
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<td></td>
<td><strong>lambda-cyhalothrin + chlorantraniliprole</strong> (R)</td>
<td>8.0-10.0 oz</td>
<td>0.08-0.098</td>
<td>12.8-16</td>
<td>DO NOT graze or feed hay to livestock.</td>
<td>30</td>
<td>24</td>
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<tr>
<td></td>
<td><strong>zeta-cypermethrin 0.8 EC</strong> (R) Mustang Maxx</td>
<td>3.2-4.0 oz</td>
<td>0.02-0.025</td>
<td>9.8-21.3</td>
<td>DO NOT exceed 20 fl oz per acre per season.</td>
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<tr>
<td></td>
<td><strong>zeta-cypermethrin + bifenthrin</strong> (R) Hero 1.24 EC</td>
<td>2.6-6.1 oz</td>
<td>0.025-0.06</td>
<td>21-49.2</td>
<td>DO NOT apply more than 0.4 lb ai of Hero per season.</td>
<td>21</td>
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<td></td>
<td></td>
<td></td>
<td>DO NOT apply again for 30 days. For green cloverworm and silver-spotted skipper, rate can be dropped to 2.6-6.1 oz.</td>
<td></td>
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<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (REI) Hours</th>
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<tbody>
<tr>
<td><strong>Soybean Looper</strong></td>
<td>Bacillus thuringiensis</td>
<td>Check label.</td>
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<tr>
<td></td>
<td>chlorantraniliprole</td>
<td>Prevation 0.43</td>
<td>14-20 oz</td>
<td>0.047–0.067</td>
<td>16-Sep</td>
<td></td>
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<tr>
<td></td>
<td>flubendiamide</td>
<td>Belt 4 SC</td>
<td>2-3 oz</td>
<td>0.0625-0.0937</td>
<td>42.7-64</td>
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<td>4</td>
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<tr>
<td></td>
<td>indoxacarb</td>
<td>Steward 1.25 SC</td>
<td>5.6-11.3 oz</td>
<td>0.055-0.11</td>
<td>11.5-22.8</td>
<td></td>
<td>4</td>
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<tr>
<td></td>
<td>lambda-cyhalothrin + chlorantraniliprole (R)</td>
<td>Bezisage 1.252</td>
<td>10.0 oz</td>
<td>0.098</td>
<td>12.8</td>
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<tr>
<td></td>
<td>methomyl (R)</td>
<td>Lannate 2.4 LV</td>
<td>1.5-3 pt</td>
<td>0.45-0.9</td>
<td>2.7-5.3</td>
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<td>4</td>
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<tr>
<td></td>
<td>methoxyfenozide</td>
<td>Intrepid 2 F</td>
<td>4-8 oz</td>
<td>0.0625-0.125</td>
<td>16-32</td>
<td></td>
<td>4</td>
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<tr>
<td></td>
<td>methoxyfenozide + spinetoram</td>
<td>Intrepid Edge 3F</td>
<td>4-6.4 oz</td>
<td>0.094-0.15</td>
<td>20-32</td>
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<tr>
<td></td>
<td>spinosad</td>
<td>Blackhawk</td>
<td>1.1-2.2 oz</td>
<td>0.025-0.05</td>
<td>16-32</td>
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<td>4</td>
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<tr>
<td></td>
<td>thiodicarb (R)</td>
<td>Larvin 3.2 F</td>
<td>1.1-1.9 pt</td>
<td>0.45-0.75</td>
<td>4.3-7.1</td>
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<tr>
<td><strong>Spider Mites</strong></td>
<td>abamectin</td>
<td>Agri-Mek 0.7 S</td>
<td>1.75-3.5 oz</td>
<td>0.01-0.019</td>
<td>36.6-73</td>
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<tr>
<td></td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC (See Generic Insecticides)</td>
<td>5.12-6.4 oz</td>
<td>0.08-0.1</td>
<td>20-25</td>
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<tr>
<td></td>
<td>chlorpyrifos (R)</td>
<td>Lorsban 4 E (See Generic Insecticides)</td>
<td>1 pt</td>
<td>0.5</td>
<td>8</td>
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<tr>
<td></td>
<td>dimethoate</td>
<td>Dimethoate 4 E</td>
<td>1 pt</td>
<td>0.5</td>
<td>8</td>
<td></td>
<td>4</td>
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<tr>
<td><strong>Bean Leaf Beetle</strong></td>
<td>acephate (R)</td>
<td>Orthene/Acephate 90 S</td>
<td>0.83-1.1 lb</td>
<td>0.75-1.0</td>
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<tr>
<td></td>
<td></td>
<td>Orthene/Acephate 97 S</td>
<td>0.75-1.0 lb</td>
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<tr>
<td></td>
<td>beta-cyfluthrin (R)</td>
<td>Baythroid XL 1 EC</td>
<td>1.6-2.8 oz</td>
<td>0.013-0.022</td>
<td>45.7-80</td>
<td></td>
<td>4</td>
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<tr>
<td></td>
<td>beta-cyfluthrin + imidacloprid (R)</td>
<td>Leverage 360</td>
<td>2.8 oz</td>
<td>0.066</td>
<td>45.7</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC (See Generic Insecticides)</td>
<td>2.1-6.4 oz</td>
<td>0.033-0.1</td>
<td>20-61</td>
<td></td>
<td>4</td>
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</table>
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<th>Insect</th>
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</tr>
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<tbody>
<tr>
<td><strong>Bean Leaf Beetle</strong></td>
<td></td>
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<tr>
<td>(cont.)</td>
<td>carbaryl</td>
<td>Sevin XLR or 4F</td>
<td>1 pt</td>
<td>0.5</td>
<td>8</td>
<td>21</td>
<td>12</td>
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<tr>
<td></td>
<td>clothianidin</td>
<td>Belay 2.13</td>
<td>3-6 oz</td>
<td>0.05-0.11</td>
<td>21.3-42.7</td>
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<td>cyfluthrin (R)</td>
<td>Tombstone 2 EC</td>
<td>1.6-2.8 oz</td>
<td>0.025-0.044</td>
<td>45.7-80</td>
<td>45</td>
<td>12</td>
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<tr>
<td></td>
<td>dimethoate</td>
<td></td>
<td>1 pt</td>
<td>0.5</td>
<td>8</td>
<td>21</td>
<td>48</td>
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<tr>
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<td>esfenvalerate (R)</td>
<td>Asana XL 0.66 EC</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td>13-22</td>
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<tr>
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<td>gamma-cyhalothrin (R)</td>
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<tr>
<td></td>
<td>Proaxis 0.5 CS</td>
<td></td>
<td>1.92-3.2 oz</td>
<td>0.0075-0.0125</td>
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<tr>
<td></td>
<td>Declare 1.25 CS</td>
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<td>0.77-1.28 oz</td>
<td>0.066</td>
<td>100-167</td>
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<td>24</td>
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<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td></td>
<td>0.96-1.6 oz</td>
<td>0.015-0.025</td>
<td>80-133</td>
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<tr>
<td></td>
<td>imidacloprid</td>
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<td></td>
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<tr>
<td></td>
<td>Gaucho 600</td>
<td></td>
<td>1.6 oz/100 lb seed</td>
<td>0.3-0.45</td>
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<tr>
<td></td>
<td>Axcess 5 FS</td>
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<td>1.6 oz/100 lb seed</td>
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<tr>
<td></td>
<td>Senator 600</td>
<td></td>
<td>1.6 oz/100 lb seed</td>
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<td></td>
<td>thiamethoxam</td>
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<tr>
<td></td>
<td>Cruiser 5 FS</td>
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<td>1.28 oz/100 lb seed</td>
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<td></td>
<td>Warden CX</td>
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<td>3.38 oz/100 lb seed</td>
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<td>methomyl (R)</td>
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<td>1-1.5 pt</td>
<td>0.3-0.45</td>
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<td>Lannate 2.4 LV</td>
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<td></td>
<td>zeta-cypermethrin 0.8 EC (R)</td>
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<td>2.8-4.0 oz</td>
<td>0.0175-0.025</td>
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<tr>
<td></td>
<td>Mustang Maxx, Respect</td>
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<td></td>
<td>zeta-cypermethrin + bifenthrin (R)</td>
<td>Hero 1.24 EC</td>
<td>4.0-10.3 oz</td>
<td>0.04-0.1</td>
<td>12.4-32</td>
<td>21</td>
<td>12</td>
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<tr>
<td><strong>Armyworm Complex</strong></td>
<td></td>
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<tr>
<td>(Yellowstriped, Fall and Beet Armyworm)</td>
<td>beta-cyfluthrin (R)</td>
<td>Baythroid XL 1 EC</td>
<td>1.6-2.8 oz</td>
<td>0.013-0.022</td>
<td>45.7-80</td>
<td>21</td>
<td>12</td>
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<td>beta-cyfluthrin + imidacloprid (R)</td>
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<td></td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>2.1-6.4 oz</td>
<td>0.033-0.1</td>
<td>20-61</td>
<td>18</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole</td>
<td>Prevathon 0.43</td>
<td>14-20 oz</td>
<td>0.047-0.067</td>
<td>6.4-9.14</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

PYRETHROIDS (Baythroid, Brigade, Tombstone, Prolex, Declare, Karate, Mustang Maxx, Hero) are not effective against beet armyworm. DO NOT USE.
## SOYBEAN INSECT CONTROL

<table>
<thead>
<tr>
<th>Insect Complex (Yellowstriped, Fall and Beet Armyworm) (cont.)</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Armyworm</td>
<td>cyfluthrin (R)</td>
<td>Tombstone 2 EC</td>
<td>1.6-2.8 oz</td>
<td>0.025-0.044</td>
<td>45.7-80</td>
<td>45</td>
<td>12</td>
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<tr>
<td></td>
<td></td>
<td>(See Generic Insecticides)</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>flubendiamide</td>
<td>Belt 4 SC</td>
<td>2-3 oz</td>
<td>0.0625-0.0937</td>
<td>42.7-64</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
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<td></td>
<td>DO NOT more than 6 oz of Belt per acre per season.</td>
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<tr>
<td></td>
<td>flubendiamide</td>
<td>Belt 4 SC</td>
<td>2-3 oz</td>
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<tr>
<td></td>
<td>gamma-cyhalothrin (R)</td>
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<td>0.0125-0.015</td>
<td>40-66.7</td>
<td>45</td>
<td>24</td>
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<tr>
<td></td>
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<td></td>
<td>83-100</td>
<td>45</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (R)</td>
<td>Declare 1.25 CS</td>
<td>1.28-1.54 oz</td>
<td>0.0125-0.015</td>
<td>40-66.7</td>
<td>45</td>
<td>24</td>
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<tr>
<td></td>
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<td></td>
<td>83-100</td>
<td>45</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td>1.6-1.92 oz</td>
<td>0.025-0.03</td>
<td>69-83</td>
<td>30</td>
<td>24</td>
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<tr>
<td></td>
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<td>69-83</td>
<td>30</td>
<td>24</td>
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<tr>
<td></td>
<td>methomyl (R)</td>
<td>Lannate 2.4 LV</td>
<td>1-1.5 pt</td>
<td>0.3-0.45</td>
<td>5.3-8</td>
<td>14</td>
<td>48</td>
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<tr>
<td></td>
<td>methoxyfenozide</td>
<td>Intrepid 2 F</td>
<td>4-8 oz</td>
<td>0.0625-0.125</td>
<td>16-32</td>
<td>14</td>
<td>12</td>
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<tr>
<td></td>
<td>methoxyfenozide + spinetoram</td>
<td>Intrepid Edge 3F</td>
<td>4-6.4</td>
<td>0.094-0.15</td>
<td>20-32</td>
<td>28</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>spinosad</td>
<td>Blackhawk</td>
<td>1.67-3.3 oz</td>
<td>0.038-0.075</td>
<td>20-32</td>
<td>28</td>
<td>4</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>DO NOT more than 4 applications per year.</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>thiodicarb (R)</td>
<td>Larvin 3.2 F</td>
<td>0.6-1.9 pt</td>
<td>0.25-0.75</td>
<td>4.3-12.8</td>
<td>28</td>
<td>48</td>
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<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R)</td>
<td>Mustang Maxx</td>
<td>3.2-4.0 oz</td>
<td>0.02-0.025</td>
<td>32-40</td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin (R)</td>
<td>Hero 1.24 EC</td>
<td>4.0-10.3 oz</td>
<td>0.04-0.1</td>
<td>12.4-32</td>
<td>21</td>
<td>12</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DO NOT apply more than 0.4 lb ai of Hero per season. DO NOT apply again for 30 days.</td>
<td></td>
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</table>
### SOYBEAN INSECT CONTROL

<table>
<thead>
<tr>
<th>Insect Insecticide</th>
<th>Formulation/Acre</th>
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<th>Application/Comments</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Synthetic Pyrethroids</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>beta-cyfluthrin (R) Baythroid XL 1 EC</td>
<td>1.6-2.8 oz</td>
<td>0.013-0.022</td>
<td>45.7-80</td>
<td>DO NOT use synthetic pyrethroids on populations of tobacco budworm. Tobacco budworm is resistant to this chemistry.</td>
<td>21</td>
<td>12</td>
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<tr>
<td>beta-cyfluthrin + imidacloprid (R) Leverage 360</td>
<td>2.8 oz</td>
<td>0.066</td>
<td>45.7</td>
<td></td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td>bifenthrin (R) Brigade 2 EC (See Generic Insecticides)</td>
<td>2.1-6.4 oz</td>
<td>0.033-0.1</td>
<td>20-61</td>
<td>DO NOT apply more than 0.3 lb ai of Brigade per season. DO NOT apply again for 30 days.</td>
<td>18</td>
<td>12</td>
</tr>
<tr>
<td>cyfluthrin (R) Tombstone 2 EC (See Generic Insecticides)</td>
<td>1.6-2.8 oz</td>
<td>0.025-0.044</td>
<td>45.7-80</td>
<td></td>
<td>45</td>
<td>12</td>
</tr>
<tr>
<td>gamma-cyhalothrin (R) Proaxis 0.5 CS Declare 1.25 CS lambda-cyhalothrin (R) Warrior II 2.08 CS (See Generic Insecticides)</td>
<td>1.92-3.2 oz</td>
<td>0.0075-0.0125</td>
<td>40-66.7</td>
<td>40-66.7</td>
<td>45</td>
<td>24</td>
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<tr>
<td></td>
<td>0.77-1.28 oz</td>
<td></td>
<td>100-167</td>
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<td>45</td>
<td>24</td>
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<tr>
<td></td>
<td>0.02-0.03</td>
<td></td>
<td>67-100</td>
<td></td>
<td>30</td>
<td>24</td>
</tr>
<tr>
<td>esfenvalerate (R) Asana XL 0.66 EC (See Generic Insecticides)</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td>13-22</td>
<td></td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td>permethrin (R) Ambush 2.0 E Pounce 25 W</td>
<td>6.4-12.8 oz</td>
<td>0.1-0.2</td>
<td>10-20</td>
<td>Permethrin: DO NOT graze treated areas or harvest for forage or hay. DO NOT make more than 2 applications per season.</td>
<td>60</td>
<td>12</td>
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<tr>
<td></td>
<td>6.4-12.8 oz</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>zeta-cypermethrin 0.8 EC (R) Mustang Maxx, Respect</td>
<td>2.8-4.0 oz</td>
<td>0.0175-0.025</td>
<td>32-45.7</td>
<td></td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td>zeta-cypermethrin + bifenthrin (R) Hero 1.24 EC</td>
<td>4.0-10.3 oz</td>
<td>0.04-0.1</td>
<td>12.4-32</td>
<td>DO NOT apply more than 0.4 lb ai of Hero per season. DO NOT apply again for 30 days.</td>
<td>21</td>
<td>12</td>
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<tr>
<td><strong>Carbamates</strong></td>
<td></td>
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<tr>
<td>carbaryl Sevin XLR or 4F</td>
<td>1-3 pt</td>
<td>0.5-1.5</td>
<td>2.7-8</td>
<td></td>
<td>21</td>
<td>12</td>
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<tr>
<td>methomyl (R) Lannate 2.4 LV</td>
<td>0.75-1.5 pt</td>
<td>0.225-0.45</td>
<td>5.3-10.7</td>
<td></td>
<td>14</td>
<td>48</td>
</tr>
<tr>
<td>thiodicarb (R) Larvin 3.2 F</td>
<td>10-16 oz</td>
<td>0.25-0.4</td>
<td>8-12.8</td>
<td></td>
<td>28</td>
<td>48</td>
</tr>
<tr>
<td><strong>Other Chemistry</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>nucleopolyhedrovirus Heligen</td>
<td>1-1.6 oz</td>
<td>80-128</td>
<td></td>
<td>Apply before reaching economic threshold targeting small larvae. Applications to large larvae often result in poor control. Larvae stop feeding within 1-3 days and die within 3-9 days. Refer to publication AG1306 for more information.</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>chlorantraniliprole Prevathon 0.43</td>
<td>14-20 oz</td>
<td>0.047-0.067</td>
<td>6.4-9.14</td>
<td>Make no more than 4 applications per year.</td>
<td>1</td>
<td>4</td>
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</table>
## SOYBEAN INSECT CONTROL

<table>
<thead>
<tr>
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<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (REI) Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn Earworm and Tobacco Budworm (cont.)</td>
<td>Other Chemistry</td>
<td>flubendiamide</td>
<td>Belt 4 SC</td>
<td>2-3 oz</td>
<td>0.0625-0.0937</td>
<td>42.7-64</td>
<td>DO NOT apply more than 6 oz of Belt per acre per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>indoxacarb</td>
<td>Steward 1.25 SC</td>
<td>5.6-11.3 oz</td>
<td>0.055-0.11</td>
<td>11.5-22.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>lambda-cyhalothrin + chlorantraniliprole (R)</td>
<td>Besiege 1.252</td>
<td>8.0-10.0 oz</td>
<td>0.08-0.098</td>
<td>12.8-16</td>
<td>DO NOT graze or feed hay to livestock. DO NOT exceed 20 ft oz per acre per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>methoxyfenozide + spinetoram</td>
<td>Intrepid Edge 3F</td>
<td>4-6.4</td>
<td>0.094-0.15</td>
<td>20-32</td>
<td>DO NOT make more than 4 applications per year.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>spinosad</td>
<td>Blackhawk</td>
<td>1.67-2.2 oz</td>
<td>0.038-0.05</td>
<td></td>
<td>DO NOT apply more than 8.3 oz of Blackhawk per year. DO NOT feed treated forage to meat or dairy animals.</td>
</tr>
<tr>
<td>ROOT FEEDER Grape Colaspis</td>
<td>chlothianidin</td>
<td>Intego Suite</td>
<td>3.37 oz/100 lb seed</td>
<td></td>
<td></td>
<td></td>
<td>A seed treatment can be beneficial in areas where grape colaspis has historically been a problem.</td>
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<tr>
<td></td>
<td>imidacloprid</td>
<td>Gaucho 600</td>
<td>1.6 oz/100 lb seed</td>
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<tr>
<td></td>
<td></td>
<td>Axcess 5 FS</td>
<td>1.6 oz/100 lb seed</td>
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<tr>
<td></td>
<td></td>
<td>Senator 600</td>
<td>1.6 oz/100 lb seed</td>
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<tr>
<td></td>
<td>thiamethoxam</td>
<td>Cruiser 5 FS</td>
<td>1.28 oz/100 lb seed</td>
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<tr>
<td></td>
<td></td>
<td>Warden CX</td>
<td>3.2 oz/100 lb seed</td>
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<tr>
<td>Green Stink Bug, Southern Green Stink Bug, Red Shouldered Stink Bug</td>
<td>acephate (R)</td>
<td>Orthene/Acephate 90 S</td>
<td>0.56-1.1 lb</td>
<td></td>
<td>0.5-1.0</td>
<td>DO NOT apply more than 1.5 lb ai acephate per season.</td>
<td>14</td>
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<tr>
<td></td>
<td></td>
<td>Orthene/Acephate 97 S</td>
<td>0.50-1.0 lb</td>
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<tr>
<td></td>
<td>beta-cyfluthrin (R)</td>
<td>Baythroid XL 1 EC</td>
<td>1.5-2.8 oz</td>
<td></td>
<td>0.013-0.022</td>
<td>45.7-80</td>
<td></td>
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<tr>
<td></td>
<td>beta-cyfluthrin + imidacloprid (R)</td>
<td>Leverage 360</td>
<td>2.8 oz</td>
<td></td>
<td>0.066</td>
<td>45.7</td>
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<tr>
<td></td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC (See Generic Insecticides)</td>
<td>2.1-6.4 oz</td>
<td></td>
<td>0.033-0.1</td>
<td>20-61</td>
<td>DO NOT apply more than 0.3 lb ai of Brigade per season. DO NOT apply again for 30 days.</td>
</tr>
<tr>
<td></td>
<td>clothianidin</td>
<td>Belay 2.13</td>
<td>3-6 oz</td>
<td></td>
<td>0.05-0.1</td>
<td>21.3-42.7</td>
<td>DO NOT apply Belay treatments less than 7 days apart. DO NOT apply more than 12 oz per acre.</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin (R)</td>
<td>Tombstone 2 EC (See Generic Insecticides)</td>
<td>1.6-2.8 oz</td>
<td></td>
<td>0.025-0.044</td>
<td>45.7-80</td>
<td></td>
</tr>
<tr>
<td></td>
<td>esfenvalerate (R)</td>
<td>Asana XL 0.66 EC (See Generic Insecticides)</td>
<td>5.8-9.6 oz</td>
<td></td>
<td>0.03-0.05</td>
<td>13-22</td>
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</table>
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<tr>
<td><strong>Green Stink Bug, Southern Green Stink Bug, Red Shouldered Stink Bug (cont.)</strong></td>
<td>gamma-cyhalothrin (R) Proaxis 0.5 CS</td>
<td>3.2-3.84 oz</td>
<td>0.0125-0.015</td>
<td>40-66.7</td>
<td></td>
<td>45</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Declare 1.25 CS</td>
<td>1.28-1.54 oz</td>
<td></td>
<td>83-100</td>
<td></td>
<td>45</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R) Warrior II 2.08 CS (See Generic Insecticides)</td>
<td>1.6-1.92 oz</td>
<td>0.025-0.03</td>
<td>67-80</td>
<td></td>
<td>30</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin + chlorantraniliprole (R) Besiege 1.252</td>
<td>8.0-10.0 oz</td>
<td>0.08-0.098</td>
<td>12.8-16</td>
<td>DO NOT graze or feed hay to livestock. DO NOT exceed 20 fl oz per acre per season.</td>
<td>30</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin + thiamethoxam (R) Endigo ZC 2.06</td>
<td>4.0-4.5 oz</td>
<td>0.064-0.07</td>
<td>28.4-32</td>
<td></td>
<td>30</td>
<td>24</td>
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<td></td>
<td>lambda-cyhalothrin + chlorpyrifos (R) Cobalt Advanced</td>
<td>16-38 oz</td>
<td>0.033-0.76</td>
<td>3.4-8</td>
<td></td>
<td>30</td>
<td>24</td>
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<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R) Mustang Maxx, Respect</td>
<td>3.2-4.0 oz</td>
<td>0.02-0.025</td>
<td>32-40</td>
<td></td>
<td>21</td>
<td>12</td>
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<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin + imidacloprid (R) Triple Crown 2.25</td>
<td>4.8 oz</td>
<td>0.084</td>
<td></td>
<td>DO NOT apply again for 30 days</td>
<td>21</td>
<td>12</td>
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<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin (R) Hero 1.24 EC</td>
<td>4.0-10.3 oz</td>
<td>0.04-0.1</td>
<td>12.4-32</td>
<td>DO NOT apply more than 0.4 lb ai of Hero per season. DO NOT apply again for 30 days.</td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td><strong>Brown Stink Bug</strong></td>
<td>acephate (R) Orthene/Acephate 90 S Orthene/Acephate 97 S</td>
<td>0.56-1.1 lb 0.5-1.0 lb</td>
<td>0.5-1.0</td>
<td></td>
<td>DO NOT apply more than 1.5 lb ai acephate per season.</td>
<td>14</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (R) Brigade 2 EC (See Generic Insecticides)</td>
<td>2.1-6.4 oz</td>
<td>0.033-0.1</td>
<td>20-61</td>
<td>DO NOT apply more than 0.3 lb ai of Brigade per season. DO NOT apply again for 30 days.</td>
<td>18</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>clothianidin Belay 2.13</td>
<td>4-6 oz</td>
<td>0.05-0.1</td>
<td>21.3-42.7</td>
<td>DO NOT apply Belay treatments less than 7 days apart. DO NOT apply more than 12 oz per acre.</td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin + thiamethoxam (R) Endigo ZC 2.06</td>
<td>4.0-4.5 oz</td>
<td>0.064-0.07</td>
<td>28.4-32</td>
<td></td>
<td>30</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin + imidacloprid (R) Triple Crown 2.25</td>
<td>4.8 oz</td>
<td>0.084</td>
<td></td>
<td>DO NOT apply again for 30 days.</td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td><strong>Redbanded Stink Bug</strong></td>
<td>acephate (R) Orthene/Acephate 90 S Orthene/Acephate 97 S</td>
<td>0.56-1.1 lb 0.5-1.0 lb</td>
<td>1.0</td>
<td></td>
<td>DO NOT apply more than 1.5 lb ai acephate per season. DO NOT tank mix acephate with sodium chlorate. Tank mixing with sodium chlorate may result in explosion of fire.</td>
<td>14</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (R) Brigade 2 EC (See Generic Insecticides)</td>
<td>2.1-6.4 oz</td>
<td>0.1</td>
<td>20-61</td>
<td>DO NOT apply more than 0.3 lb ai of Brigade per season. DO NOT apply again for 30 days.</td>
<td>18</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>clothianidin Belay 2.13</td>
<td>4-6 oz</td>
<td>0.07-0.1</td>
<td>21.3-32</td>
<td>DO NOT apply Belay treatments less than 7 days apart. DO NOT apply more than 12 oz per acre.</td>
<td>21</td>
<td>12</td>
</tr>
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<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (REI) Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Redbanded Stink Bug</strong></td>
<td>lambda-cyhalothrin + chlorpyrifos (R) Cobalt Advanced</td>
<td>24-38 oz</td>
<td>0.5-0.76</td>
<td>3.4-5.3</td>
<td>DO NOT tank mix Cobalt Advanced with sodium chloride. Tank mixing with sodium chlorate may result in explosion of fire.</td>
<td>30</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin + thiamethoxam (R) Endigo ZC 2.06</td>
<td>4.0-4.5 oz</td>
<td>0.064-0.07</td>
<td>28.4-32</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin + imidacloprid (R) Leverage 360</td>
<td>2.8 oz</td>
<td>0.066</td>
<td>28.32</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tank Mix Options With Bifenthrin</strong></td>
<td>acephate (R) Orthene 97S</td>
<td>0.5 lb</td>
<td>0.5</td>
<td>Tank mix Orthene, Belay or Imidacloprid with 5.12 fl oz of bifenthrin (Brigade 2EC or generic) per acre. Tank mixes have proven to give superior control.</td>
<td>18</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td></td>
<td>clothianidin Belay 2.13</td>
<td>3 oz</td>
<td>0.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>imidacloprid (R) Imidacloprid 4F</td>
<td>1.5 oz</td>
<td>0.047</td>
<td>85.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Imidacloprid 2F (See Generic Insecticides)</td>
<td>3 oz</td>
<td>0.047</td>
<td>42.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Multiple Pests</strong></td>
<td>acephate + bifenthrin (R) Acenthrin 80 S</td>
<td>8-21 oz</td>
<td>0.4-1.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>acetamiprid + bifenthrin (R) Justice 1.8 EC</td>
<td>2.5-5.0 oz</td>
<td>0.035-0.07</td>
<td>25.6-51.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin (R) + acetameprid Argyle 1.52 OD</td>
<td>5-9 oz</td>
<td>0.06-0.11</td>
<td>14-25.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos + lambda-cyhalothrin (R) Cobalt Advanced 2.63 EC</td>
<td>6-38 oz</td>
<td>0.12-0.76</td>
<td>3.4-21.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (R) + spinosad Conseso 5.25 SC</td>
<td>2-4 oz</td>
<td>0.08-0.16</td>
<td>32-64</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>imidacloprid + beta-cyfluthrin (R) Leverage 360 SC</td>
<td>2.8 oz</td>
<td>0.067</td>
<td>45.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R) + chlorantraniliprole Besiege 1.25 SC</td>
<td>5-10 oz</td>
<td>0.49-0.98</td>
<td>12.8-25.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R) + thiamethoxam Endigo 2.06 ZC</td>
<td>2.5-4.5 oz</td>
<td>0.04-0.07</td>
<td>28.4-51.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin + imidacloprid (R) Triple Crown 2.25</td>
<td>3.5-4.8 oz</td>
<td>0.061-0.084</td>
<td>33-36.6</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Redbanded Stink Bug* Treat when an average of 10 bugs per 25 sweeps from R6.5 to R7. Terminate insecticide applications at R7 if weather conditions are favorable.
# SUNFLOWER INSECT CONTROL

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sunflower Head Moth</strong></td>
<td><strong>Bacillus thuringiensis</strong></td>
<td></td>
<td></td>
<td></td>
<td>Minimum Days From Last Application to Harvest Restricted Entry Interval (REI) Hours</td>
</tr>
<tr>
<td></td>
<td>Check label.</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Many insecticides (particularly Asana, Adjourn, Baythroid, Silencer, Proaxis, Declare, Mustang Maxx, Respect, Lambda-Cy and Wariror) are very hazardous to honeybees. If blooming sunflowers must be treated, notify local beekeepers so that bees can be moved or confined during application.</td>
<td></td>
<td></td>
<td></td>
<td><strong>chlorpyrifos</strong> (R) Lorsban Adv. 3.755 EC (See Generic Insecticides)</td>
</tr>
<tr>
<td></td>
<td>1.0-1.5 pt</td>
<td>0.47-0.7</td>
<td>5.3-8</td>
<td></td>
<td>DO NOT apply more than 6 pt of chlorpyrifos 4 E per season. DO NOT allow livestock to graze in treated areas.</td>
</tr>
<tr>
<td></td>
<td><strong>lambda-cyhalothrin + chlorantraniliprole</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>lambda-cyhalothrin + chlorantraniliprole</strong> Besiege 1.252 5-10 oz 0.049-0.098 12.8-25.6</td>
</tr>
<tr>
<td></td>
<td><strong>beta-cyfluthrin (R)</strong> Baythroid XL 1 EC</td>
<td>2.0-2.8 oz</td>
<td>45.5-64</td>
<td></td>
<td><strong>beta-cyfluthrin (R)</strong> Baythroid XL 1 EC 2.0-2.8 oz 0.016-0.022 45.5-64</td>
</tr>
<tr>
<td></td>
<td><strong>esfenvalerate (R)</strong> Asana XL 0.66 EC (See Generic Insecticides)</td>
<td>5.8-9.6 oz</td>
<td>13-22</td>
<td></td>
<td><strong>esfenvalerate (R)</strong> Asana XL 0.66 EC (See Generic Insecticides) 5.8-9.6 oz 0.03-0.05 13-22</td>
</tr>
<tr>
<td></td>
<td><strong>flubendiamide</strong> Bell 4 SC 2-4 fl oz</td>
<td>0.0625-0.125</td>
<td>32-64</td>
<td></td>
<td><strong>flubendiamide</strong> Bell 4 SC 2-4 fl oz 0.0625-0.125 32-64</td>
</tr>
<tr>
<td></td>
<td><strong>gamma-cyhalothrin (R)</strong> Proaxis 0.5 CS Declare 1.25 CS</td>
<td>2.56-3.84 oz</td>
<td>33-50</td>
<td></td>
<td><strong>gamma-cyhalothrin (R)</strong> Proaxis 0.5 CS Declare 1.25 CS 2.56-3.84 oz 0.01-0.015 33-50</td>
</tr>
<tr>
<td></td>
<td><strong>lambda-cyhalothrin (R)</strong> Warrior II 2.08 CS (See Generic Insecticides)</td>
<td>1.28-1.92 oz</td>
<td>66.7-100</td>
<td></td>
<td><strong>lambda-cyhalothrin (R)</strong> Warrior II 2.08 CS (See Generic Insecticides) 1.28-1.92 oz 0.02-0.03 66.7-100</td>
</tr>
<tr>
<td></td>
<td><strong>methadathion</strong> Supracide 2 E 2.0 pt</td>
<td>0.5</td>
<td>4</td>
<td></td>
<td><strong>methadathion</strong> Supracide 2 E 2.0 pt 0.5 4</td>
</tr>
<tr>
<td></td>
<td><strong>zeta-cypermethrin 0.8 EC (R)</strong> Mustang Maxx/Respect</td>
<td>2.24-4.0 oz</td>
<td>32-57</td>
<td></td>
<td><strong>zeta-cypermethrin 0.8 EC (R)</strong> Mustang Maxx/Respect 2.24-4.0 oz 0.014-0.025 32-57</td>
</tr>
<tr>
<td><strong>Cutworm</strong></td>
<td><strong>chlorpyrifos</strong> (R) Lorsban 15 G 6.75 lb</td>
<td></td>
<td>1.0</td>
<td></td>
<td>At planting, place Lorsban granules in 6- to 7-inch band over the row behind planter. Incorporate in top 1-inch of soil.</td>
</tr>
<tr>
<td></td>
<td><strong>beta-cyfluthrin (R)</strong> Baythroid XL 1 EC</td>
<td>0.8-1.6 oz</td>
<td>80-160</td>
<td></td>
<td>Treat at 1 or more cutworms per sq ft or if plant stand losses are approaching the lower limits for optimum plant population.</td>
</tr>
<tr>
<td></td>
<td><strong>esfenvalerate (R)</strong> Asana XL 0.66 EC (See Generic Insecticides)</td>
<td>5.8-9.6 oz</td>
<td>13-22</td>
<td></td>
<td><strong>esfenvalerate (R)</strong> Asana XL 0.66 EC (See Generic Insecticides) 5.8-9.6 oz 0.03-0.05 13-22</td>
</tr>
<tr>
<td></td>
<td><strong>gamma-cyhalothrin (R)</strong> Proaxis 0.5 CS Declare 1.25 CS</td>
<td>1.92-3.2 oz</td>
<td>40-67</td>
<td></td>
<td><strong>gamma-cyhalothrin (R)</strong> Proaxis 0.5 CS Declare 1.25 CS 1.92-3.2 oz 0.0075-0.0125 40-67</td>
</tr>
<tr>
<td></td>
<td><strong>lambda-cyhalothrin (R)</strong> Warrior II 208 CS (See Generic Insecticides)</td>
<td>0.96-1.6 oz</td>
<td>80-133</td>
<td></td>
<td><strong>lambda-cyhalothrin (R)</strong> Warrior II 208 CS (See Generic Insecticides) 0.96-1.6 oz 0.015-0.025 80-133</td>
</tr>
<tr>
<td></td>
<td><strong>zeta-cypermethrin 0.8 EC (R)</strong> Mustang Maxx/Respect</td>
<td>2.24-4.0 oz</td>
<td>32-57</td>
<td></td>
<td><strong>zeta-cypermethrin 0.8 EC (R)</strong> Mustang Maxx/Respect 2.24-4.0 oz 0.014-0.025 32-57</td>
</tr>
<tr>
<td>Insect</td>
<td>Insecticide</td>
<td>Formulation/Acre</td>
<td>Lb ai/Acre</td>
<td>Acres/Gallon</td>
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</tr>
<tr>
<td>----------------</td>
<td>----------------------------------</td>
<td>------------------</td>
<td>------------</td>
<td>--------------</td>
<td>--------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Cutworm</td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>0.033-0.1</td>
<td>20-61</td>
<td>DO NOT apply more than 0.2 lb ai of Brigade per season. DO NOT apply again for 30 days.</td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (R)</td>
<td>Proaxis 0.5 CS</td>
<td>0.0075-0.0125</td>
<td>40-66.7</td>
<td>DO NOT apply more than 0.06 lb ai per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Declare 1.25 CS</td>
<td>0.015-0.025</td>
<td>80-133</td>
<td>DO NOT apply more than 0.06 lb ai per season.</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td></td>
<td></td>
<td>DO NOT apply more than 0.15 lb ai per season.</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R)</td>
<td>Mustang Maxx/Respect</td>
<td>0.008-0.025</td>
<td>32-100</td>
<td>DO NOT apply more than 0.266 lb ai of Hero per season. DO NOT apply again for 5 days.</td>
</tr>
<tr>
<td>Kudzu Bug</td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>0.1</td>
<td>20</td>
<td>DO NOT apply more than 0.2 lb ai of Brigade per season. DO NOT apply again for 30 days.</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Proaxis 0.5 CS</td>
<td>0.03</td>
<td>67</td>
<td>DO NOT apply more than 0.06 lb ai per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Declare 1.25 CS</td>
<td></td>
<td></td>
<td>DO NOT apply more than 0.06 lb ai per season.</td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (R)</td>
<td>Mustang Maxx/Respect</td>
<td>0.025</td>
<td>32</td>
<td>DO NOT apply more than 0.15 lb ai per season.</td>
</tr>
<tr>
<td>Threecornered</td>
<td>gamma-cyhalothrin (R)</td>
<td>Proaxis 0.5 CS</td>
<td>0.0075-0.0125</td>
<td>40-66.7</td>
<td>DO NOT apply more than 0.06 lb ai per season.</td>
</tr>
<tr>
<td>Alfalfa Hopper</td>
<td></td>
<td>Declare 1.25 CS</td>
<td>0.0125-0.015</td>
<td>80-100</td>
<td>DO NOT apply more than 0.06 lb ai per season.</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td></td>
<td></td>
<td>DO NOT apply more than 0.06 lb ai per season.</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin + chlorantraniliprole (R)</td>
<td>Besiege 1.252</td>
<td>0.049-0.08</td>
<td>16-25.6</td>
<td>DO NOT graze or feed hay to livestock. DO NOT exceed 20 fl oz per acre per season.</td>
</tr>
<tr>
<td></td>
<td>imidacloprid</td>
<td>Gaucho 600</td>
<td>1.6 - 3.2 oz/100 lb seed</td>
<td></td>
<td>Seed treatment. DO NOT graze or feed livestock on forage or hay.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Senator 600</td>
<td>1.6 - 3.2 oz/100 lb seed</td>
<td></td>
<td>Seed treatment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Axcess 5 FS</td>
<td>1.6 - 3.2 oz/100 lb seed</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>thiamethoxam</td>
<td>Cruiser 5 FS</td>
<td>1.28 oz/100 lb seed</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Warden CX</td>
<td>3.38 oz/100 lb seed</td>
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<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R)</td>
<td>Mustang Maxx/Respect</td>
<td>0.0175-0.025</td>
<td>32-45.7</td>
<td>DO NOT apply more than 0.15 lb ai per season.</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin (R)</td>
<td>Hero 1.24 EC</td>
<td>0.04-0.1</td>
<td>12.4-32</td>
<td>DO NOT apply more than 0.266 lb ai of Hero per season. DO NOT apply again for 5 days.</td>
</tr>
</tbody>
</table>
## EDAMAME INSECT CONTROL

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (REI) Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blistier Beetle</strong></td>
<td>bifenthrin (R) Brigade 2 EC</td>
<td>2.1-6.4 oz</td>
<td>0.033-0.1</td>
<td>20-61</td>
<td>DO NOT apply more than 0.2 lb ai of Brigade per season. DO NOT apply again for 30 days.</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>carbaryl Sevin XLR or 4F</td>
<td>2 qt</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (R) Proaxis 0.5 CS</td>
<td>1.92-3.2 oz</td>
<td>0.077-0.125</td>
<td>40-66.7</td>
<td>DO NOT apply more than 0.06 lb ai per season.</td>
<td>7 succulent, 21 dried</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Declare 1.25 CS</td>
<td>0.97-1.28 oz</td>
<td>0.77-1.28</td>
<td>100-167</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R) Warrior II 2.08 CS</td>
<td>0.96-1.6 oz</td>
<td>0.015-0.025</td>
<td>80-133</td>
<td>DO NOT apply more than 0.06 lb ai per season.</td>
<td>7 succulent, 21 dried</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>(See Generic Insecticides)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin + chlorantraniliprole (R)</td>
<td>8.0-10.0 oz</td>
<td>32-45.7</td>
<td></td>
<td></td>
<td>7 succulent, 21 dried</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Besiege 1.252</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R) Mustang Maxx/Respect</td>
<td>1.28-4.0 oz</td>
<td>0.008-0.025</td>
<td>32-100</td>
<td>DO NOT apply more than 0.15 lb ai per season.</td>
<td>1 succulent, 21 dried</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC + bifenthrin (R) Hero 1.24 EC</td>
<td>4.0-10.3 oz</td>
<td>0.04-0.1</td>
<td>12.4-32</td>
<td>DO NOT apply more than 0.266 lb ai of Hero per season. DO NOT apply again for 5 days.</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td><strong>Defoliating Caterpillars</strong></td>
<td>Bacillus thuringiensis</td>
<td>0.5 - 2 lb/a</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>(Garden webworm, green cloverworm, saltmarsh caterpillar, cabbage looper, velvetbean caterpillar, silver-spotted skipper)</td>
<td>bifenthrin (R) Brigade 2 EC</td>
<td>2.1-6.4 oz</td>
<td>0.033-0.1</td>
<td>20-61</td>
<td>DO NOT apply more than 0.2 lb ai of Brigade per season. DO NOT apply again for 30 days.</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>(See Generic Insecticides)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>carbaryl Sevin XLR or 4F</td>
<td>2-3 pt</td>
<td>1.0-1.5</td>
<td>2.7-4</td>
<td></td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole Prevathon 0.43</td>
<td>14-20 oz</td>
<td>0.047-0.067</td>
<td>6.4-9.14</td>
<td></td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (R) Proaxis 0.5 CS</td>
<td>1.92-3.2 oz</td>
<td>0.077-0.125</td>
<td>40-66.7</td>
<td>DO NOT apply more than 0.06 lb ai per season.</td>
<td>7 succulent, 21 dried</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Declare 1.25 CS</td>
<td>0.97-1.28 oz</td>
<td>0.77-1.28</td>
<td>100-167</td>
<td>Higher rate of 1.28-1.54 oz/acre required for garden webworm and silver-spotted skipper.</td>
<td>7 succulent, 21 dried</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R) Warrior II 2.08 CS</td>
<td>1.28-1.92 oz</td>
<td>0.02-0.03</td>
<td>66.6-100</td>
<td>DO NOT apply more than 0.06 lb ai per season.</td>
<td>7 succulent, 21 dried</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>(See Generic Insecticides)</td>
<td></td>
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<td></td>
<td>For garden webworm and silver-spotted skipper, raise rate to 1.6-1.92 oz/acre.</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin + chlorantraniliprole (R)</td>
<td>6-10 oz</td>
<td>0.06-0.1</td>
<td>13-21</td>
<td>DO NOT graze or feed hay to livestock. DO NOT exceed 20 fl oz per acre per season. Use 8-10 oz for silver-spotted skippers.</td>
<td>7 succulent, 21 dried</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Besiege 1.252</td>
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<tr>
<td></td>
<td>methoxyfenozide Intrepid 2F</td>
<td>4-16 oz</td>
<td>0.0625-0.250</td>
<td>16-32</td>
<td>Intrepid is not labeled for silver-spotted skipper.</td>
<td>7</td>
<td>7</td>
</tr>
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<td></td>
<td>DO NOT apply more than 1 lb ai of Intrepid per season.</td>
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<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R) Mustang Maxx</td>
<td>2.8-4.0 oz</td>
<td>0.0175-0.025</td>
<td>32-45.7</td>
<td>DO NOT apply more than 0.15 lb ai per season.</td>
<td>1 succulent, 21 dried</td>
<td>12</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>For saltmarsh caterpillar and silver-spotted skipper, the rate can be lowered to 1.28 oz. Raise rate to 3.2-4 oz for cabbage loopers.</td>
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<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin (R) Hero 1.24 EC</td>
<td>4.0-10.3 oz</td>
<td>0.04-0.1</td>
<td>12.4-32</td>
<td>DO NOT apply more than 0.266 lb ai of Hero per season. DO NOT apply again for 5 days.</td>
<td>3</td>
<td>12</td>
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<tr>
<td></td>
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<td></td>
<td>For green cloverworm and silver-spotted skipper, rate can be dropped to 2.6-6.1 oz.</td>
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<tr>
<td>Insect</td>
<td>Insecticide</td>
<td>Formulation/Acre</td>
<td>Lb ai/Acre</td>
<td>Acres/Gallon</td>
<td>Application/Comments</td>
<td>Minimum Days From Last Application to Harvest</td>
<td>Restricted Entry Interval (REI) Hours</td>
</tr>
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<tr>
<td><strong>Grasshoppers</strong></td>
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<tr>
<td></td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>0.033-0.1</td>
<td>20-61</td>
<td>DO NOT apply more than 0.2 lb ai of Brigade per season. DO NOT apply again for 30 days.</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole</td>
<td>Prevathon 0.43</td>
<td>0.047-0.067</td>
<td>6.4-9.14</td>
<td></td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (R)</td>
<td>Proaxis 0.5 CS</td>
<td>0.0125-0.015</td>
<td>40-66.7</td>
<td>DO NOT apply more than 0.06 lb ai per season.</td>
<td>7 succulent, 21 dried</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Declare 1.25 CS</td>
<td>0.0125-0.015</td>
<td>83-100</td>
<td></td>
<td>7 succulent, 21 dried</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td>0.025-0.03</td>
<td>67-80</td>
<td>DO NOT apply more than 0.06 lb ai per season.</td>
<td>7 succulent, 21 dried</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin + chlorantraniliprole (R)</td>
<td>Besiege 1.252</td>
<td>0.08-0.098</td>
<td>12.8-16</td>
<td>DO NOT graze or feed hay to livestock.  DO NOT exceed 20 fl oz per acre per season.</td>
<td>7 succulent, 21 dried</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R)</td>
<td>Mustang Maxx/Respect</td>
<td>0.02-0.025</td>
<td>32-40</td>
<td>DO NOT apply more than 0.15 lb ai per season.</td>
<td>1 succulent, 21 dried</td>
<td>12</td>
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<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin (R)</td>
<td>Hero 1.24 EC</td>
<td>0.025-0.06</td>
<td>21-49.2</td>
<td>DO NOT apply more than 0.266 lb ai of Hero per season. DO NOT apply again for 5 days.</td>
<td>3</td>
<td>12</td>
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<tr>
<td><strong>Soybean Looper</strong></td>
<td>Bacillus thuringiensis</td>
<td>Check label.</td>
<td></td>
<td></td>
<td><em>Bacillus thuringiensis</em> works effectively against insecticide-resistant or susceptible populations of soybean loopers and requires 3-4 days to kill larvae.</td>
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</tr>
<tr>
<td></td>
<td>chlorantraniliprole</td>
<td>Prevathon 0.43</td>
<td>0.047-0.067</td>
<td>6.4-9.14</td>
<td></td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin + chlorantraniliprole (R)</td>
<td>Besiege 1.252</td>
<td>0.098</td>
<td>12.8</td>
<td>DO NOT graze or feed hay to livestock.  DO NOT exceed 20 fl oz per acre per season.</td>
<td>7 succulent, 21 dried</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>methoxyfenozide</td>
<td>Intrepid 2 F</td>
<td>0.0625-0.125</td>
<td>16-32</td>
<td>DO NOT exceed more than 1 lb ai of Intrepid per season.</td>
<td>7</td>
<td>12</td>
</tr>
<tr>
<td><strong>Spider Mites</strong></td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>0.08-0.1</td>
<td>20-25</td>
<td>DO NOT apply more than 0.2 lb ai of Brigade per season. DO NOT apply again for 30 days.</td>
<td>3</td>
<td>12</td>
</tr>
</tbody>
</table>
# EDAMAME INSECT CONTROL

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (REI) Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bean Leaf Beetle</strong></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>2.1-6.4 oz</td>
<td>0.033-0.1</td>
<td>DO NOT apply more than 0.2 lb ai of Brigade per season. DO NOT apply again for 30 days.</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>carbaryl</td>
<td>Sevin XLR or 4F</td>
<td>1 pt</td>
<td>0.5</td>
<td></td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (R)</td>
<td>Proaxis 0.5 CS</td>
<td>1.92-3.2 oz</td>
<td>0.0075-0.0125</td>
<td>DO NOT apply more than 0.06 lb ai per season.</td>
<td>7 succulent, 21 dried</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Declare 1.25 CS</td>
<td>0.77-1.28 oz</td>
<td>8</td>
<td></td>
<td>7 succulent, 21 dried</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td>0.96-1.6 oz</td>
<td>0.015-0.025</td>
<td>DO NOT apply more than 0.06 lb ai per season.</td>
<td>7 succulent, 21 dried</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>imidacloprid</td>
<td>Gaucho 600</td>
<td>1.6 - 3.2 oz/100 lb seed</td>
<td>0.3-0.45</td>
<td>Gaucho and Cruiser will suppress early-season bean leaf beetles.</td>
<td></td>
<td>12</td>
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<tr>
<td></td>
<td></td>
<td>Axcess 5 FS</td>
<td>1.6 - 3.2 oz/100 lb seed</td>
<td></td>
<td></td>
<td></td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Senator 600</td>
<td>1.6 - 3.2 oz/100 lb seed</td>
<td></td>
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<td></td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam</td>
<td>Cruiser 5 FS</td>
<td>1.28 oz/100 lb seed</td>
<td></td>
<td></td>
<td></td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Warden CX</td>
<td>3.38 oz/100 lb seed</td>
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<td></td>
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<td>12</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R)</td>
<td>Mustang Maxx/Respect</td>
<td>2.8-4.0 oz</td>
<td>0.0175-0.025</td>
<td>DO NOT apply more than 0.15 lb ai per season.</td>
<td>1 succulent, 21 dried</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin (R)</td>
<td>Hero 1.24 EC</td>
<td>4.0-10.3 oz</td>
<td>0.04-0.1</td>
<td>DO NOT apply more than 0.266 lb ai of Hero per season.</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td><strong>Armyworm Complex</strong></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Complex (Yellow-striped, Fall and Beet Armyworm)</td>
<td>PYRETHROIDS (Brigade, Prolex, Proaxis, Karate, Mustang Maxx, Hero) are not effective against beet armyworm. DO NOT USE.</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>2.1-6.4 oz</td>
<td>0.033-0.1</td>
<td>DO NOT apply more than 0.2 lb ai of Brigade per season. DO NOT apply again for 30 days.</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole</td>
<td>Prevathon 0.43</td>
<td>14-20 oz</td>
<td>0.047-0.067</td>
<td></td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (R)</td>
<td>Proaxis 0.5 CS</td>
<td>3.2-3.84 oz</td>
<td>0.0125-0.015</td>
<td>DO NOT apply more than 0.06 lb ai per season.</td>
<td>7 succulent, 21 dried</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Declare 1.25 CS</td>
<td>1.28-1.54 oz</td>
<td>83-100</td>
<td></td>
<td>7 succulent, 21 dried</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Warrior II 2.08 CS</td>
<td>1.6-1.92 oz</td>
<td>0.025-0.03</td>
<td>DO NOT apply more than 0.06 lb ai per season.</td>
<td>7 succulent, 21 dried</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin + chlorantraniliprole (R)</td>
<td>Besiege 1.252</td>
<td>8.0-10.0 oz</td>
<td>0.08-0.098</td>
<td>DO NOT graze or feed hay to livestock.</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>methoxyfenozide</td>
<td>Intrepid 2 F</td>
<td>4-8 oz</td>
<td>0.0625-0.125</td>
<td>DO NOT exceed 20 fl oz per acre per season.</td>
<td>7 succulent, 21 dried</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R)</td>
<td>Mustang Maxx/Respect</td>
<td>3.2-4.0 oz</td>
<td>0.02-0.025</td>
<td>DO NOT apply more than 0.15 lb ai per season.</td>
<td>1 succulent, 21 dried</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin (R)</td>
<td>Hero 1.24 EC</td>
<td>4.0-10.3 oz</td>
<td>0.04-0.1</td>
<td>DO NOT apply more than 0.266 lb ai of Hero per season.</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

**Minimum Days From Last Application to Harvest**

- **3** days
- **21** days
- **24** days
- **7** days

**Restricted Entry Interval (REI) Hours**

- **12** hours
## EDAMAME INSECT CONTROL

<table>
<thead>
<tr>
<th>Insect Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
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<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (REI) Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Synthetic Pyrethroids</strong></td>
<td></td>
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<tr>
<td>bifenthrin (R)</td>
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</tr>
<tr>
<td>Brigade 2 EC</td>
<td>2.1-6.4 oz</td>
<td>0.0331-0.1</td>
<td>20-61</td>
<td>DO NOT apply more than 0.2 lb ai of Brigade per season. DO NOT apply again for 30 days.</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>gamma-cyhalothrin (R)</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Proaxis 0.5 CS</td>
<td>1.92-3.2 oz</td>
<td>0.0075-0.0125</td>
<td>40-66.7</td>
<td>DO NOT apply more than 0.06 lb ai per season.</td>
<td>7 succulent, 21 dried</td>
<td></td>
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<tr>
<td>Declare 1.25 CS</td>
<td>0.77-1.28 oz</td>
<td>0.0075-0.0125</td>
<td>100-167</td>
<td></td>
<td>7 succulent, 21 dried</td>
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<tr>
<td>lambda-cyhalothrin (R)</td>
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<tr>
<td>Warrior II 2.08 CS</td>
<td>1.28-1.92 oz</td>
<td>0.02-0.03</td>
<td>67-100</td>
<td>DO NOT apply more than 0.06 lb ai per season.</td>
<td>7 succulent, 21 dried</td>
<td></td>
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<tr>
<td>zeta-cypermethrin 0.8 EC (R)</td>
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</tr>
<tr>
<td>Mustang Maxx/Respect</td>
<td>2.8-4.0 oz</td>
<td>0.0175-0.025</td>
<td>32-45.7</td>
<td>DO NOT apply more than 0.15 lb ai per season.</td>
<td>1 succulent, 21 dried</td>
<td></td>
</tr>
<tr>
<td>zeta-cypermethrin + bifenthrin (R)</td>
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</tr>
<tr>
<td>Hero 1.24 EC</td>
<td>4.0-10.3 oz</td>
<td>0.04-0.1</td>
<td>12.4-32</td>
<td>DO NOT apply more than 0.266 lb ai of Hero per season. DO NOT apply again for 5 days.</td>
<td>3</td>
<td>12</td>
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<tr>
<td><strong>Carbamates</strong></td>
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<tr>
<td>carbaryl</td>
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<td></td>
</tr>
<tr>
<td>Sevin XLR or 4F</td>
<td>1-3 pt</td>
<td>0.5-1.5</td>
<td>2.7-8</td>
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<td>21</td>
<td>12</td>
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<tr>
<td><strong>Other Chemistry</strong></td>
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<tr>
<td>chlorantraniliprole</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Prevathon 0.43</td>
<td>14-20 oz</td>
<td>0.047-0.067</td>
<td>6.4-9.14</td>
<td>Make no more than 4 applications per year.</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>lambda-cyhalothrin + chlorantraniliprole (R)</td>
<td>8.0-10.0 oz</td>
<td>0.08-0.98</td>
<td>12.8-16</td>
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<td>7 succulent, 21 dried</td>
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<tr>
<td><strong>ROOT FEEDER</strong></td>
<td></td>
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<tr>
<td>Grape Colaspis</td>
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</tr>
<tr>
<td>imidacloprid</td>
<td></td>
<td></td>
<td></td>
<td>A seed treatment can be beneficial in areas where grape colaspis has historically been a problem.</td>
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<tr>
<td>Gaucho 600</td>
<td>1.6 oz/100 lb seed</td>
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<td>12</td>
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<tr>
<td>Access 5 FS</td>
<td>1.6 oz/100 lb seed</td>
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<td>12</td>
<td></td>
</tr>
<tr>
<td>Senator 600</td>
<td>1.6 oz/100 lb seed</td>
<td></td>
<td></td>
<td></td>
<td>12</td>
<td></td>
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<tr>
<td>thiamethoxam</td>
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</tr>
<tr>
<td>Cruiser 5 FS</td>
<td>1.28 oz/100 lb seed</td>
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<td>12</td>
<td></td>
</tr>
<tr>
<td>Warden CX</td>
<td>3.2 oz/100 lb seed</td>
<td></td>
<td></td>
<td></td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

In recent years, pyrethroids have shown reduced efficacy and can be expected to provide poor to moderate control. Consider tank-mixing another chemistry when using a pyrethroid. DO NOT use synthetic pyrethroids on populations of tobacco budworm. Tobacco budworm is resistant to this chemistry.
<table>
<thead>
<tr>
<th>Insect Insecticide</th>
<th>Formulation/Acre</th>
<th>Lb ai/Acre</th>
<th>Acres/Gallon</th>
<th>Application/Comments</th>
<th>Minimum Days From Last Application to Harvest</th>
<th>Restricted Entry Interval (REI) Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green Stink Bug, Southern Green Stink Bug, Red Shouldered Stink Bug</td>
<td>bifenthrin (R) Brigade 2 EC (See Generic Insecticides)</td>
<td>2.1-6.4 oz</td>
<td>0.330.033-0.1</td>
<td>20-61</td>
<td>DO NOT apply more than 0.2 lb ai of Brigade per season. DO NOT apply again for 30 days.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (R) Proaxis 0.5 CS Declare 1.25 CS</td>
<td>3.2-3.84 oz</td>
<td>0.0125-0.015</td>
<td>40-66.7</td>
<td>DO NOT apply more than 0.06 lb ai per season.</td>
<td>7 succulent, 21 dried</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R) Warrior II 2.08 CS (See Generic Insecticides)</td>
<td>1.6-1.92 oz</td>
<td>0.025-0.03</td>
<td>67-80</td>
<td>DO NOT apply more than 0.06 lb ai per season.</td>
<td>7 succulent, 21 dried</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin + chlorantraniliprole (R) Besiege 1.252</td>
<td>8.0-10.0 oz</td>
<td>0.08-0.098</td>
<td>12.8-16</td>
<td>DO NOT graze or feed hay to livestock. DO NOT exceed 20 fl oz per acre per season.</td>
<td>7 succulent, 21 dried</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin 0.8 EC (R) Mustang Maxx/Respect</td>
<td>3.2-4.0 oz</td>
<td>0.02-0.025</td>
<td>32-40</td>
<td>DO NOT apply more than 0.15 lb ai per season. DO NOT apply more than 0.266 lb ai of Hero per season.</td>
<td>1 succulent, 21 dried</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin +bifenthrin (R) Hero 1.24 EC</td>
<td>4.0-10.3 oz</td>
<td>0.04-0.1</td>
<td>12.4-32</td>
<td>DO NOT apply again for 5 days.</td>
<td>3</td>
</tr>
<tr>
<td>Brown Stink Bug</td>
<td>bifenthrin (R) Brigade 2 EC (See Generic Insecticides)</td>
<td>2.1-6.4 oz</td>
<td>0.330.033-0.1</td>
<td>20-61</td>
<td>DO NOT apply more than 0.2 lb ai of Brigade per season. DO NOT apply again for 30 days.</td>
<td>3</td>
</tr>
<tr>
<td>Redbanded Stink Bug</td>
<td>bifenthrin (R) Brigade 2 EC (See Generic Insecticides)</td>
<td>2.1-6.4 oz</td>
<td>0.330.033-0.1</td>
<td>20-61</td>
<td>DO NOT apply more than 0.2 lb ai of Brigade per season. DO NOT apply again for 30 days.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>imidacloprid Imidacloprid 4F</td>
<td>1.4 oz</td>
<td>0.13</td>
<td>91.4</td>
<td>DO NOT apply more than 0.13 lb ai of Imidacloprid per season.</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Imidacloprid 2F (See Generic Insecticides)</td>
<td>2.8 oz</td>
<td>0.13</td>
<td>45.7</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td>Multiple Pests</td>
<td>lambda-cyhalothrin (R) + chlorantraniliprole Besiege 1.25 SC</td>
<td>5-10 oz</td>
<td>0.49-0.98</td>
<td>12.8-25.6</td>
<td>Bollworm, Tobacco Budworm, Cutworm, Grasshopper, Bean Leaf Beetle, Green Stink Bugs, Loopers, Green Cloverworm, Velvetbean Caterpillar, Kudzu Bug, Garden Webworm, Saltmarsh Caterpillar</td>
<td>7 succulent, 21 dried</td>
</tr>
</tbody>
</table>
### STORED GRAIN INSECT CONTROL

<table>
<thead>
<tr>
<th>Type Treatment</th>
<th>Insect</th>
<th>Insecticide</th>
<th>Rate</th>
<th>Application/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preventive treatments for bins</td>
<td>Beetles and Moths</td>
<td>Centynal 0.42</td>
<td>0.25-1.5 oz/gal water</td>
<td>Clean bins before application. Storicide II may be applied using automated spray equipment. DO NOT enter bin until spray has dried. Use malathion for wooden or metal bins. Malathion will not control Indian meal moth. Malathion is NOT labeled for rice storage facilities. DO NOT APPLY DIRECTLY TO GRAIN.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Malathion 5 EC</td>
<td>5.12 oz/gal water</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Storicide II</td>
<td>1.8 oz/gal water</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Suspend 0.42 SC</td>
<td>0.25-1.5 oz/gal water</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Preventive treatment sprays for grain</td>
<td>Beetles and Moths</td>
<td>Actellic 5 E</td>
<td>9.2-12.3 oz/30 tons grain (1,071 bushels)</td>
<td>Shelled corn and grain sorghum only</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Centynal 0.42 SC</td>
<td>8-10 lb/1,000 bushels</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1/30 fl oz (1 mL)/1,000 sq ft</td>
<td>Diacon is a growth regulator and does not control adults but is effective against larvae.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Malathion 6% Dust</td>
<td>10 lb/1,000 bushels (wheat, corn, oats, rye or barley)</td>
<td>Malathion is not labeled for rice. Apply as grain is being loaded or moved into final storage for protection from beetles and moths. OMRI certified for organic production. Excessive use may lower grain grade and may reduce test weight. Apply Storicide II in 1-5 gal of water into main grain stream as a coarse spray. Storicide II is not labeled for corn.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Silicon dioxide</td>
<td>1-2 lbs per ton of grain</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Insecto, Dryacide)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Storicide II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface treatment (inside bins and grain treatment)</td>
<td>Beetles and Moths</td>
<td>Malathion 6% Dust</td>
<td>5 lb/1,000 sq ft</td>
<td>Apply as top-dress on grain bin surface for protection against moths and beetles. Malathion is not labeled for rice.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contain or Sensat</td>
<td>2.6 fl oz/1,000 sq ft</td>
<td>Effective against all grain-infesting moths as well as confused flour beetle and flat grain beetle. Provides suppression only for other weevils and beetles.</td>
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<tr>
<td></td>
<td></td>
<td>Diacon-D</td>
<td>8 lb/1,000 sq ft</td>
<td>Diacon is a growth regulator and does not control adults but is effective against larvae.</td>
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<tr>
<td></td>
<td></td>
<td>Diacon IGR 2.5</td>
<td>1/30 fl oz (1 mL)/1,000 sq ft</td>
<td>OMRI certified for organic production. Excessive use may use may lower grain grade and may reduce test weight.</td>
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<tr>
<td></td>
<td></td>
<td>Silicon dioxide</td>
<td>2-3 lbs/1,000 sq ft</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>(Insecto, Dryacide)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Moths only</td>
<td>Bacillus thuringiensis (Dipel, SOK-Bt, etc.)</td>
<td>Follow label directions.</td>
<td></td>
</tr>
</tbody>
</table>
## STORED GRAIN INSECT CONTROL

<table>
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<tr>
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<th>Insecticide</th>
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<th>Application/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grain fumigation</td>
<td>Beetles and Moths</td>
<td>Aluminum Phosphide (R)</td>
<td></td>
<td>Grain surface should be level. Apply in gas-tight bins when grain temperature is 60°F or higher. Leave for at least 3 days, preferably 5 days. DO NOT fumigate when temperatures are below 40°F. Use higher rates when infestations are high and/or temperatures are low. Always use a gas mask and never fumigate alone. Fumigated grain should be aerated thoroughly before feeding. Use a self-contained breathing apparatus and a safety rope. Seal all buildings and storage bins airtight before fumigation. Fumigation is not recommended for storage bins not equipped with fans for aeration.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Phostoxin, Fumitoxin, Gastoxtin, Fumex, Killz-All, Phosfume, Weevil-Cide)</td>
<td>Silos and Concrete Bins</td>
<td>200-900 pellets/1,000 bu 40-180 tablets/1,000 bu 10 pellets/ton 6 tablets/ton (check label also)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Butler-Type Bins</td>
<td>450-900 pellets/1,000 bu 90-180 tablets/1,000 bu</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Space Treatments</td>
<td>pellets: 100-725/1,000 cubic ft tablets: 20-145/1,000 cubic ft</td>
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<td></td>
<td>Be careful under hot, humid conditions when using aluminum phosphide because phosphine gas may be released quickly under these conditions. Phosphine needs at least 72 hours to kill some immature insects. Special training and precautions are needed before using aluminum phosphide. For more information on treatment using aluminum phosphide: <a href="http://www.degeschamerica.com/">http://www.degeschamerica.com/</a>.</td>
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</tbody>
</table>

### HOME STORAGE

Protection of small quantities of grain for home storage to be eaten

| Beetles and Moths | Heat oven until center of grain is 120 degrees F. | Cold or freezer treatment at 0 degrees F. | Place in a tight container. Temperature should be checked with meat thermometer. DO NOT use heat on seed to be planted. Place container in deep freeze. |
|-------------------|--------------------------------------------------|------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
|                   | 30 minutes                                       | 4 days                                   |                                                                                  |                                                                                  |
HONEY BEE HIVE MANAGEMENT

All chemical information provided below is given with the understanding that no endorsement of named products is intended, nor is criticism implied of similar products that are not mentioned. Individuals who use pesticides are responsible for ensuring that the intended use complies with current regulations and conforms to the product label. Before purchasing or using any pesticide, always read and carefully follow the label directions. Products listed below are identified by common chemical name. A trade name in parentheses may also be listed as a convenience for the reader. Additional trade names may be available.

<table>
<thead>
<tr>
<th>Pest/Disease</th>
<th>Treatment</th>
<th>Rate</th>
<th>Application</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Varroa Mites</td>
<td>Formic Acid 46.7% (Mite Away Quick Strip)</td>
<td>2 strips per colony</td>
<td>Hive entrance should be fully open during application; seal other holes and close screen bottom board. Lay strips across top of brood frames (or between brood frames if 2 brood boxes present). Leave at least 2 inches between strips and at least 4 inches from outside edge of hive. Apply only when daytime high temperatures are between 50°F and 92°F during week of application.</td>
<td>Material is extremely caustic. Applicators should wear coveralls, long sleeves, long pants, acid-resistant gloves (PVC, neoprene, nitrile) and protective eyewear. Wear approved respirator with organic vapor cartridge. DO NOT open hives without PPE for 72 hours after application. Safe to apply during the honey flow.</td>
</tr>
<tr>
<td>Thymol</td>
<td>Dosage prepackaged by manufacturer; follow label directions for bulk packaging.</td>
<td>Follow label directions for specific product.</td>
<td>DO NOT use during honey flow. Remove product at least 30 days prior to honey harvest. Treatments are most effective during broodless periods. Use when daytime high temperatures are between 68°F and 86°F. DO NOT use when temperatures are above 90°F.</td>
<td></td>
</tr>
<tr>
<td>Oxalic Acid Dihydrate</td>
<td>Liquid: up to 50 mL medicated syrup per hive body</td>
<td>Dissolve 35 g of oxalic acid dihydrate in 1 liter of 1:1 sugar syrup (warm syrup to completely dissolve crystals). Use syringe to trickle 5 mL of solution directly onto adult bees in each occupied bee space in each brood box.</td>
<td>DO NOT apply as liquid to any colony more than once per year during broodless period; this method may cause some bee mortality or overwintering bee loss.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vapor: 2 grams crystals per hive body</td>
<td>Seal all upper entrances, ventilation and cracks; smoke bees up from the bottom board; place 2 grams oxalic acid crystals into vaporizer; insert the vaporizer apparatus through the bottom entrance and cover entrance with towel; apply heat until all oxalic acid has sublimated.</td>
<td>Follow vaporizer manufacturer’s directions for use. Oxalic acid can damage bee brood and will not control varroa mites in capped cells. Use only in late fall or early spring when little or no brood is present. DO NOT use when honey supers are in place.</td>
<td></td>
</tr>
<tr>
<td>Potassium Salt of Hop Beta Acids (HopGuard II)</td>
<td>1 strip per 5 frames of bee brood</td>
<td>Open folded strips and place over top bars of brood frames, hanging within colony cluster. Apply up to 6 strips per year per hive, based on need. Bees will destroy and remove cardboard strips.</td>
<td>For best results, apply when little or no brood is present in the colony. If used while brood is present, application may need to be repeated 3 times at 2-week intervals. DO NOT apply to frames in honey supers; safe to use during honey flow if all label guidelines are followed.</td>
<td></td>
</tr>
</tbody>
</table>
HONEY BEE HIVE MANAGEMENT

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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Varroa Mites (cont.)</td>
<td>Amitraz (Apivar)</td>
<td>1 strip/5 frames of bees in brood chamber</td>
<td>Hang strip between frames in brood nest. Treat for minimum of 42 days and maximum of 56 days. Remove strips and discard. DO NOT reuse strips. Use chemical-resistant gloves to handle strips.</td>
<td>If hives are treated in the spring, prior to the first honey flow, strips must be removed at least 14 days prior to adding honey supers. Fall treatment can be applied as soon as honey supers are removed.</td>
</tr>
<tr>
<td></td>
<td>Fluvalinate (Apistan)</td>
<td>1 strip/5 frames of bees in brood chamber</td>
<td>Hang strip between frames in brood nest. Treat for minimum of 42 days and maximum of 56 days. Remove strips and discard. DO NOT reuse strips. Use chemical-resistant gloves to handle strips.</td>
<td>Treat hives in the spring before first honey flow or in late summer or fall after surplus honey has been removed. Supers may be returned to hive following treatment. Never consume or sell contaminated honey. Many mite populations are resistant to this product.</td>
</tr>
<tr>
<td></td>
<td>Coumaphos (CheckMite+)</td>
<td>1 strip/5 frames of bees in brood chamber</td>
<td>Hang strip between frames in brood nest. Treat for minimum of 42 days and maximum of 56 days. Remove strips and discard. DO NOT reuse strips. Use chemical-resistant gloves to handle strips.</td>
<td>Treat hives in spring before first honey flow or in late summer or fall after surplus honey has been removed. Supers may not be placed on hives for 14 days after removal of strips. Never consume or sell honey that has been treated. DO NOT treat any hive with coumaphos more than two times in one year. Many mite populations are resistant to this product.</td>
</tr>
<tr>
<td>Tracheal Mites</td>
<td>Menthol 99.94% granules in packet (Menthol, Mite-A-Thol)</td>
<td>1.8 ounces (50 grams)/colony</td>
<td>Place packet on top bars when daytime high temperature is above 70°F and below 80°F; place on bottom board if temperature is above 80°F. Remove packet after 10 to 12 weeks and discard.</td>
<td>Remove product at least 4 weeks prior to spring honey flow to prevent honey contamination. In the fall, remove surplus honey prior to treatment. DO NOT use product when temperature is below 60°F. Use of fumigants for varroa mites (formic acid, thymol) is effective against tracheal mites as well.</td>
</tr>
<tr>
<td></td>
<td>1:2 Shortening-sugar patties</td>
<td>1 patty (thoroughly mix 1 part vegetable shortening with 2 parts granulated sugar)</td>
<td>Place 1 flattened patty (approximately 1/3 cup) on top bars above brood nest when brood is being reared in hive.</td>
<td>Grease patties do not kill tracheal mites, but slow their spread within a hive by interfering with mite host-finding ability. Check often, as patties are extremely attractive to small hive beetles.</td>
</tr>
<tr>
<td>Nosema</td>
<td>Bioclohexylammonium fumagillin (Fumadil-B, Fumagilin-B)</td>
<td>Mix with syrup according to manufacturer’s product label directions for number of hives needing treatment.</td>
<td>Mix with sugar syrup and feed to honey bees. Feed 2 gallons of syrup for fall treatment; 1 gallon syrup for spring treatment.</td>
<td>DO NOT use during honey flow. Stop treatment at least 4 weeks prior to addition of any honey supers.</td>
</tr>
<tr>
<td></td>
<td>Nozevit</td>
<td>1 mL (20 drops) per 12 fluid ounces of light syrup</td>
<td>Feed medicated syrup to each hive 2 times, 10 days apart, in the spring and/or the fall.</td>
<td>DO NOT use during honey flow. Stop treatment at least 4 weeks prior to addition of any honey supers. [Nozevit is NOT a medication or an antibiotic; it is a feeding supplement which, in some cases, appears to lower the overall spore count in Nosema-infected bees.]</td>
</tr>
</tbody>
</table>
## HONEY BEE HIVE MANAGEMENT

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<thead>
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<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Small Hive Beetles</strong></td>
<td>- Coumaphos (CheckMite+)</td>
<td>1 strip per hive</td>
<td>Place 1” square of strip in center of plastic Beetle Barn trap, or prepare a 5” × 5” square of corrugated cardboard by removing the paper from one side. Cover smooth side with duct tape or packing tape to prevent bees from tearing up and removing cardboard. Cut one strip in half and staple both pieces to the corrugated side of cardboard. Place strip-side-down on bottom board of hive. Use chemical-resistant gloves to handle strips. <strong>DO NOT USE LEATHER BEE GLOVES.</strong> DO NOT USE DURING HONEY FLOW. Remove strip 14 days before honey supers are added in spring, or remove surplus honey prior to fall treatment. Never consume or sell honey that has been treated. <strong>DO NOT treat any hive with coumaphos more than two times in one year.</strong> Chemical control has limited effect on small hive beetles; keep colonies strong, do not over-super and manage adult beetle populations using mechanical traps to prevent damage from beetle larvae.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Under-hive beetle traps (Freeman Beetle Trap, IPK Trap, West Beetle Trap)</td>
<td>1 trap per hive</td>
<td>Level hive in all directions. Replace or modify bottom board to hold plastic or metal tray. Fill tray with vegetable oil, mineral oil or soapy water. Trap will accumulate hive debris (dust, wax, pollen, mites) in addition to beetles; check tray regularly and replace liquid as needed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- In-hive beetle traps (Beetle Jail, Beetle Blaster, Beetle Eaters, Hood Trap)</td>
<td>Up to 2 per hive body</td>
<td>For traps with one chamber, fill reservoir one-half to three-quarters full with vegetable or mineral oil. For traps with multiple chambers, add apple cider vinegar or other bait in addition to oil. Oils coat and suffocate beetles but are not attractive; baits attract beetles but do not kill them. Baitable traps are recommended. Inspect traps frequently and replace oil/bait. Bees may cover trap openings with propolis. <strong>Beetle Bait Recipe:</strong> Combine 1 cup water, 1/2 cup apple cider vinegar, 1/4 cup sugar and the peel of 1 ripe banana (chopped in small pieces). Allow to ferment one to two days.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Permethrin (Gardstar 40% EC)</td>
<td>5 mL per gallon of water</td>
<td>Thoroughly drench soil in area 18 to 24 inches wide in front of each hive. Apply late in evening when few bees are active. Mow grass/vegetation around hives prior to application. Apply only after high numbers of beetle larvae have been found in a hive. Soil drench kills only adult beetles emerging from soil; does not prevent adults flying from other areas. Permethrin is HIGHLY TOXIC TO HONEY BEES; do not contaminate hives or other surfaces that bees may contact. Apply with a sprinkler can, never with a pressure sprayer.</td>
<td></td>
</tr>
<tr>
<td><strong>American Foulbrood</strong></td>
<td>- Oxytetracycline hydrochloride (Terramycin Pre-Mix, Tetra Bee Mix, Tetroxy)</td>
<td>Mix 8.75 grams of Oxytetracycline powder with 1 pound of powdered sugar, or use pre-mixed product.</td>
<td>Apply 1 ounce (2 tablespoons), 3 times, at 4- to 5-day intervals to the tops of the frames in the brood chamber. Dust the mixture onto the tops of frames, around the edges of the brood chamber to avoid powder killing uncapped brood. <strong>DO NOT use during honey flow. Stop treatment at least 6 weeks prior to addition of any honey supers. Requeen hive, or caging queen for 10 days, to break brood cycle at time of application will increase effectiveness of treatment.</strong> Tyllosin is recommended for use when foulbrood is found to be resistant to other treatments. Use only under the supervision of a state apiary inspector.</td>
<td><strong>NOTE:</strong> AFB is extremely contagious. Antibiotics cannot cure AFB-infected honey bees. Destruction of infected colonies (bees and hives) by burning is mandatory. Apairy should be quarantined; all other colonies in the apiary should be treated with antibiotic, then inspected again in 4 weeks. If AFB is suspected, contact state apiary inspector.</td>
</tr>
<tr>
<td></td>
<td>- Tylosin (Tylan)</td>
<td>Mix 2 teaspoons product with 1/4 cup powdered sugar.</td>
<td>Apply approximately 3 tablespoons, 3 times, at 4- to 5-day intervals to the top of the frames in the brood chamber. Dust the mixture onto the tops of frames, around the edges of the brood chamber to avoid powder killing uncapped brood. Tyllosin is recommended for use when foulbrood is found to be resistant to other treatments. Use only under the supervision of a state apiary inspector.</td>
<td></td>
</tr>
</tbody>
</table>
## HONEY BEE HIVE MANAGEMENT

All chemical information provided below is given with the understanding that no endorsement of named products is intended, nor is criticism implied of similar products that are not mentioned. Individuals who use pesticides are responsible for ensuring that the intended use complies with current regulations and conforms to the product label. Before purchasing or using any pesticide, always read and carefully follow the label directions. Products listed below are identified by common chemical name. A trade name in parentheses may also be listed as a convenience for the reader. Additional trade names may be available.

<table>
<thead>
<tr>
<th>Pest/Disease</th>
<th>Treatment</th>
<th>Rate</th>
<th>Application</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>European Foulbrood</td>
<td>Oxytetracycline hydrochloride (Terramycin Pre-Mix, Tetra Bee Mix, Tetroxy)</td>
<td>Mix 8.75 grams of Oxytetracycline powder with 1 pound of powdered sugar, or use pre-mixed product.</td>
<td>Apply 1 ounce (2 tablespoons), 3 times, at 4- to 5-day intervals to the tops of the frames in the brood chamber. Dust the mixture onto the tops of frames, around the edges of the brood chamber to avoid powder killing uncapped brood.</td>
<td>DO NOT use during honey flow. Stop treatment at least 6 weeks prior to addition of any honey supers. Requeening hive, or caging queen for 10 days, to break brood cycle at time of application will increase effectiveness of treatment.</td>
</tr>
<tr>
<td></td>
<td>Tylosin (Tylan)</td>
<td>Mix 2 teaspoons product with 1/4 cup powdered sugar.</td>
<td>Apply approximately 3 tablespoons, 3 times, at 4- to 5-day intervals to the top of the frames in the brood chamber. Dust the mixture onto the tops of frames, around the edges of the brood chamber to avoid powder killing uncapped brood.</td>
<td>Tylosin is recommended for use when foulbrood is found to be resistant to other treatments. Use only under the supervision of a state apiary inspector.</td>
</tr>
<tr>
<td>Greater Wax Moth (Fumigation of Stored Bee Hive Supers and Other Beekeeping Equipment)</td>
<td>Paradichlorobenzene 100% (Para Moth)</td>
<td>3 ounces crystals for a stack of up to 5 hive bodies</td>
<td>Sprinkle crystals on paper or cardboard placed on top bars of the uppermost hive body in stack. Cover tightly, using tape to seal gaps between hive bodies if necessary. Stacks should be inspected every 2 to 3 weeks; add more crystals if needed.</td>
<td>Use in well-ventilated area. Never use on a live colony of honey bees or on combs of un-extracted honey. Not usually necessary after first freeze of fall season. Unstack supers and allow to thoroughly air out for at least 2 weeks prior to placing back on hive.</td>
</tr>
<tr>
<td></td>
<td>Glacial acetic acid (80%)</td>
<td>150 mL (2/3 cup) per stack of up to 5 hive bodies</td>
<td>Soak an absorbent pad (such as cotton wool) with acetic acid and place on top bars of topmost super; cover tightly. Use tape to seal gaps between hive bodies if necessary. Stacks should be inspected every 2 to 3 weeks and treatment repeated if necessary.</td>
<td>Never use on a live colony of honey bees. Repeated use of acetic acid can cause corrosion of metal parts such as wires, nails and frame rests.</td>
</tr>
<tr>
<td></td>
<td>Aluminum phosphide (Phostoxin)</td>
<td>150-225 pellets/1,000 cu ft, 30-40 tablets/1,000 cu ft</td>
<td></td>
<td>Honey from treated hives or supers may only be used for bee food.</td>
</tr>
</tbody>
</table>
# Apple/Pear Spray Schedule—Commercial

## Insect Management and Formulations

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use/Acre</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BY MARCH 15</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initiate Oriental Fruit Moth and SJS</td>
<td>Superior oil plus one of the</td>
<td>2%</td>
<td>Where San Jose scale is a main target of oil sprays, the best timing is at green</td>
<td>45</td>
</tr>
<tr>
<td>Scouting Program</td>
<td>following:</td>
<td></td>
<td>tip, but delaying oil application until half-inch green will give better control of mites.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>San Jose Scale European Red</td>
<td></td>
<td><strong>DO NOT use Captan within 2 weeks or Sulfur within 30 days before or after an oil application.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mite Eggs Aphid Eggs</td>
<td></td>
<td><strong>Apply Supracide before any blossoms open.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lorsban Advanced</td>
<td>0.5-4 pt</td>
<td>For rates less than 2 pt Supracide per 100 gal, tank mix with an oil.</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Supracide 2E</td>
<td>3-12 pt</td>
<td>Use Esteem with Superior spray oil at recommended rate at half-inch green to control scale and rosy apple aphid.</td>
<td>See text</td>
</tr>
<tr>
<td></td>
<td>Esteem 35WP</td>
<td>3-5 oz</td>
<td></td>
<td>45</td>
</tr>
<tr>
<td><strong>TIGHT CLUSTER TO PINK</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rosy Apple Aphid</td>
<td>Ambush</td>
<td>6.4-25.6 oz</td>
<td>Ambush and Pounce are not to be applied after petal fall.</td>
<td>See text</td>
</tr>
<tr>
<td></td>
<td>Asana XL 0.66 EC</td>
<td>4.8-14.5 oz</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Avaunt WDG</td>
<td>5-6 oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Baythroid XL 1 EC</td>
<td>2-2.4 fl oz</td>
<td>Keeping the orchard groundcover free of flowering broadleaf weeds will also lessen the bug population and keep pollinators in the fruit trees.</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Beleaf 50 SG</td>
<td>2-2.8 fl oz</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Besiege</td>
<td>6-12 fl oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Danitol 2.4 EC</td>
<td>10.7-21.3 fl oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Mustang Max 0.8 EC</td>
<td>1.28-4 fl oz</td>
<td></td>
<td>See text</td>
</tr>
<tr>
<td></td>
<td>Pounce 25 WP</td>
<td>6.4-16 oz</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Proaxis 0.5 EC</td>
<td>2.6-5.1 fl oz</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Warrior</td>
<td>1.28-2.56 fl oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tarnished Plant Bugs and Stink Bugs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spotted Tentiform Leafminer</td>
<td>Same as GREEN TIP TO ½” GREEN</td>
<td></td>
<td>The need for insecticide against leafminer at this time is questionable, because the number of mines rarely exceeds threshold level of one per leaf.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>or</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Altacor 35 WDG</td>
<td>2.5-4.0 oz</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Assail 30SG</td>
<td>2.5 oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Esteem 35WP</td>
<td>3-5 oz</td>
<td></td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Intrepid 2F</td>
<td>8-12 fl oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>Plum Curculio dispersal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plum curculio (PC) adults</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## APPLE/PEAR SPRAY SCHEDULE—COMMERCIAL

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use/Acre</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BY APRIL 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initiate Scouting Programs for Plum Curculio</td>
<td>Tie a gray plum curculio pyramid trap to each of 4 perimeter apple tree trunks adjacent to woods (PC overwintering site) and check twice weekly for plum curculio adults. The spray threshold is one PC adult per trap per week.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Place 2 or 3 codling moth pheromone traps in upper third of tree canopy in orchard interior and check twice weekly to record first consistent moth emergence in early to mid-April = CM biofix date.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After appropriate biofix dates, begin accumulating DD (base 50°F for CM and PC and base 51°F for SJS) to predict spray periods (hatch) by calculating number of daily DD using proper base = DD = (maximum daily temperature + minimum daily temperature) / 2 – base.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BLOOM</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DO NOT SPRAY INSECTICIDES/MITICIDES DURING BLOOM.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PETAL FALL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>European Red Mite</strong></td>
<td>Oil</td>
<td>0.5%-1%</td>
<td>DO NOT use oil if temperature exceeds 90°F.</td>
<td>7</td>
</tr>
<tr>
<td>Twospotted Spider Mite</td>
<td>Acramite 50 WS</td>
<td>0.75-1 lb</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Agri-Mek 0.7 SC</td>
<td>1 fl oz</td>
<td></td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Apollo 4 SC</td>
<td>4-8 fl oz</td>
<td></td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Envidor 2 SC</td>
<td>16-18 fl oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Kanemite 15 SC</td>
<td>21-31 fl oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Nealta</td>
<td>13.7 fl oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Nexter 75 WP</td>
<td>4.4-5.2 oz</td>
<td>Spray threshold: Apply when mites exceed threshold of 2.5 mites per leaf.</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Onager 1 EC</td>
<td>12-24 fl oz</td>
<td>Caution: DO NOT use Captan or Sulfur within two weeks of the oil application.</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Portal</td>
<td>1-2 pt</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Savey 50 DF</td>
<td>3-6 oz</td>
<td>Apollo and Savey are most effective if applied after petal fall or first cover.</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Zeal 72 WP</td>
<td>2-3 oz</td>
<td>Use low rate of Nexter for European red mite or high rate for twospotted mite.</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Use low rate of Acramite for twospotted mite or high rate for European red mite.</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Agri-Mek is most effective if applied before leaves harden off.</td>
<td>14</td>
</tr>
<tr>
<td><strong>Plum Curculio</strong></td>
<td>Avaunt 30 WDG</td>
<td>5-6 oz</td>
<td>Peak hatch of redbanded leafroller usually coincides with petal fall. Control at this time helps prevent late-season problems. If plum curculio pressure has been severe and Imidan is applied to control it, use 8.3 lb per acre.</td>
<td>14</td>
</tr>
<tr>
<td><strong>Leafrollers</strong></td>
<td>Imidan 70 W</td>
<td>2.1-5.3 lb</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td><strong>Oriental Fruit Moth</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Leafrollers</strong></td>
<td>Products listed above for three species combined or</td>
<td>Spray trees as plum curculio adults move into orchard between 100-400 DD accumulated after second day in late March when temperatures exceed 70°F. Adult moths and plum curculio enter the orchards from late March to late April. Cool weather during this time may extend plum curculio adult feeding and egg laying of both species into early May.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Altacor 35 WDG</td>
<td>2.5-4.5 oz</td>
<td>After petal fall, look for plum curculio feeding damage on fruit, especially along orchard perimeter adjacent to woods (overwintering site).</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Confirm 2 F</td>
<td>20 fl oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Delegate 25 WG</td>
<td>4.5-7.0 oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Entrust 2 SC</td>
<td>4-10 fl oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Exirel</td>
<td>8.5-17 fl oz</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Intrepid 2 F</td>
<td>8-16 fl oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Proclaim 5 SG</td>
<td>3.2-4.8 oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Rimon 0.83 EC</td>
<td>20-50 fl oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td><strong>Plum Curculio</strong></td>
<td>Products listed above for three species combined or</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Actara 25W</td>
<td>4.5-5.5 oz</td>
<td></td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Assail 30 SG</td>
<td>5-8 oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Belay 2.13 SC</td>
<td>6 fl oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Exirel</td>
<td>8.5-17 fl oz</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Surround WP (OMRI*)</td>
<td>25-50 lb</td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>
# APPLE/PEAR SPRAY SCHEDULE—COMMERCIAL

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<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use/Acre</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PETAL FALL</strong></td>
<td><strong>Oriental Fruit Moth</strong></td>
<td></td>
<td><strong>Products listed above for three species combined</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Altacor 35 WDG</em></td>
<td>2.5-4.5 oz</td>
<td><strong>Randomly inspect 100 fruit for feeding punctures by either stink bugs or tarnished plant bugs.</strong></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td><em>Assail 30 SG</em></td>
<td>5-8 oz</td>
<td><strong>Spray threshold</strong> = 1 or more white apple leafhopper nymphs per leaf. Leafhoppers are usually below this spray threshold in Arkansas.</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td><em>Belay 2.13 SC</em></td>
<td>6-12 fl oz</td>
<td><strong>Admire Pro is a foliar application.</strong></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td><em>Besiege</em></td>
<td>6-12 fl oz</td>
<td><strong>If an insecticide is not applied for rosy apple aphid at pink or if live aphids are still present, an insecticide should be applied.</strong></td>
<td>21</td>
</tr>
<tr>
<td></td>
<td><em>Delegate 25 WG</em></td>
<td>4.5-7.0 oz</td>
<td><strong>Not labeled for woolly apple aphid.</strong></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td><em>Entrust 2 SC</em></td>
<td>6-10 fl oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td><em>Exirel</em></td>
<td>8.5-17 fl oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td><em>Intrepid 2 F</em></td>
<td>12-16 fl oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td><em>Rimon 0.83 EC</em></td>
<td>20-40 fl oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Stink Bugs</strong></td>
<td><strong>See TIGHT CLUSTER TO PINK</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tarnished Plant Bug</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>White Apple Leafhopper</strong></td>
<td><em>Actara 25W</em></td>
<td>4.5-5.5 oz</td>
<td><strong>The need for insecticide against spotted tentiform leafminer is questionable, because the number of mines in Arkansas rarely exceeds the spray threshold level of two mines per leaf.</strong></td>
<td>35</td>
</tr>
<tr>
<td></td>
<td><em>Admire Pro</em></td>
<td>2.8 fl oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td><em>Assail 30 SG</em></td>
<td>2.5-4.0 oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td><em>Closer 2 SC</em></td>
<td>1.5-2.75 fl oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td><em>Danitol 2.4EC</em></td>
<td>10.6-21.3 fl oz</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><em>Exirel</em></td>
<td>8.5-17 fl oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Spotted Tentiform Leafminer</strong></td>
<td><strong>See TIGHT CLUSTER TO PINK</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(larvae)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aphid</strong></td>
<td><strong>See TIGHT CLUSTER TO PINK</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Beleaf 50 SG</em></td>
<td>2-2.8 oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Closer 2 SC</em></td>
<td>1.5-2.75 fl oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Esteem 35 WP</em></td>
<td>3-5 oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Movento 2 SC</em></td>
<td>6-9 fl oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Azera</em></td>
<td>2-3.5 pt</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FIRST COVER</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Codling Moth</strong></td>
<td>Imidan, Assail or Calypso</td>
<td></td>
<td><strong>Time applications of Intrepid or Rimon before Oriental fruit moth egg hatch at 200-400 DD or for codling moth between 50-100 DD following biofix. Repeat applications in 14- to 17-day intervals.</strong></td>
<td>5</td>
</tr>
<tr>
<td><strong>Oriental Fruit Moth</strong></td>
<td>as listed at <strong>PETAL FALL</strong></td>
<td></td>
<td><strong>For codling moth larvae, spray for each generation starting at 250 DD (May), 1250 DD (June) and 2250 DD (late July).</strong></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>for plum curculio</td>
<td></td>
<td><strong>For Oriental fruit moth, spray for each generation at 400-700 DD (late April), 1300-1700 DD (late May, after 2300 DD (late June) and every 10 to 14 days thereafter if you continue to see new fruit damage (red ring with frass).</strong></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>or</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Altacor 35 WDG</em></td>
<td>2.5-4.5 oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Confirm 2F</em></td>
<td>20 fl oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Delegate 25 WG</em></td>
<td>4.5-7 fl oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Exirel</em></td>
<td>8.5-17 fl oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Intrepid 2 F</em></td>
<td>12-16 fl oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Rimon 0.83 EC</em></td>
<td>20-40 fl oz</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# APPLE/PEAR SPRAY SCHEDULE—COMMERCIAL

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use/Acre</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIRST COVER (cont.)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Codling Moth larvae</td>
<td>Carpovirusine</td>
<td>6.8-13.5 fl oz</td>
<td>Use in non-chlorinated water. Apply one of the codling moth granulosis virus formulation. (Carpovirusine, Cyd-X HP, Madex or Virosoft) sprays only in orchards with low to moderate populations of codling moth. Time virus application against newly hatched codling moth larvae. Repeat sprays at interval of 7-9 days during codling moth hatch periods. After application, you may see stings and frass on fruit skins but rarely see live larvae in fruit. <strong>Note:</strong> Refrigerate virus formulations until used.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Cyd-X HP</td>
<td>0.5-3 fl oz</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Madex</td>
<td>0.5-3 fl oz</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Virosoft CP4</td>
<td>3.2 fl oz</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Oriental Fruit Moth and Leafroller larvae</td>
<td>Biobit HP</td>
<td>0.5-1.0 lb</td>
<td>Apply weekly as necessary during hatch period. <strong>Resistance management:</strong> Alternate Entrust sprays with applications of Bt formulations against Oriental fruit moth or leafrollers.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Deliver (OMRI*)</td>
<td>0.5-2.0 lb</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>San Jose Scale crawlers</td>
<td>Admire Pro 4.6 F</td>
<td>2.8 fl oz</td>
<td>Spray foliage when you see scale crawlers on several double-sticky tapes wrapped around scale-infested branches. By 300 DD since first catch of San Jose scale males on pheromone traps, wrap sticky tape traps on limbs and check twice weekly for crawlers.</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Assail 30 SG</td>
<td>8 oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Centaur 70 WDG</td>
<td>34.5 oz</td>
<td></td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Esteem 35W</td>
<td>4-5 oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Movento 2 SC</td>
<td>6-9 fl oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Sivanto 200 SL</td>
<td>10.5-14 fl oz</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## SECOND COVER AND SUMMER COVER SPRAYS

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use/Acre</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Jose Scale</td>
<td>See <strong>FIRST COVER</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plum Curculio</td>
<td>See <strong>PETAL FALL</strong></td>
<td></td>
<td>Plum curculio sprays are justified when you detect new fruit feeding damage in perimeter trees after 1200 DD (usually in early June) has accumulated since the <strong>PC biofix</strong> in late March.</td>
<td></td>
</tr>
<tr>
<td><strong>Spray in Mid-August</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oriental Fruit Moth and Codling Moth</td>
<td>SpinTor 2SC</td>
<td>6-10 fl oz</td>
<td>Beginning in early August, weekly monitoring fruit weekly for new surface stings and frass, apply insecticide: SpinTor or Entrust or Bt or virus. <strong>In conventional orchards,</strong> SpinTor will control Oriental fruit moth, codling moth and leafrollers as will other compounds listed in <strong>FIRST COVER.</strong></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Entrust 2 SC (OMRI*)</td>
<td>1.5-3 oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Oriental Fruit Moth</td>
<td>Biobit HP (OMRI*)</td>
<td>0.5-1.0 lb</td>
<td><strong>In organic blocks,</strong> from August to harvest, rotate weekly applications of Entrust with Bt formulations (Biobit, Deliver or Javelin) to control Oriental fruit moth or granulosis virus (Cyd-X, Virosoft and Virusine) to control codling moth.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Deliver (OMRI*)</td>
<td>0.5-2.0 lb</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Codling Moth</td>
<td>Cyd-X HP (OMRI*)</td>
<td>1-6 fl oz</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Virosoft CP4 (OMRI*)</td>
<td>1.3 fl oz</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Carpovirusine (OMRI*)</td>
<td>6.8-13.5 fl oz</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>White Apple Leafhopper</td>
<td>See <strong>PETAL FALL</strong></td>
<td></td>
<td><strong>Leafhoppers generally are not a problem in Arkansas.</strong> Spray threshold = one or more nymphs per leaf in late July to early August. Treatment at this time will eliminate the need to treat for adults immediately before harvest.</td>
<td></td>
</tr>
<tr>
<td>Spotted Tentiform Leafminer</td>
<td>See <strong>PETAL FALL</strong></td>
<td></td>
<td><strong>Spray threshold = two mines per leaf of spotted tentiform leafminer larvae (June to July).</strong> <strong>Spray threshold = four mines per leaf of spotted tentiform leafminer larvae (August).</strong></td>
<td></td>
</tr>
<tr>
<td>Green Apple Aphid</td>
<td>See <strong>PETAL FALL</strong></td>
<td></td>
<td><strong>Spray threshold = 50% terminals infested with aphids.</strong> Control is most important on young trees and dwarf plantings. Admire Pro is a foliar spray for this aphid.</td>
<td></td>
</tr>
</tbody>
</table>
## SECOND COVER AND SUMMER COVER SPRAYS

**Spray in Mid-August**

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use/Acre</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woolly Apple Aphid</td>
<td>Admire Pro 4.6 F</td>
<td>7-10.5 fl oz</td>
<td>Aboveground infestations of woolly apple aphid are of greatest concern for younger trees.</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Beleaf 50 SG</td>
<td>2-2.8 fl oz</td>
<td>Apply Admire Pro by chemigation into the root zone.</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Diazinon AG 600</td>
<td>12.75 fl oz/100 gal</td>
<td>DO NOT apply Admire Pro pre-bloom or during bloom when bees are foraging.</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Movento 2 SC</td>
<td>6-9 fl oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>European Red Mite</td>
<td>Same as PETAL FALL or</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Twospotted Spider Mite</td>
<td>Vydate L</td>
<td>2-4 pt</td>
<td>Agri-Mek is not as effective once leaves harden off.</td>
<td>14</td>
</tr>
<tr>
<td>Japanese Beetle</td>
<td>Assail 30 SG</td>
<td>5-8 oz</td>
<td>DO NOT make more than two applications of Assail per season and use a 14-day interval spray.</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Danitol 2.4 EC</td>
<td>16-21.3 fl oz</td>
<td>DO NOT exceed 5.3 oz Assail per season.</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Imidan 70 WP</td>
<td>2.1-5.3 lb</td>
<td>DO NOT exceed 16 fl oz (0.5 lb ai) Sevin per acre per season.</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Mustang Maxx 0.8 EC</td>
<td>1.28-4 fl oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Azeria</td>
<td>2-3.5 pt</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Proaxis 0.5 EC</td>
<td>2.5-5.1 fl oz</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Surround WP</td>
<td>25-50 lb</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Sevin XLR (4 EC)</td>
<td>1.5-3.0 qt</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Sevin XLR (10 EC)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Sevin XLR (15 EC)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Sevin XLR (20 EC)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Warrior</td>
<td>1.28-2.56 fl oz</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Neemix 4.5 (OMRI*)</td>
<td>7-16 fl oz</td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

### RED IMPORTED FIRE ANTS (ALL FIRE ANT BAITS) – Apply when ants are active and soil temperature is above 60°F. DO NOT treat if rain is anticipated within 6 hours.

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use/Acre</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bearing Apples</td>
<td>Pyriproxyfen (Esteem)</td>
<td>2-4 Tbsp/mound</td>
<td>Mound-to-mound treatment rate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.5-2.0 lb/acre</td>
<td>Broadcast rate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S-Methoprene (Extinguish)</td>
<td>3-5 Tbsp/mound</td>
<td>Mound-to-mound treatment rate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-1.5 lb/acre</td>
<td>Broadcast rate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pyridine (Distance)</td>
<td>1-4 Tbsp/mound</td>
<td>Mound-to-mound treatment rate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-1.5 lb/acre</td>
<td>Broadcast rate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S-Methoprene (Extinguish)</td>
<td>3-5 Tbsp/mound</td>
<td>Mound-to-mound treatment rate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.0-1.5 lb/acre</td>
<td>Broadcast rate.</td>
<td></td>
</tr>
<tr>
<td>Non-Bearing Apples</td>
<td>Fenoxycarb (Award)</td>
<td>1-3 Tbsp/mound</td>
<td>Mound-to-mound treatment rate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-1.5 lb/acre</td>
<td>Broadcast rate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hydramethylnon (Amdro Pro)</td>
<td>2-5 Tbsp/mound</td>
<td>Mound-to-mound treatment rate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-1.5 lb/acre</td>
<td>Broadcast rate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pyridine (Distance)</td>
<td>1-4 Tbsp/mound</td>
<td>Mound-to-mound treatment rate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-1.5 lb/acre</td>
<td>Broadcast rate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S-Methoprene (Extinguish)</td>
<td>3-5 Tbsp/mound</td>
<td>Mound-to-mound treatment rate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.0-1.5 lb/acre</td>
<td>Broadcast rate.</td>
<td></td>
</tr>
</tbody>
</table>

*OMRI = Organic Materials Review Institute lists compounds approved for organic production.*
<table>
<thead>
<tr>
<th>Organic Agriculture Resources List</th>
<th>Address/Online URL</th>
<th>Phone and Fax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organic Resources (Suppliers of Pest Management)</td>
<td>Dr. Kathleen Delate, Depts. of Agronomy/Horticulture, 106 Horticulture Hall Iowa State University, Ames, IA 50011 Online: <a href="http://extension.agron.iastate.edu/organicag/">http://extension.agron.iastate.edu/organicag/</a></td>
<td>Ph: 515-294-7069 Fax: 515-294-0730</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Organic Agriculture Suppliers</th>
<th>Address/Online URL</th>
<th>Phone and Fax</th>
</tr>
</thead>
<tbody>
<tr>
<td>AgBio, Inc. (insect traps, lures, flathead borer trap, organic pesticides)</td>
<td>9915 Raleigh Street, Westminster, CO 80031 Online: <a href="http://www.agbio-inc.com">http://www.agbio-inc.com</a></td>
<td>Ph: 303-469-9221 Fax: 303-469-9598</td>
</tr>
<tr>
<td>NovaSource (Surround Crop Protectant)</td>
<td>2255 N. 44th Street, Suite 300, Phoenix, AZ 85008-3279 Online: <a href="http://novasource.com/home/products/surround/">http://novasource.com/home/products/surround/</a></td>
<td>Ph: 800-525-2803</td>
</tr>
<tr>
<td>Gardens Alive (beneficial insects, soil amendments, cover crops, traps, pest controls: Surround Crop Protectant)</td>
<td>5100 Schenley Place, Lawrenceburg, IN 47025 Online: <a href="http://www.gardensalive.com">http://www.gardensalive.com</a></td>
<td>Ph: 513-354-1482 Fax: 513-354-1483</td>
</tr>
<tr>
<td>Peaceful Valley Farm and Garden Supply, Inc. (organic farming supplies, CM trap, seeds, plants, soil amendments, pest control: JMS Stylet oil, Isomate CTT, Dipel, Entrust, Pyganic, Surround Kaolin clay, M-Pede Insecticidal Soap, and parasitic nematodes)</td>
<td>P.O. Box 2209, 125 Clydesdale Court, Grass Valley, CA 95945 Online: <a href="http://www.groworganic.com">http://www.groworganic.com</a></td>
<td>Ph: 888-784-1722</td>
</tr>
<tr>
<td>Planet Natural (trap and lures, organic pesticides, beneficial insects)</td>
<td>1612 Gold Avenue, Bozeman, MT 59715 Online: <a href="http://www.planetnatural.com">http://www.planetnatural.com</a></td>
<td>Ph: 800-289-6656 Fax: 406-587-0223</td>
</tr>
<tr>
<td>Rincon-Vitova Insectaries, Inc. (beneficial insects)</td>
<td>P.O. Box 1555, Ventura, CA 93002-1555 Online: <a href="http://www.rinconvitova.com">http://www.rinconvitova.com</a></td>
<td>Ph: 800-248-2847 Fax: 805-643-6267</td>
</tr>
<tr>
<td>Seven Springs Farm (Pest Controls: Copper, Bt-Javelin, Dipel, Neemix, Pyganic, Entrust, M-Pede, Surround Crop Protectant)</td>
<td>426 Jerry Lane, Check, VA 24072 Online: <a href="http://www.7springsfarm.com">http://www.7springsfarm.com</a></td>
<td>Ph: 800-540-9181</td>
</tr>
</tbody>
</table>
**BLACKBERRY/RASPBERRY INSECT CONTROL—COMMERCIAL**

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use/Acre</th>
<th>Remarks/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LATE OCTOBER/EARLY NOVEMBER OR LATE MARCH (DORMANT)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raspberry Crown Borer</td>
<td>Altacor</td>
<td>3-4.5 oz</td>
<td>Apply Brigade or Hero after egg hatch ends from late October to early November or wait to apply in late March. Apply Brigade as a soil drench to the crown of plants in minimum of 50 gallons water per acre prior to significant rainfall event. DO NOT exceed 12.8 fl oz (0.2 lb ai) per acre per season. Apply Hero as a soil drench to crown of plant with 200 gallons water per acre.</td>
</tr>
<tr>
<td>Brigade 2 EC</td>
<td>6.4 fl oz</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Brigade WSB</td>
<td>16 oz</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Hero</td>
<td>10.3 fl oz</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>DELAYED DORMANT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rednecked Cane Borer</td>
<td>Cultural control</td>
<td></td>
<td>If less than 5% of fruiting canes have galls, then during winter, prune out galled fruiting canes, burn or shred these infested canes to kill overwintering larvae.</td>
</tr>
<tr>
<td><strong>PREBLOOM</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strawberry Clipper</td>
<td>Actara</td>
<td>3 oz</td>
<td>When the first flower appears, begin randomly checking 100 clusters for clipped buds or tap flower clusters over a white paper plate to detect adult strawberry clipper weevils (1/10 inch long with snout). If more than 1% of buds are clipped or you find 1 adult weevil, apply insecticide and reapply at 10-day intervals as long as bud clipping or weevils occur.</td>
</tr>
<tr>
<td>Sevin 4F</td>
<td>1-2 qt</td>
<td>7</td>
<td>Applications of Sevin and pyrethroids can cause mite flare-ups.</td>
</tr>
<tr>
<td>Sevin 80S</td>
<td>1.25-2.5 lb</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Spider Mites</td>
<td>Acramite</td>
<td>0.75-1 lb</td>
<td>Minimize road dust to prevent spider mite buildup.</td>
</tr>
<tr>
<td>Aza-Direct</td>
<td>3.5 pt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Savey 50DF</td>
<td>4-6 oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zeal</td>
<td>2-3 oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>EARLY BLOOM THROUGH BLOOM</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SAVE THE BEES!! DO NOT APPLY INSECTICIDES DURING BLOOM!!</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>POST-BLOOM TO HARVEST</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rednecked Cane Borer</td>
<td>Admire Pro (4.6F)</td>
<td>10.5-14 fl oz</td>
<td>DO NOT apply prebloom, during bloom or when bees are foraging. If more than 5% fruiting canes have galls, apply Admire Pro by either chemigation into root zone or by a basal soil drenching in a minimum of 500 gallons solution per acre.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Days of residual activity:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Spotted Wing Drosophila**</td>
<td>Danitol 2.4EC</td>
<td>16-21.33 fl oz</td>
<td>7 days</td>
</tr>
<tr>
<td></td>
<td>Delegate 25WG</td>
<td>3-6 oz</td>
<td>7 days</td>
</tr>
<tr>
<td></td>
<td>Exirel</td>
<td>13.5-20.5 fl oz</td>
<td>5 days</td>
</tr>
<tr>
<td></td>
<td>Malathion BEC</td>
<td>1-4 pt</td>
<td>7 days</td>
</tr>
<tr>
<td></td>
<td>Mustang Maxx</td>
<td>4 oz</td>
<td>5-7 days</td>
</tr>
<tr>
<td></td>
<td>Entrust 2SC (OMRI*)</td>
<td>4-6 oz</td>
<td>3-5 days</td>
</tr>
<tr>
<td></td>
<td>Pyganic 1.4 (OMRI*)</td>
<td>16-64 fl oz</td>
<td>0-2 days</td>
</tr>
</tbody>
</table>

*OMRI = Organic Materials Review Institute lists compounds approved for organic production.

**Spotted Wing Drosophila (SWD)** is a new invasive insect pest that was detected in ripening and ripened fruit in many Midwest states, including Arkansas, in 2013. The SWD larvae feed inside and damage ripening soft-skinned fruit, especially **blackberry, blueberry, raspberry and strawberry**. See the Spotted Wing Drosophila site: [http://www.ipm.msu.edu/invasive_species/spotted_wing_drosophila](http://www.ipm.msu.edu/invasive_species/spotted_wing_drosophila) or the Arkansas SWD fact sheet: [https://www.uaex.edu/publications/PDF/FSA-7079.p](https://www.uaex.edu/publications/PDF/FSA-7079.p)
## BLACKBERRY/RASPBERRY INSECT CONTROL — COMMERCIAL

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use/Acre</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>POST-BLOOM TO HARVEST</strong> (cont.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stink Bugs</td>
<td>Actara</td>
<td>3 oz</td>
<td>DO NOT exceed 6 oz Actara per acre per season. If leaf bronzing is occurring and mites are present, apply a foliar spray of Danitol. DO NOT exceed 12.8 fl oz Brigade per acre per season.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Bifenthrin 2 EC</td>
<td>6.4 fl oz</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Brigade 2 EC</td>
<td>6.4 fl oz</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Danitol 2.4 EC</td>
<td>16 fl oz</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td><strong>Spider Mites</strong></td>
<td>Acramite 50WS</td>
<td>0.75-1 lb</td>
<td>Apply miticide if scouting detects between 1 and 5 spider mites per leaf.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Bifenthrin 2 EC</td>
<td>6.4 fl oz</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Brigade 2 EC</td>
<td>6.4 fl oz</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Danitol 2.4 EC</td>
<td>16 fl oz</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Kanemite</td>
<td>31 fl oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Savey DF</td>
<td>4-6 oz</td>
<td>DO NOT make more than 1 application of Savey per year.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Zeal</td>
<td>2-3 oz</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>JMS Stylet Oil (OMRI*)</td>
<td>3-6 qt</td>
<td>M-Pede may cause plant injury if plants are drought stressed or temperatures exceed 90°F.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>M-Pede (OMRI*)</td>
<td>2 gal/100 gal</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td><strong>Leafrollers</strong></td>
<td>Deliver (OMRI*)</td>
<td>0.25-1.5 lb</td>
<td>Deliver is a formulation of <em>Bacillus thuringiensis</em> var. <em>kurstaki</em> (Bt). This is approved for organic production. <strong>Leafrollers are usually NOT a problem in caneberries.</strong></td>
<td>0</td>
</tr>
<tr>
<td><strong>Japanese Beetle</strong></td>
<td>Assail 30SG</td>
<td>4.5-5.3 oz</td>
<td>Mid-June to late July, check for foliage feeding by Japanese beetle or fruit feeding by green June beetle and spray weekly as needed with 7-day minimum interval between applications.</td>
<td>1</td>
</tr>
<tr>
<td><strong>Green June Beetle</strong></td>
<td>Assail 70WP</td>
<td>1.9-2.3 oz</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Danitol 2.4 EC</td>
<td>10 2/3-16 fl oz</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Sevin 4F</td>
<td>1-2 qt</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Sevin 80S</td>
<td>2.5 lb</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Malathion 5EC</td>
<td>3 pt</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Malathion 8F</td>
<td>1-4 pt</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Pyganic 1.4 (OMRI*)</td>
<td>16-64 fl oz</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Surround WP (OMRI*)</td>
<td>25-50 lb</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td><strong>Sap Beetles</strong></td>
<td>Assail 30 SG</td>
<td>4.5-5.3 oz</td>
<td><strong>Sanitation:</strong> Strawberry sap beetles are best controlled by timely and complete (“clean”) picking of over-ripe and damaged berries. Keep berries off the ground.</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Bait buckets can be used to detect and reduce local population of sap beetles:</strong> Fill a small, screened 4 oz specimen cup with over-ripe berries (your culls). Place cup of berries inside a 1 quart deli cup trap that has a lid with several 1/5-inch holes. Then add a beetle drowning mixture of 9 parts apple cider vinegar and 1 part ethanol. These traps may prove useful for intercepting dispersing beetles from woods to plantings of ripening berries, reduce beetle numbers in the harvested berries and aid in timing insecticide application. Empty beetles from bait buckets on a daily basis.</td>
<td></td>
</tr>
</tbody>
</table>
### BLACKBERRY/RASPBERRY INSECT CONTROL — COMMERCIAL

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use/Acre</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>POST-BLOOM TO HARVEST Broad Mites***</td>
<td>Agri-Mek SC</td>
<td>3.5 fl oz</td>
<td>FIFRA Section 2(ee) recommendation for Agri-Mek® SC approved for use in AR, FL, IL, IN, NC, PA, SC for control of broad mites in caneberry. <strong>Agri-Mek SC must be mixed with a non-ionic surfactant activator</strong> type wetting, spreading and/or penetrating spray adjuvant at 0.1-0.5% v/v. By late May, begin weekly scouting for first damage (leaf bronzing and/or cupping) and presence of broad mites on underside of terminal leaflets, especially in primocane-fruiting cultivars. Use a 20x or 30x hand lens to see white, oval, spotted eggs and oval, white (immature) to amber adult broad mites. <strong>Apply miticide only if/when</strong> you detect new terminal leaf damage and leaflet samples average between one to five active broad mites per leaflet.</td>
<td>7</td>
</tr>
<tr>
<td>RED IMPORTED FIRE ANTS (ALL FIRE ANT BAITS)</td>
<td>S-Methoprene (Extinguish)</td>
<td>3-5 Tbsp/mound</td>
<td>Mound-to-mound treatment rate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.0-1.5 lb/acre</td>
<td>Broadcast rate.</td>
<td></td>
</tr>
</tbody>
</table>

***Broad Mites:*** The broad mite damages terminal leaves, flowers and fruit on citrus, peppers, tomatoes and recently became a pest of blackberries, especially primocane-fruiting cultivars. This mite feeds by piercing the bud, leaf or flower. This feeding injects a toxin that stunts growth, curls and bronzes leaves and often kills terminal and lateral leaf and flower buds (looks like fire blight). This mite overwinters mostly in blackberry leaf litter, and to lesser extent under blackberry bud scales and in the soil. Eggs are oval and spotted (0.08 mm long), and the broad mites are oval and vary from small white immature to amber adults (0.2 mm). Primocane-fruiting blackberry cultivars usually have floricanes pruned to ground, removed and burned by bud break. This practice produces a late-summer to fall crop. From late-May through fall in Arkansas, you can find a buildup of broad mite numbers on terminal leaves of emerging primocanes. Broad mites have damaged floricanes-fruiting blackberry cultivars. These mite-infested florican blocks appear to have delayed bud break and low vigor in spring. Broad mites can be found on terminal florican leaves from April until after mid-summer harvest when floricanes are usually removed.
# Blueberry Insect Control — Commercial

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use/Acre</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bud Swell</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scale</td>
<td>Apply dormant oil</td>
<td></td>
<td>During dormant pruning, clip off bagworms on plants and adjacent juniper/cedar trees. Destroy these bags so larvae do not hatch next June and disperse to and defoliate blueberry plants. At bud swell, begin checking plants daily for damaged buds or check after dusk for climbing cutworms feeding on the buds. Spray weekly as long as damage is occurring or climbing cutworms are present.</td>
<td>7</td>
</tr>
<tr>
<td>Climbing Cutworm</td>
<td>Sevin 80S</td>
<td>1 7/8-2 1/2 lb</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bagworms</td>
<td>Sevin XLR</td>
<td>1 1/2-2 qt</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Petal Fall</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cherry Fruitworm</td>
<td>Asana XL</td>
<td>4.8-9.6 fl oz</td>
<td>Asana repels bees; do not apply within 7 days of pollination.</td>
<td>14</td>
</tr>
<tr>
<td>Cranberry Fruitworm</td>
<td>Asail 30SG</td>
<td>4-6.9 oz</td>
<td>Apply insecticide against cherry fruitworm at petal fall and 10 days later.</td>
<td>7</td>
</tr>
<tr>
<td>Eastern Tent Caterpillar</td>
<td>Avaunt</td>
<td>3-5.6 oz</td>
<td>Apply insecticide against cranberry fruitworm 10 days and 20 days after petal fall.</td>
<td></td>
</tr>
<tr>
<td>Leafroller (usually not a problem)</td>
<td>Confirm 2F</td>
<td>16 fl oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Danitol 2.4</td>
<td>13-16 oz</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Delegate</td>
<td>3-6 oz</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Imidan 70W</td>
<td>1 1/3 lb</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Intrepid</td>
<td>10-16 fl oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Knack 0.83EC</td>
<td>16 fl oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Malathion 5EC</td>
<td>2 pt</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Mustang Maxx</td>
<td>4 fl oz</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Rimon</td>
<td>20-30 fl oz</td>
<td>Rimon is for cranberry fruitworm control.</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Sevin 80S</td>
<td>1 7/8-2 1/2 lb</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Sevin XLR</td>
<td>1.5-2 qt</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Success</td>
<td>4-6 fl oz</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Entrust 2SC (OMRI*)</td>
<td>4-6 fl oz</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Deliver (OMRI*)</td>
<td>0.25-1.5 lb</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td><strong>First and Second Cover</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruitworms</td>
<td>Brigade</td>
<td>5.3-16 oz</td>
<td>In the last couple of years, plum curculio adults and larvae were observed causing damage in blueberry fruit.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Danitol</td>
<td>10.6-16 oz</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Imidan 70W</td>
<td>1.3 lb</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Malathion</td>
<td>1.5-2.5 pt</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Surround (OMRI*)</td>
<td>1.5-2.5 pt</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Bagworms</td>
<td>Deliver (OMRI*)</td>
<td>0.25-1.5 lb</td>
<td>During the first or second week of June, check planting for newly hatched bagworms (very localized near bagworm-infested junipers or other trees) and either remove by hand or spray.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Entrust (OMRI*)</td>
<td>1.25-2.0 oz</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>
## BLUEBERRY INSECT CONTROL — COMMERCIAL

### THIRD AND ADDITIONAL COVERS

**Blueberry Maggot**

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use/Acre</th>
<th>Remarks/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flatheaded Apple Tree Borer</td>
<td>Sevin XLR</td>
<td>1-2 qt</td>
<td>Blueberry maggot larvae and adults have not been observed in Arkansas.</td>
</tr>
<tr>
<td></td>
<td>Sevin 80S</td>
<td>1 1/2-2 1/2 lb</td>
<td>In late April, set out emerald ash borer purple sticky traps in vertical orientation along the wooded perimeter of the blueberry planting being attacked by this borer. Check purple traps weekly for adult flatheaded borers. Apply insecticide to canes at three-week intervals from first to last capture of adult borers on purple traps or adults observed on blueberry canes. DO NOT make more than five applications of Imidan per acre per year.</td>
</tr>
<tr>
<td></td>
<td>Imidan 70W</td>
<td>1.3 lb</td>
<td></td>
</tr>
</tbody>
</table>

### POST-BLOOM TO HARVEST

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use/Acre</th>
<th>Remarks/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leafrollers</td>
<td>Deliver (OMRI*)</td>
<td>0.25-1.5 lb</td>
<td>Leafrollers are usually NOT a problem in blueberries in Arkansas. Deliver is a formulation of Bacillus thuringiensis var kurstaki (BT).</td>
</tr>
<tr>
<td></td>
<td>Entrust 2SC (OMRI*)</td>
<td>4.6 fl oz</td>
<td></td>
</tr>
<tr>
<td>Japanese Beetle</td>
<td>Assail 25WB</td>
<td>3 oz</td>
<td>Mid-June to late July, check for foliar feeding by Japanese beetle or fruit feeding by green June beetle. Spray weekly as needed with seven-day minimum interval between applications.</td>
</tr>
<tr>
<td></td>
<td>Malathion</td>
<td>4.5-5.3 oz</td>
<td>Spray weekly as needed with seven-day minimum interval between applications.</td>
</tr>
<tr>
<td></td>
<td>Sevin 4F</td>
<td>1-4 pt</td>
<td>After harvest, you can suppress Japanese beetle foliar feeding by applying enough Surround to whiten the foliage. Reapply Surround as needed to maintain white-washed appearance. Supplemental controls may be needed to complete insect control.</td>
</tr>
<tr>
<td></td>
<td>Sevin 80S</td>
<td>2.5 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Surround WP (OMRI*)</td>
<td>25-50 lb</td>
<td></td>
</tr>
</tbody>
</table>

**Spotted Wing Drosophila**

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use/Acre</th>
<th>Days of residual activity:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Danitol 2.4EC</td>
<td>16-21.33 fl oz</td>
<td>7 days</td>
</tr>
<tr>
<td></td>
<td>Delegate 25WG</td>
<td>3-6 oz</td>
<td>7 days</td>
</tr>
<tr>
<td></td>
<td>Exirel</td>
<td>13.5-20.5 fl oz</td>
<td>5 days</td>
</tr>
<tr>
<td></td>
<td>Malathion EC</td>
<td>1-4 pt</td>
<td>7 days</td>
</tr>
<tr>
<td></td>
<td>Mustang Maxx</td>
<td>4 oz</td>
<td>7 days</td>
</tr>
<tr>
<td></td>
<td>Entrust 2SC (OMRI*)</td>
<td>4-6 oz</td>
<td>3-5 days</td>
</tr>
<tr>
<td></td>
<td>Pyganic 1.4 (OMRI*)</td>
<td>16-64 fl oz</td>
<td>0-2 days</td>
</tr>
</tbody>
</table>

### YELLOWNECKED CATERPILLARS

**Fall Webworm**

Fruitworm sprays

In July and August, check twice weekly for groups of fall webworms defoliating limbs inside a web or groups of yellownecked caterpillars defoliating whole plants. Usually, these pests are localized, so hand removal and destruction of caterpillars provides adequate control.

### RED IMPORTED FIRE ANTS (ALL FIRE ANT BAITS)

Apply when ants are active and soil temperature is above 60 degrees F. DO NOT treat if rain is anticipated within 6 hours.

**S-Methoprene** (Extinguish)

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<th>Days of residual activity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-Methoprene</td>
<td>3-5 Tbsp/mound</td>
<td>7 days</td>
</tr>
<tr>
<td>(Extinguish)</td>
<td>1.0-1.5 lb/acre</td>
<td>7 days</td>
</tr>
</tbody>
</table>

*OMRI = Organic Materials Review Institute lists compounds approved for organic production.

**Spotted Wing Drosophila (SWD)** is a new invasive insect pest that was detected in ripening and ripened fruit in many Midwest states, including Arkansas, in 2013. The SWD larvae feed inside and damage ripening soft-skinned fruit, especially blackberry, blueberry, raspberry and strawberry. See the Spotted Wing Drosophila site: [http://www.ipm.msu.edu/invasive_species/spotted_wing_drosophila](http://www.ipm.msu.edu/invasive_species/spotted_wing_drosophila) or the Arkansas SWD fact sheet: [https://www.uaex.edu/publications/PDF/FSA-7079.pdf](https://www.uaex.edu/publications/PDF/FSA-7079.pdf)
### CHERRY/PEACH/PLUM INSECT CONTROL—COMMERCIAL

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<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use/Acre</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DELAYED DORMANT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mites</td>
<td>Superior oil</td>
<td>2 gal</td>
<td>Apply after leaves drop in the fall or before buds swell in the spring.</td>
<td></td>
</tr>
<tr>
<td>San Jose Scale</td>
<td>Superior oil plus</td>
<td>1.5 gal</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assail 30 SG</td>
<td>5.3-8 oz</td>
<td>Esteem applied with oil at delayed dormant is reported to provide very good scale control. Esteem does not kill adult scale, but suppresses hatch of eggs they lay. Therefore, in season use of Esteem may not protect fruit from blemishes by scale (small red dots develop around young scale).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Esteem 35WP</td>
<td>4-6 oz</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PINK**

Tarnished Plant Bug: See **PETAL FALL**

**BLOOM**

__BY MARCH 15__

Initiate Oriental Fruit Moth and San Jose scale Scouting Program

Place 2 or 3 Oriental fruit moth pheromone traps in orchard interior and check twice weekly to record first consistent moth emergence (late March) = OFM biofix. Keep trap bottoms clean and replace lures monthly or every two months for long-life lures. After OFM biofix date, begin calculating number of daily degree days (DD) using base 45°F = DD = (maximum daily temperature + minimum daily temperature) / 2 – 45.

Place 2 San Jose scale pheromone traps in orchard interior in tops of trees known to have a live SJS infestation (conspicuous red spots on apples last year) and record first date in early to mid-April when you consistently capture SJS males on traps = SJS biofix. Remove scale trap in May. After specific biofix dates, begin accumulating DD (base 51°F for SJS) to predict crawler spray periods (hatch).

Plum curculio dispersal

Plum curculio adults disperse from overwintering sites in adjacent woods into orchard and begin feeding on and laying eggs in fruit between 100-400 DD accumulated after temperatures exceed 70°F for two days in late March = PC biofix. After PC biofix date, begin accumulating DD to predict dispersal period by calculating number of daily DD using base 50°F = DD = (maximum daily temperature + minimum daily temperature) / 2 – 50.

__BY LATE MARCH__

Initiate Plum Curculio and Lesser Peachtree Borer*** Scouting Programs

Tie gray plum curculio pyramid trap to each of 3 or 4 perimeter orchard tree trunks adjacent to woods (overwintering site) and check twice weekly for plum curculio adults. Place 2 lesser peachtree borer pheromone traps in interior trees and check weekly to record moth flight beginning and peaks. Keep peachtree borer trap bottoms clean and replace lures monthly or every two months for long-life lures. After specific biofix dates, begin accumulating DD (base 50°F for CM) to predict spray periods (hatch). Calculate number of daily degree days (DD) using proper base = DD = (maximum daily temperature + minimum daily temperature) / 2 – base.

**PETAL FALL**

Tarnished Plant Bug

Belay: 6 fl oz

Stink Bugs

Baythroid XL: 5.5 fl oz

Besiege: 6-12 fl oz

Imidan 70W: 2-4.25 lb

Mustang Maxx: 1.28-4 fl oz

Sevin XLR: 3 qt

Warrior: 2.5-5.12 fl oz

Stink bug and plant bug catfacing are worse where control of flowering weeds is poorest. Keep spring flowering broadleaf weeds mowed regularly to reduce orchard attractiveness to stink bugs and tarnished plant bugs.

Use of pyrethroids (Asana, Baythroid, Mustang Maxx, Pounce, Proaxis, Renounce, Warrior) will kill mite predators and cause mite outbreaks.

DO NOT use Imidan on sweet cherries. Use Imidan in blocks with scale infestations.

Lesser Peachtree Borer*** REFER TO LATE MARCH AND SECTION ON BORERS.
**CHERRY/PEACH/PLUM INSECT CONTROL—COMMERCIAL**

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use/Acre</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SHUCK SPLIT TO 7-10 DAYS AFTER</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oriental Fruit Moth</td>
<td>Actara 25WP</td>
<td>4.5-5.5 oz</td>
<td>Oriental fruit moth egg hatch period for each generation occurs so many DD after OFM biofix: 400-700 DD (late April), 1300-1700 DD (late May) and after 2300 DD. Belay can be applied 2 times per season against scale, stink bugs and plum curculio.</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Altacor</td>
<td>3-4.5 oz</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Asana XL</td>
<td>4.8-14.5 fl oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Assail 30 SG</td>
<td>2.5-8 oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Besiege</td>
<td>6-12 fl oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Delegate 25 WG</td>
<td>6-7 oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Exirel</td>
<td>10-20.5 fl oz</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Imidan 70W</td>
<td>2-4.25 lb</td>
<td>DO NOT use Imidan on sweet cherries. Use Imidan in blocks with scale infestations.</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Intrepid 2 F</td>
<td>10-16 fl oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Rimon EC</td>
<td>20-40 fl oz</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Entrust 2SC (OMRI*)</td>
<td>4-6 fl oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Deliver (OMRI*)</td>
<td>0.5-2 lb</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Plum Curculio</td>
<td>Products listed in PETAL FALL or <strong>Plum curculio:</strong> Apply insecticide after shuck split If greater than 1 plum curculio adult per 4 traps per week or begin sprays when you first detect fruit feeding damage in perimeter trees.</td>
<td></td>
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<tr>
<td></td>
<td>Apta</td>
<td>21-27 fl oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Avaunt 30 WG</td>
<td>5-6 oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Besiege</td>
<td>6-12 fl oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Imidan 70 WP</td>
<td>2.13-4.25 lb</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>San Jose Scale</td>
<td>Admire Pro (foliar)</td>
<td>1.4-2.8 fl oz</td>
<td>Time spray against San Jose scale crawlers. Monitor for crawlers by wrapping double-stick tape around scale-infested limbs in early May. Inspect the tape weekly for yellow crawlers. The crawler period persists 2 to 3 weeks in May. Apply crawler spray at 10-day intervals as long as crawlers are detected.</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Assail 30 SG</td>
<td>5.8-8 oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Belay</td>
<td>6 fl oz</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Centaur 70W</td>
<td>34.5 oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Esteem 35 WP</td>
<td>3-5 oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Movento</td>
<td>6-9 oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Aza-Direct (OMRI*)</td>
<td>1-2 pt</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td><strong>BY MAY 1</strong></td>
<td></td>
<td></td>
<td><strong>REFER TO SECTION ON BORERS.</strong></td>
<td></td>
</tr>
<tr>
<td>European Red Mite</td>
<td>Acramite 50 WS</td>
<td>0.75-1 lb</td>
<td>Place 2 peachtree borer pheromone traps on interior trees. These traps will indicate when moth flight begins and peaks. Delay peachtree borer trunk drench spray until you consistently catch peachtree borers in traps for at least two weeks.</td>
<td>3</td>
</tr>
<tr>
<td>Twospotted Spider Mite</td>
<td></td>
<td></td>
<td><strong>Mite spray thresholds:</strong> Miticide spray recommended if mites exceed 2.5 mites per leaf in May, 5 mites per leaf in June and 7.5 mites per leaf in July. Repeat spray once 10 days later if live mites still exceed threshold. Use low rate of Acramite for twospotted mite or high rate for European red mite. Acramite can only be applied once per season. Agri-Mek is most effective if applied before leaves harden off. Apollo is most effective on eggs and newly hatched nymphs. Limit use to one Apollo application per year. Use low rate of Nexter for European red mite or high rate for twospotted mite.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agri-Mek 0.7 SC</td>
<td>0.5-1 fl oz</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Apollo 4 SC</td>
<td>2-8 oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Envidor 2 SC</td>
<td>16-18 fl oz</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Nexter 75 WP</td>
<td>4.4 oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Onager 1 EC</td>
<td>12-24 fl oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Zeal 72WP</td>
<td>2-3 fl oz</td>
<td></td>
<td>7</td>
</tr>
</tbody>
</table>
## CHERRY/PEACH/PLUM INSECT CONTROL – COMMERCIAL

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use/Acre</th>
<th>Remarks/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BY MAY 1</strong> REFER TO SECTION ON BORERS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oriental Fruit Moth</td>
<td>SEE SHUCK SPLIT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plum Curculio</td>
<td>SEE SHUCK SPLIT</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PREHARVEST</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oriental Fruit Moth</td>
<td>Assail 30 SG</td>
<td>5.3-8 oz</td>
<td></td>
</tr>
<tr>
<td>Japanese Beetle (late June to August)</td>
<td>Admire Pro (foliar)</td>
<td>1.4-2.8 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exirel</td>
<td>10-20.5 fl oz</td>
<td></td>
</tr>
<tr>
<td>Green June Beetle (July to August)</td>
<td>Sevin XLR</td>
<td>2 1/8-4 1/2 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aza-Direct (OMRI*)</td>
<td>4-8 fl oz</td>
<td></td>
</tr>
<tr>
<td>Spotted Wing Drosophila**</td>
<td>Malathion</td>
<td>2.4 pt</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sevin XLR</td>
<td>2-3 qt</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Entrust</td>
<td>4-8 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pyganic 5 EC (OMRI*)</td>
<td>4.5-17 fl oz</td>
<td></td>
</tr>
<tr>
<td><strong>SPECIAL PROBLEM/PEST OF CHERRY AND MAYBE LATE PEACHES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| *OMRI = Organic Materials Review Institute lists compounds approved for organic production. **Spotted Wing Drosophila (SWD) is a new invasive insect pest that was detected in ripening and ripened fruit in many Midwest states, including Arkansas, in 2013. The SWD larvae feed inside and damage ripening soft-skinned fruit, especially blackberry, blueberry, raspberry and strawberry. See the Spotted Wing Drosophila site: [http://www.ipm.msu.edu/invasive_species/spotted_wing_drosophila](http://www.ipm.msu.edu/invasive_species/spotted_wing_drosophila) or the Arkansas SWD fact sheet: [https://www.uaex.edu/publications/PDF/FSA-7079.pdf](https://www.uaex.edu/publications/PDF/FSA-7079.pdf).***BORERS OF TREES – The peachtree borer and lesser peachtree borer often infest peach, apricot, cherry and plum trees. The lesser peachtree borer lays eggs on bark near scaffold wounds where larvae hatch and bore into wounds. This species appears to have two generations per year. This attack further weakens limbs. The peachtree borer lays eggs near trunk base and larva bores in trunk below the soil line. Some of the regularly applied insecticide cover sprays aid in suppressing lesser peachtree borers. However, adequate control of both pests requires a drench spray of the trunk and/or scaffold limbs. Pheromone traps are available to monitor moth emergence of both pests. Where lesser peachtree borers have been a problem, spray 7-14 days after moth emergence begins in April and repeat in June for second generation hatch.**

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use/Acre</th>
<th>Remarks/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesser Peachtree Borer***</td>
<td>Asana XL</td>
<td>4.8-14.5 fl oz</td>
<td>Where lesser peachtree borer has been a light to moderate problem, apply insecticide once at the peak of the second moth flight (in June or July). Where lesser peachtree borer has been a moderate to heavy problem, make two applications: one 7 to 14 days after emergence of first-generation moths begins (spray mid-April to mid-May) and the second at the peak of the second generation moth flight (often in June or July). Lorsban 50W is for sour cherries only. Lorsban is not labeled for use on plums. Use only Pounce, Ambush or Warrior on plums.</td>
</tr>
<tr>
<td></td>
<td>Lorsban Advanced</td>
<td>1.5-4 pt</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lorsban 50 W</td>
<td>2-3 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mustang Maxx</td>
<td>1.28-4 oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pounce 25 WP</td>
<td>6.4-25.6 oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Warrior</td>
<td>2.56-5.12 fl oz</td>
<td></td>
</tr>
<tr>
<td>Peachtree Borer***</td>
<td>Asana XL</td>
<td>4.8-14.5 fl oz</td>
<td>DO NOT exceed one application of Lorsban per year in June.</td>
</tr>
<tr>
<td></td>
<td>Lorsban Advanced</td>
<td>1.5-4 pt</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Besiege</td>
<td>6-12 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Warrior</td>
<td>2.56-5.1 fl oz</td>
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</tr>
</tbody>
</table>

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### CHERRY/PEACH/PLUM INSECT CONTROL — COMMERCIAL

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use/Acre</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GRANULATE AMBROSIA BEETLE</strong></td>
<td></td>
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<tr>
<td><strong>RED IMPORTED FIRE ANTS</strong></td>
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</table>
### GRAPE INSECT CONTROL—COMMERCIAL

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use/Acre</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DORMANT</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Grape Scale</td>
<td>Look for weakened vines with loose trunk bark, peel bark off and check for grape scale. Flag vines that have live grape scale. See BUD SWELL about scale oil spray and PREBLOOM TO BLOOM for timing grape scale crawler spray.</td>
<td></td>
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<tr>
<td><strong>BUD SWELL</strong></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Grape Scale</td>
<td>Superior oil (70 sec viscosity)</td>
<td>4 gal</td>
<td>Spray trunk and cordon of scale-infested vines by bud swell.</td>
<td>0</td>
</tr>
<tr>
<td>Flea Beetle</td>
<td>Altacor</td>
<td>3-4.5 oz</td>
<td>During bud swell, scout at least twice weekly for feeding holes in buds, or during daylight, check for presence of bluish-black flea beetle adults on buds or inspect buds after dusk for presence of cutworms. Spray weekly as long as there is more than 1% new bud damage.</td>
<td>14</td>
</tr>
<tr>
<td>Climbing Cutworm</td>
<td>Baythroid XL</td>
<td>2.4-3.2 fl oz</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Danitol 2.4EC</td>
<td>5 1/3-10 2/3 fl oz</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Delegate 2S WG</td>
<td>3-5 oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Sevin XLR</td>
<td>2 qt</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Success</td>
<td>4-8 fl oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Entrust 2SC (OMRI*)</td>
<td>4-6 fl oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Deliver (OMRI*)</td>
<td>0.5-1 lb</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td><strong>BUD BREAK</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flea Beetle</td>
<td>See BUD SWELL SPRAY</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Climbing Cutworm</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>BY APRIL 1</strong></td>
<td>Initiate grape berry moth scouting program</td>
<td></td>
<td>Place 3 grape berry moth pheromone traps at eye level on perimeter trees of woods adjacent to vineyard (overwintering site of grape berry moth) and check twice weekly to record first consistent moth emergence (mid April) = GBM biofix. Be sure to keep trap bottoms clean and replace lures monthly or every two months for long-life lures. After GBM biofix date, begin calculating number of daily degree days (DD) using base 47°F = DD = (maximum daily temperature + minimum daily temperature) / 2 – 47.</td>
<td></td>
</tr>
<tr>
<td><strong>PREBLOOM TO BLOOM</strong></td>
<td>Honeybees</td>
<td>Since insects do not pollinate grapes, there is no danger to honeybees at this time unless they are working on blooming weeds in the vineyard. Mow drive row before spraying grapes to eliminate blooms on weeds in drive row.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grape Scale</td>
<td>Lorsban Advanced</td>
<td>1 qt</td>
<td>DO NOT make more than one application of Lorsban Advanced or another product containing chlorpyrifos per season. Spray Lorsban Advanced to trunk, canes and foliage by prebloom. Grape scale crawlers can be detected by wrapping double-stick tape around scale-infested limbs beginning in late April. Inspect tapes weekly for yellow crawlers or lift adult scale covers to check for crawler presence.</td>
<td>35</td>
</tr>
<tr>
<td>Flea Beetle Larvae</td>
<td>See BUD SWELL</td>
<td></td>
<td>Check for presence of flea beetle larvae on leaves any time between 4 to 10 inches of shoot growth and bloom.</td>
<td></td>
</tr>
<tr>
<td>Rose Chafer</td>
<td>Assail 30 SG</td>
<td>2.5-5.3 oz</td>
<td>Check for rose chafer on clusters during and after bloom.</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Assail 70 WP</td>
<td>1.1 oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Danitol 2.4 EC</td>
<td>10 2/3 lb</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Imidan 70W</td>
<td>1 1/2-2 1/8 lb</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Sevin XLR</td>
<td>2 qt</td>
<td></td>
<td>7</td>
</tr>
</tbody>
</table>
## GRAPE INSECT CONTROL—COMMERCIAL

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use/Acre</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BY MAY 15</strong></td>
<td><strong>Grape Berry Moth (eggs)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intrepid 2F</td>
<td>8-16 fl oz</td>
<td>Move grape berry moth pheromone traps into the vineyard interior. Grape berry moth larvae usually hatch and feed on perimeter grape clusters from mid-May to early June or from 400-800 DD since GBM biofix in April. Begin weekly inspections of 100-200 clusters in the perimeter and second row for new berry moth larvae tunneling under the berry skin (damaged berry skin appears pink to purple). Spray the perimeter vines in May to early June, if greater than 1% clusters damaged by berry moth. Intrepid is an insect growth regulator that provides control of grape berry moth if first applied just before initiation of grape berry moth hatch (200-300 DD) and reapplied 10 days later.</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>See SHATTER for other formulations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Foliar Grape Phylloxera</strong></td>
<td></td>
<td></td>
<td>Grape phylloxera crawlers produce second generation foliar galls in May. These crawlers mature and produce additional generations of crawlers on susceptible cultivars including Catawba, Cayuga White, Chambourcin, Chardonel, Delaware, Norton/Cynthiana, Reliance, Vignoles and Vidal. Apply insecticide in May against grape phylloxera crawlers when you first see expanding terminal leaves on susceptible vines with a rash-like appearance (new leaf galls forming). For Admire Pro to be effective against grape phylloxera, it must be applied to soil around vines and watered in by irrigation or rain in early April to move systemically up trunk into leaves (see BUD BREAK).</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Admire Pro</td>
<td>7-14 oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assail 30 SG</td>
<td>2.5 oz</td>
<td>Use of Induce® adjuvant only with Movento is prohibited once fruit are present due to adverse plant compatibility.</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Danitol 2.4EC</td>
<td>10 2/3-21 1/3 fl oz</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Movento</td>
<td>6-8 oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Spider Mites</strong></td>
<td></td>
<td>Spider mite flare-ups may occur due to road dust coating grape leaves. Apply miticide between 1 and 5 spider mites per leaf.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agri-Mek 0.7 SC</td>
<td>1.75-3.5 fl oz plus</td>
<td>Nonionic surfactant</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Acramite 50WS</td>
<td>0.75-1.0 lb</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Nealta 1.67 SC</td>
<td>13.7 fl oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Pyramite</td>
<td>3.3 oz (dilute rate)</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Vendex 50WP</td>
<td>1.0-2.5 lb</td>
<td>Make no more than 2 applications of Vendex per season no closer than 21 days apart.</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>JMS Stylet Oil (OMRI*)</td>
<td>1-2 gal</td>
<td>Phytotoxicity: DO NOT apply sulfur within 10 days of JMS Stylet Oil application, but you can repeat oil spray every 10-14 days.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>M-Pede (OMRI*)</td>
<td>2 gal/100 gal</td>
<td>Phytotoxicity: M-Pede should not be applied to Vitis vinifera or Calmeria grapes. M-Pede may cause plant injury if plants are drought stressed or temperatures exceed 90°f or burned by sulfur if applied within 3 days of sulfur application. M-Pede may alter the waxy bloom of grape and affect quality rating of table grapes.</td>
<td>0</td>
</tr>
<tr>
<td><strong>Leafhopper</strong></td>
<td>See SHATTER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assail 30 SG</td>
<td>2.5 oz</td>
<td>DO NOT make more than two applications per season at 14-day interval.</td>
<td>7</td>
</tr>
<tr>
<td><strong>SHATTER</strong></td>
<td><strong>Grape Berry Moth (newly hatched)</strong></td>
<td></td>
<td>Grape berry moth: Spray if greater than 1% of clusters in perimeter vines are damaged by grape berry moth.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Deliver (OMRI*)</td>
<td>0.5-1.25 lb</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insect</td>
<td>Material and Formulation</td>
<td>Amount to Use/Acre</td>
<td>Remarks/Precautions</td>
<td>Days to Harvest</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------------------</td>
<td>--------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td><strong>SHATTER (cont.)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rose Chafer</td>
<td>Actara</td>
<td>1.5-3.5 oz</td>
<td>Actara has a 14-day minimum interval between applications. DO NOT make more than two applications per season at 14-day interval.</td>
<td>5</td>
</tr>
<tr>
<td>Grape Curculio</td>
<td>Admire Pro</td>
<td>1.0-1.4 fl oz</td>
<td>Admire Pro used as a foliar spray against sucking insects; leafhoppers and grape mealy bugs. <strong>Grape curculio</strong> (the legless larvae that feed in berries from mid-June into July): These larvae have recently attacked grape blocks receiving only a perimeter spray against grape berry moth. Starting on June 15, check clusters weekly in the unspayed vineyard interior for new berry damage by these legless larvae.</td>
<td>30</td>
</tr>
<tr>
<td>Japanese Beetle</td>
<td>Altacor</td>
<td>2-4.5 oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leaf rollers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leafhoppers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grape Mealy Bug</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FIRST COVER TO VERASION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grape Berry Moth</td>
<td>See SHATTER</td>
<td></td>
<td>Spray whole vineyard if greater than 1% of clusters damaged by grape berry moth. Second- and third-generations of grape berry moth hatch in mid to late June (1330-1700 DD), and after mid-July (2300 DD) or continue weekly inspections of 100 to 200 clusters in the perimeter and second row for new grape berry moth larvae tunneling.</td>
<td></td>
</tr>
<tr>
<td>Rose Chafer</td>
<td>Assail 30 SG</td>
<td>2.5-5.3 oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Leafhopper</td>
<td>Assail 70 WP</td>
<td>1.1 oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Grape Mealybug</td>
<td>Avaunt DG</td>
<td>5-6 oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Japanese Beetle</td>
<td>Brigade 2 EC</td>
<td>8-16 oz</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>Leafhopper</td>
<td>Danitol 2.4 EC</td>
<td>10.6-21.3 fl oz</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td>Japanese Beetle</td>
<td>Entrust 2SC</td>
<td>4-6 fl oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Leafhopper</td>
<td>Imidan 70W</td>
<td>1.1/3-2.18 lb</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Japanese Beetle</td>
<td>Intrepid 2F</td>
<td>8-16 fl oz</td>
<td></td>
<td>30</td>
</tr>
<tr>
<td>Leafhopper</td>
<td>Sevin XLR</td>
<td>2 qt</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Japanese Beetle</td>
<td>Sivanto 200 SL</td>
<td>7-14 fl oz</td>
<td>Sivanto is applied to foliage.</td>
<td>7</td>
</tr>
<tr>
<td><strong>VERASION TO HARVEST</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grape Berry Moth</td>
<td>See SHATTER</td>
<td></td>
<td>Spray whole vineyard if greater than 1% of clusters damaged by grape berry moth. Continue weekly monitoring for insect pests. Apply insecticides as needed</td>
<td></td>
</tr>
<tr>
<td>Japanese Beetle</td>
<td>Danitol 2.4 EC</td>
<td>10.67-21.33 fl oz</td>
<td><strong>Japanese Beetle</strong>: This is a pest that was introduced to Northwest Arkansas in the late 1990s and became an economic pest defoliating grapes and other fruits and ornamentals by 2002. Late June and July, Japanese beetles will defoliate most of the canopy of susceptible grapes on Norton, Vidal, Vignoles, Chambourcin, Cabernet Franc and others. Weekly insecticide sprays are required to prevent foliar damage.</td>
<td>21</td>
</tr>
<tr>
<td>Leafhopper</td>
<td>Mustang Maxx</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Insect</td>
<td>Material and Formulation</td>
<td>Amount to Use/Acre</td>
<td>Remarks/Precautions</td>
<td>Days to Harvest</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>--------------------------</td>
<td>--------------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td><strong>VERASION TO HARVEST</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grape Berry Moth</td>
<td>Sevin XLR</td>
<td></td>
<td>Surround applied to white-washed foliage will suppress/prevent Japanese beetle defoliation but should be reapplied as often as needed to keep vines white-washed, especially after a rain. Surround is approved for organic production.</td>
<td>7</td>
</tr>
<tr>
<td>Japanese Beetle Leafhopper</td>
<td>Surround WP (OMRI*)</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td><strong>Multicolored Asian Lady Beetle</strong></td>
<td>Belay 2.13SC</td>
<td>2-4 fl oz</td>
<td>See Multicolored Asian Lady Beetle**. Scout vineyards several days before harvest to determine the abundance of multicolored Asian lady beetle. Additional insecticides (including Baythroid and Mustang Maxx) have short pre-harvest intervals, and although not labeled specifically for this pest, they have been effective in trials and vineyard use.</td>
<td>0/30</td>
</tr>
<tr>
<td></td>
<td>Scorpion 35SL</td>
<td>2-5 fl oz</td>
<td></td>
<td>12 hours</td>
</tr>
<tr>
<td></td>
<td>Venom 70SG</td>
<td>1-3 oz.</td>
<td></td>
<td>12 hours</td>
</tr>
<tr>
<td>Green June Beetle</td>
<td>Sevin XLR</td>
<td>2 qt</td>
<td>In July and early August, green June beetles will feed on and damage ripening fruit. Apply spray in July when first beetles enter the vineyard. Reapply as needed (weekly).</td>
<td>7</td>
</tr>
<tr>
<td>Grape Root Borer</td>
<td>Lorsban Advanced</td>
<td>4.5 pt/100 gal water</td>
<td>Use to control the pest just prior to adult emergence from the soil or new larvae entering soil. Apply Lorsban to the soil surface in a 1- to 2-foot band on either side of the vine. DO NOT allow spray to contact fruit or foliage. Make one application per season by 35 days pre-harvest or after harvest. Generic formulations of chlorpyrifos are also labeled for use against grape root borer. Application can be made with flood nozzles and at low pressure (40-60 psi).</td>
<td>35</td>
</tr>
<tr>
<td><strong>Cultural Control</strong></td>
<td></td>
<td></td>
<td><strong>Cultural tactic:</strong> Maintain weed-free area under vines. Use a grape root borer pheromone trap to detect first moth emergence. Use grape hoe at first catch of grape root borer moths and repeat 1 month later to pile soil to 4- to 6-inch depth and 1-foot width on both sides of trunk. Mounded soil needs to be removed by September 1. This practice will greatly suppress moth ability to emerge from the soil.</td>
<td></td>
</tr>
<tr>
<td>Spotted Wing Drosophila</td>
<td>So far, no reports of fly larvae in grape berries</td>
<td></td>
<td>See blackberry and raspberry, blueberry and strawberry sections in MP144.</td>
<td></td>
</tr>
</tbody>
</table>

*OMRI = Organic Materials Review Institute lists compounds approved for organic production.  
**Multicolored Asian Lady Beetle (MALB), a late season vineyard inhabitant, can significantly reduce wine quality. These beetles are attracted to ripening grapes as a source of sugars in late summer and fall. They may congregate, often by the hundreds or thousands, in and among grape clusters from August through October. Although they may cause direct yield loss, they more often reduce wine quality when sufficient numbers become trapped in the harvested grapes and are crushed along with the grapes at the winery. MALB secretes a defense chemical when they are stressed. This defense chemical causes wine to smell “dirty” (a musty, damp odor), masking the flavors and smells of the grapes. As few as two MALB per lug of grapes can alter wine flavor and bouquet enough to be detected. Excessive numbers of MALB in grape clusters are most common in late-ripening varieties such as Cabernet Franc, Cabernet Sauvignon, Chambourcin, Riesling, Vidal and Vignoles, but earlier grapes that are prone to cracking can also be infested. Scout vineyards several days before harvest to determine the abundance of MALB.
## HOME ORCHARD SPRAY SCHEDULE

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use in 3 Gal Sprayer*</th>
<th>Spray and Time of Application</th>
<th>Trees to Receive Application</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scales, Aphids and Spider Mites</td>
<td>Superior Oil</td>
<td>7.6 fl oz</td>
<td>Apply a 2% oil solution during dormant stage before buds swell in spring.</td>
<td>Apple, Pear, Stone fruits</td>
<td>0</td>
</tr>
<tr>
<td><strong>PINK TO ½” GREEN</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rosy Apple Aphid</td>
<td>Greenlight Conquest Conc.</td>
<td>6 oz</td>
<td>At pink, look weekly for curling leaves around the fruit clusters and for rosy apple aphids on underside of curling leaves.</td>
<td>Apple</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Malathion</td>
<td>9 Tbsp</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spider Mites</td>
<td>M-Pede (OMRI**)</td>
<td>5 Tbsp</td>
<td>Apply spray to underside of leaves when you see 1 or more mites per leaf.</td>
<td>Apple, Pear, Stone fruits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>JMS Stylet Oil (OMRI**)</td>
<td>7.6 Tbsp</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### BLOOM

**SAVE THE BEES!! DO NOT APPLY INSECTICIDES DURING BLOOM.**

### PETAL FALL (90% of petals have fallen)

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use in 3 Gal Sprayer*</th>
<th>Spray and Time of Application</th>
<th>Trees to Receive Application</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plum Curculio</td>
<td>Fruit Tree Spray mix: Sevin + Malathion + Captan or Surround (OMRI**)</td>
<td>4.5-7.5 Tbsp</td>
<td>Pick up fruit drops weekly and bury them to kill plum curculio larvae inside the fruit. This practice helps lessen the plum curculio population in following years. In April and May, maintain a white-washed appearance of canopy with a spray of Surround to suppress plum curculio damage of fruit. Codling moth only attacks apple and pear.</td>
<td>Apples, Pear, Stone fruits</td>
<td>14</td>
</tr>
<tr>
<td>San Jose Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Codling Moth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Virus formulations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carpovirusine (OMRI**)</td>
<td></td>
<td>1-2.4 tsp</td>
<td>Apply to tree as soon as first codling moth entry hole or insect frass is seen on fruit. Apply weekly as necessary during hatch period. Keep the virus formulation refrigerated to keep the virus alive.</td>
<td>Apple and pear</td>
<td>0</td>
</tr>
<tr>
<td>CYD-X (OMRI**)</td>
<td></td>
<td>0.5-1 tsp</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Virosoft CP4 (OMRI**)</td>
<td></td>
<td>0.5 tsp</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Oriental Fruit Moth (newly hatched larvae)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entrust 2SC (OMRI**)</td>
<td></td>
<td>1-1.5 tsp</td>
<td>Oriental fruit moth and leafrollers: Apply to tree as soon as first Oriental fruit moth entry hole or insect frass is seen on fruit. Apply weekly as necessary during hatch period.</td>
<td>Apples, Stone fruits</td>
<td>7</td>
</tr>
<tr>
<td>Formulations of 9t bacteria</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biobit HP (OMRI**)</td>
<td></td>
<td>0.5-1 Tbsp</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Deliver (OMRI**)</td>
<td></td>
<td>0.5-2 Tbsp</td>
<td></td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

### FIRST COVER (10-14 days after PETAL FALL)

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use in 3 Gal Sprayer*</th>
<th>Spray and Time of Application</th>
<th>Trees to Receive Application</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plum Curculio</td>
<td>Fruit Tree Spray mix: Sevin + Malathion + Captan or Surround (OMRI**)</td>
<td>4.5-7.5 Tbsp</td>
<td>Surround should be reapplied as often as needed to keep plants white-washed, especially after a rain or as new foliage emerges.</td>
<td>Apple, Pear, Stone fruits</td>
<td>14</td>
</tr>
<tr>
<td>Codling Moth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### SECOND COVER (10-14 days after FIRST COVER)

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use in 3 Gal Sprayer*</th>
<th>Spray and Time of Application</th>
<th>Trees to Receive Application</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plum Curculio</td>
<td>Fruit Tree Spray mix: Sevin + Malathion + Captan or M-Pede (OMRI**)</td>
<td>4.5-7.5 Tbsp</td>
<td>Mites and scale can be suppressed with M-Pede or JMS Stylet Oil when applied at 2 to 3 week intervals starting in early May. Or, place Japanese fruit bags around pome or stone fruits when they reach 1/2 inch diameter a couple weeks after petal fall. These bags will prevent disease and insect damage to pome and stone fruits. Remove outer bag 3 weeks before harvest to develop full fruit color.</td>
<td>Apple, Stone fruits</td>
<td>14</td>
</tr>
<tr>
<td>San Jose Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Codling Moth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Jose Scale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Spray and Time of Application

- **Apply a 2% oil solution during dormant stage before buds swell in spring.**
- **At pink, look weekly for curling leaves around the fruit clusters and for rosy apple aphids on underside of curling leaves.**
- **Apply spray to underside of leaves when you see 1 or more mites per leaf.**

**Trees to Receive Application**

- Apple, Pear, Stone fruits
- Apples, Pear, Stone fruits
- Apple and pear
- Oriental Fruit Moth and leafrollers: Apply to tree as soon as first Oriental fruit moth entry hole or insect frass is seen on fruit. Apply weekly as necessary during hatch period.

**Days to Harvest**

- 0
- 1
- 3
- 14
- 7
- 0
- 0
- 0
- 0
- 0
# HOME ORCHARD SPRAY SCHEDULE

<table>
<thead>
<tr>
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<th>Material and Formulation</th>
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<th>Spray and Time of Application</th>
<th>Trees to Receive Application</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>THIRD COVER</strong> (10-14 days after SECOND COVER)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Codling Moth</td>
<td>Fruit Tree Spray mix: Sevin + Malathion + Captan or Surround (OMRI**)</td>
<td>4.5-7.5 Tbsp&lt;sup&gt;0.75-1.5 lb&lt;/sup&gt;</td>
<td>In late April, begin applying insecticide to trunks at three-week intervals to suppress flatheaded apple tree borer.</td>
<td>Apple, Pear, Stone fruits</td>
<td>14 0</td>
</tr>
<tr>
<td>Plum Curculio</td>
<td></td>
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<td></td>
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<tr>
<td>San Jose Scale</td>
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<tr>
<td>Flatheaded Apple Tree Borer</td>
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</tr>
<tr>
<td>Japanese Beetle</td>
<td>Surround (OMRI**)</td>
<td>0.75-1.5 lb</td>
<td><strong>All July</strong>, maintain a white-washed appearance of canopy with spray of Surround to suppress Japanese beetle defoliation of canopy (white clay residue on fruit can be washed off). Or, apply weekly sprays of Sevin to prevent canopy defoliation (spray top third of tree).</td>
<td>Apples, Blackberries, Raspberries, Cherries, Grapes, Stone fruits</td>
<td>0</td>
</tr>
<tr>
<td>Spotted Wing Drosophila***</td>
<td>Greenlight Conquest Conc.</td>
<td>6 oz</td>
<td><strong>Monitor</strong>: Set up monitoring traps a couple weeks before harvest begins (see online information listed below).</td>
<td>Blackberry, Blueberry, Cherry, Raspberry, Strawberry</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Cultural tactic</strong>: A week before harvest begins, cover fruiting plants with fine netting (0.98 mm) such as floating row cover to exclude flies before they lay eggs on fruit.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Malathion</td>
<td>9 Tbsp</td>
<td><strong>Sprays</strong>: If fly numbers are high and other methods are not providing adequate control, use insecticides registered for home use, such as spinosyns (Entrust), pyrethrins (Pyganic), malathion and carbaryl (Sevin) reapplied on 5- to 7-day intervals.</td>
<td>3 7 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sevin</td>
<td>9 Tbsp</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Pyganic</td>
<td>6-12 Tbsp</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Entrust (OMRI**)</td>
<td>1-1.5 tsp</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Conversions**: 1 fl oz = 2 tablespoons (T); or 1 fl oz = 6 teaspoons (t)

**OMRI** = Organic Materials Review Institute lists compounds approved for organic production.

***Spotted Wing Drosophila (SWD) is a new invasive insect pest that was detected in ripening and ripened fruit in many Midwest states, including Arkansas, in 2013. The SWD larvae feed inside and damage ripening soft-skinned fruit, especially blackberry, blueberry, raspberry and strawberry. See the Spotted Wing Drosophila site: [http://www.ipm.msu.edu/invasive_species/spotted_wing_drosophila](http://www.ipm.msu.edu/invasive_species/spotted_wing_drosophila) or the Arkansas SWD fact sheet: [https://www.uaex.edu/publications/PDF/FSA-7879.p](https://www.uaex.edu/publications/PDF/FSA-7879.p)
<table>
<thead>
<tr>
<th>Organic Agriculture Suppliers</th>
<th>Address/Online URL</th>
<th>Phone and Fax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midwest Organic and Sustainable Education Service (MOSES) (best list of organic suppliers)</td>
<td>P.O. Box 339, Spring Valley, WI 54767 Online: <a href="http://www.mosesorganic.org">www.mosesorganic.org</a></td>
<td>Ph: 715-778-5775 Ph: 888-551-4769 Fax: 715-778-5773</td>
</tr>
<tr>
<td>Organic Agriculture Resources list</td>
<td>Dr. Kathleen Delate, Depts. of Agronomy/Horticulture, 106 Horticulture Hall Iowa State University, Ames, IA 50011 Online: <a href="http://extension.agron.iastate.edu/organicag/">http://extension.agron.iastate.edu/organicag/</a></td>
<td>Ph: 515-294-7069 Fax: 515-294-0730</td>
</tr>
<tr>
<td>AgBio, Inc. (flathead apple tree borer trap, insect traps and lures, Pyganic)</td>
<td>9915 Raleigh Street, Westminster, CO 80031 Online: <a href="http://www.agbio-inc.com">http://www.agbio-inc.com</a></td>
<td>Ph: 303-469-9221 Fax: 303-469-9598</td>
</tr>
<tr>
<td>Ag Resource, Inc. (irrigation and production supplies, soil amendments, pest controls, equipment)</td>
<td>35268 State Highway 34, Detroit Lakes, MN 56501 Online: <a href="http://www.agresourceincmn.com/">http://www.agresourceincmn.com/</a></td>
<td>Ph: 218-847-9351 Ph: 800-286-6650</td>
</tr>
<tr>
<td>NovaSource (Surround Crop Protectant)</td>
<td>2255 N. 44th Street, Suite 300, Phoenix, AZ 85008-3279 Online: <a href="http://novasource.com/home/products/surround/">http://novasource.com/home/products/surround/</a></td>
<td>Ph: 800-525-2803</td>
</tr>
<tr>
<td>Peaceful Valley Farm and Garden Supply, Inc. (organic farming supplies, Codling moth trap, seeds, plants, soil amendments, pest control: Cyd-X, JMS Stylet oil, Dipel, Entrust, Pyganic, Surround Crop Protectant, M-Pede Insecticidal Soap)</td>
<td>P.O. Box 2209, 125 Clydesdale Court, Grass Valley, CA 95945 Online: <a href="http://www.groworganic.com">http://www.groworganic.com</a></td>
<td>Ph: 888-784-1722 Ph: 530-272-4769</td>
</tr>
<tr>
<td>Rincon-Vitova Insectaries, Inc. (distributors of beneficial insects for controlling pests biologically)</td>
<td>P.O. Box 1555, Ventura, CA 93002 Online: <a href="http://www.rinconvitova.com">www.rinconvitova.com</a></td>
<td>Ph: 805 643-5407 Ph: 800-248-2847 Fax: 805-643-6287</td>
</tr>
<tr>
<td>Seven Springs Farm (Pest Controls: Copper, Bt-Javelin, Neemix, Pyganic, Entrust, M-Pede, Surround Crop Protectant)</td>
<td>426 Jerry Lane NE – Check, VA 24072 Online: <a href="http://www.7springsfarm.com">http://www.7springsfarm.com</a></td>
<td>Ph: 540-651-3228 Ph: 800-540-9181</td>
</tr>
<tr>
<td>Wilson Orchard and Vineyard Supply (6” x 7” green outside x red inside color coated paper bag for maturing/protecting apples. Also known as Japanese Fruit Bags. Sold in bundles of 100.)</td>
<td>1104 East Mead, Yakima, WA 98903 Online: <a href="http://www.wilsonirr.com">http://www.wilsonirr.com</a></td>
<td>Ph: 509-453-9983 Ph: 800-232-1174 Fax: 509-453-1258</td>
</tr>
</tbody>
</table>
PECAN INSECT CONTROL—COMMERCIAL

Disclaimer: Not all recommended formulations are listed below. Additional formulations, each with Class/Mode of Action information, can be found online on Pecan IPM PIPE where you click "Toolbox," click “Insecticides Search,” and then search for recommended insecticides by pest name (conventional or approved for organic) at http://pecan.ipmpipe.org/Toolbox.

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use/Acre</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obscure Scale</td>
<td>Superior oil emulsion</td>
<td>3 gal</td>
<td>Apply 1%-2% horticultural oil spray November-December and again in February. Scale populations build slowly but can reach damaging levels before becoming obvious.</td>
<td></td>
</tr>
<tr>
<td>Phylloxera</td>
<td>Centric 40 WG</td>
<td>2.0-2.5 oz</td>
<td>Native trees and improved varieties vary in susceptibility to phylloxera. This insect is not highly mobile, and infestations are often limited to a few trees. Treatments should be applied to those trees previously infested and those adjacent to them.</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Lorsban (various) (R)</td>
<td>2-6 pt</td>
<td>There are many generic formulations available of imidacloprid.</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Movento</td>
<td>6-9 oz</td>
<td>Control must be initiated at bud break (April). A hand lens should be used to confirm that phylloxera are present. Marking infested trees that have galls in May will facilitate identification of potential treatment sites next year.</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Trimax Pro</td>
<td>1.3-2.6 oz</td>
<td></td>
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<tr>
<td></td>
<td>Warrior (R)</td>
<td>1.28-2.56 fl oz</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Imidacloprid (various)</td>
<td>1.3-2.6 oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Province (R)</td>
<td>2.56-5.12 fl oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pecan Nut Casebearer</td>
<td>Belay SC</td>
<td>3-4 oz</td>
<td>Be careful using pyrethroids (IRAC 3A) because they kill natural enemies of aphids and mites resulting in outbreaks.</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Dimilin 2F</td>
<td>8-16 oz</td>
<td>Longer residual activity may be expected with the insect growth regulators (Confirm and Intrepid). First-generation larvae are the most damaging and generally occur in May.</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Intrepid 2 F</td>
<td>4-8 oz</td>
<td>Timing of sprays requires monitoring adult moths in pheromone traps and following accumulated temperature models. Sprays are warranted when 2% to 4% of the clusters are infested or damaged.</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Mustang Maxx (R)</td>
<td>3.2-4.0 oz</td>
<td>To see when to begin inspecting clusters in your orchard, go online on to the Pecan IPM PIPE web site on Pecan Nut Casebearer Risk Map at <a href="http://pecan.ipmpipe.org/Maps/pncRiskMap">http://pecan.ipmpipe.org/Maps/pncRiskMap</a>.</td>
<td></td>
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<tr>
<td></td>
<td>Warrior (R)</td>
<td>1.28-2.56 fl oz</td>
<td></td>
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<tr>
<td></td>
<td>Entrust (OMRI*)</td>
<td>1.25-2.5 oz</td>
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<td></td>
<td>Belt</td>
<td>3-4 fl oz</td>
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<tr>
<td></td>
<td>Altacor</td>
<td>2-4.5 oz</td>
<td></td>
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<tr>
<td></td>
<td>Delegate</td>
<td>4.5-7 oz</td>
<td></td>
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<tr>
<td></td>
<td>Confirm</td>
<td>8-16 fl oz</td>
<td></td>
<td></td>
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<tr>
<td>Pecan Weevil</td>
<td>Trimmers Pro</td>
<td>1.3-2.6 fl oz</td>
<td></td>
<td></td>
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<tr>
<td>Pecan Nut Aphids</td>
<td>Assail 30SG</td>
<td>2.5-9.6 oz</td>
<td>Black aphids are more damaging than yellow aphids because they inject a toxin between leaf veins causing an area up to 1/4 inch in diameter to turn brown and die. Treatments are recommended when there is an average of one black aphid per compound leaf or 25 yellow aphids per compound leaf. Leaf samples should be randomly collected from different trees throughout the orchard. Aphid treatment is strongly discouraged before July. Use 7 oz of Provado for black aphids. Separate applications for yellow aphids are generally not recommended.</td>
<td>14</td>
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<tr>
<td></td>
<td>Belay SC</td>
<td>3-4 oz</td>
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<tr>
<td></td>
<td>Centric 40 WG</td>
<td>2.5 oz</td>
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<tr>
<td></td>
<td>Fulfill 50 WG</td>
<td>4 oz</td>
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<tr>
<td></td>
<td>Movento</td>
<td>6-9 oz</td>
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<tr>
<td></td>
<td>Mustang Maxx (R)</td>
<td>3.2-4.0 oz</td>
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<tr>
<td></td>
<td>Nexer</td>
<td>5.2-10.67 oz</td>
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<tr>
<td></td>
<td>Warrior (R)</td>
<td>2.56-5.12 oz</td>
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<tr>
<td></td>
<td>Closer</td>
<td>1.5-2.75 fl oz</td>
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<tr>
<td>Pecan Weevil</td>
<td>Asana XL (R)</td>
<td>4.8-14.5 oz</td>
<td>The majority of weevils emerge from soil after a heavy rain as early as August 15, especially on sandy soils. Treatments are generally warranted in infested orchards in late August. Monitoring circle traps on trunks will detect emerging adults and aid timing of treatments. Multiple applications may be required. Pecans are most susceptible to injury from gel stage to shock split. Sevin is best for weevils alone but is not effective against aphids, mites or stink bugs and may cause mite problems.</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Imidan 70 WP</td>
<td>3.0-3.25 lb</td>
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<td></td>
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<tr>
<td></td>
<td>Mustang Maxx (R)</td>
<td>3.2-4.0 oz</td>
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<tr>
<td></td>
<td>Sevin</td>
<td>2-3 lb</td>
<td></td>
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<tr>
<td></td>
<td>Warrior (R)</td>
<td>2.56-5.12 oz</td>
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<tr>
<td></td>
<td>Brigade</td>
<td>8-32 oz</td>
<td></td>
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<tr>
<td></td>
<td>Province (R)</td>
<td>2.56-5.12 fl oz</td>
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<tr>
<td></td>
<td>Grizzly Z</td>
<td>2.56-5.12 fl oz</td>
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<td></td>
<td>Lambda-CY EC</td>
<td>2.56-5.12 fl oz</td>
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<td></td>
<td>Hero</td>
<td>10.3 oz</td>
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**PECAN INSECT CONTROL — COMMERCIAL**

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<th>Days to Harvest</th>
</tr>
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<tbody>
<tr>
<td>Stink Bugs</td>
<td>Imidan 70 WP 2-3 1/8 lb</td>
<td></td>
<td>Stink bugs are mobile pests that build populations on many broadleaf plants. Problems are often associated with orchards next to soybean. Some states recommend treatment when populations exceed one insect per 40 terminals. If stink bugs are present from water through dough stages, apply treatments to minimize stink bug feeding and pecan nut damage.</td>
<td>14</td>
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<tr>
<td></td>
<td>Mustang Maxx (R) 3.2-4.0 oz</td>
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<td>7</td>
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<tr>
<td></td>
<td>Warrior (R) 2.56-5.12 oz</td>
<td></td>
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<td>14</td>
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<tr>
<td>Leaffooted Bugs</td>
<td>Same as Stink Bug</td>
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<td>21</td>
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<td></td>
<td>Brigade 8-32 fl oz</td>
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<td>21</td>
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<td></td>
<td>Biflinthrin 3.2-12.8 fl oz</td>
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<td>21</td>
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<tr>
<td></td>
<td>Fanfare 3.2-12.8 fl oz</td>
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<td>21</td>
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<tr>
<td></td>
<td>Sniper 3.2-12.8 fl oz</td>
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<td>21</td>
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<td></td>
<td>Endigo ZC 5-6 fl oz</td>
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<td>14</td>
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<tr>
<td></td>
<td>Girzzly Z 2.56-5.12 fl oz</td>
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<td>14</td>
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<tr>
<td></td>
<td>Silencer 2.56-5.12 fl oz</td>
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<td>14</td>
</tr>
<tr>
<td>Hickory Shuckworm</td>
<td>Intrepid 2 F 4-8 oz</td>
<td></td>
<td>Treatments are warranted in orchards with a history of shuckworm infestation. Multiple applications may be required. Pecans are most susceptible to hickory shuckworm after the gel stage. Sampling is very difficult, although adult moths can be monitored using commercially available pheromone traps. Once traps begin catching shuckworm moths, growers can begin weekly inspections of nuts for egg cemented to the shuck in a creamy white substance.</td>
<td>14</td>
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<tr>
<td></td>
<td>Entrust (OMRI*) 1.25-2.5 oz</td>
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<td></td>
<td>1</td>
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<tr>
<td></td>
<td>Confirm 2F 8-16 fl oz</td>
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<td>14</td>
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<tr>
<td></td>
<td>Intrepid Edge 4.0-6.4 fl oz</td>
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<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Altacar 2.0-4.5 fl oz</td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Belt 3-4 fl oz</td>
<td></td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>Mites</td>
<td>Acramite 12-16 oz</td>
<td></td>
<td>Mites are usually more of a problem in hot, dry periods or outbreaks occur after application of a pyrethroid or Sevin insecticides that kill the natural mite predators. Treat when leaf discoloration is noted and an average of 8 or more mites are found per compound leaf. Portal may only be applied once per season (do not apply by air).</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Dicofol 4E 2 qt</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Evidor 2SC 14-18 oz</td>
<td></td>
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<td>7</td>
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<tr>
<td></td>
<td>Portal 2 pt</td>
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<td>14</td>
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<tr>
<td></td>
<td>Zeal 2-3 oz</td>
<td></td>
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<td>28</td>
</tr>
<tr>
<td>Fall Webworm</td>
<td>Intrepid 2 F 4-8 oz</td>
<td></td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>Walnut Caterpillar</td>
<td>Sevin 2 1/2-6 1/4 lb</td>
<td></td>
<td>Sevin may cause mite problems to increase.</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Dipel (OMRI*) 1.5-2.0 lb</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Entrust (OMRI*) 1.25-3 oz</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>RED IMPORTED FIRE ANTS (ALL FIRE ANT BAITS) – Apply when ants are active and soil temperature is above 60 degrees F. DO NOT treat if rain is anticipated within 6 hours.</td>
<td></td>
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</tr>
<tr>
<td>Non-Bearing Trees</td>
<td>Fenoxycarb 1-3 Tbsp/mound</td>
<td></td>
<td>Mound-to-mound treatment rate. This is an insect growth regulator (IGR). Broadcast rate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Award) 1.0-1.5 lb/acre</td>
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<tr>
<td></td>
<td>Hydramethylnon 2-5 Tbsp/mound</td>
<td></td>
<td>Mound-to-mound treatment rate. This is an IGR. Broadcast rate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Amdro Pro) 1.0-1.5 lb/acre</td>
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<tr>
<td></td>
<td>S-Methoprene 3-5 Tbsp/mound</td>
<td></td>
<td>Mound-to-mound treatment rate. This is an IGR. Broadcast rate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Extinguish) 1.0-1.5 lb/acre</td>
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<tr>
<td></td>
<td>Pyriproxyfen 2-4 Tbsp/mound</td>
<td></td>
<td>Mound-to-mound treatment rate. This is an IGR. Broadcast rate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Esteem) 1.5-2.0 lb/acre</td>
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<tr>
<td></td>
<td>Pyridine 1-4 Tbsp/mound</td>
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<tr>
<td></td>
<td>(Distance) 1.0-1.5 lb/acre</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Bearing Trees</td>
<td>Pyriproxyfen 2-4 Tbsp/mound</td>
<td></td>
<td>Mound-to-mound treatment rate. This is an IGR. Broadcast rate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Esteem) 1.5-2.0 lb/acre</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*OMRI = Organic Materials Review Institute lists compounds approved for organic production.
## STRAWBERRY INSECT CONTROL

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use/Acre</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PREBLOOM</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strawberry Clipper</td>
<td>Brigade WSB</td>
<td>6.4-32 oz</td>
<td>Begin checking for clipped buds when the first flower appears. If clipped buds are found, apply insecticide and repeat spray at 10-day intervals as long as bud clipping continues.</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Danitol 2.4EC</td>
<td>10 2/3 oz</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Lorsban 4E</td>
<td>1 qt</td>
<td></td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Sevin 4F</td>
<td>1-2 qt</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td>Tarnished Plant Bug</td>
<td>Admire Pro</td>
<td>1.3 fl oz</td>
<td>Admire Pro as a foliar spray of spittlebug.</td>
<td>7</td>
</tr>
<tr>
<td>Spittlebug</td>
<td>Beleaf 50 SG</td>
<td>4-6.9 oz</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Brigade WSB</td>
<td>6.4-32 oz</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Danitol 2.4EC</td>
<td>10.67 oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Rimon 0.83EC</td>
<td>9-12 fl oz</td>
<td>Rimon is labeled against tarnished plant bug but not spittle bug. If spittlebugs are a problem, spray when buds first become visible and make a second application just before the first blossoms open.</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Sevin 4F</td>
<td>1-2 qt</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Spider Mites</strong></td>
<td>Acramite 50 WS</td>
<td>0.75-1.0 lb</td>
<td>Label allows up to two applications of Acramite or Kanemite per season.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Agri-Mek 0.7 SC</td>
<td>3.5 fl oz</td>
<td>Apply Danitol at higher rates to control spider mites.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Danitol 2.4EC</td>
<td>10 2/3 oz</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Kanemite 15 SC</td>
<td>21-31 fl oz</td>
<td>Minimize road dust to prevent spider mite buildup.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Nealta 1.67SC</td>
<td>13.7 fl oz</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Oberon 2 SC</td>
<td>12-16 fl oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Portal 0.4 EC</td>
<td>2 pt</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Savey 50 DF</td>
<td>4-6 oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Zeal 72 WSP</td>
<td>2-3 oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>JMS Stylet Oil (OMRI*)</td>
<td>1-2 gal</td>
<td>JMS Stylet-oil is approved for organic production.</td>
<td>0</td>
</tr>
<tr>
<td><strong>Predator Mites</strong></td>
<td>Ask state fruit entomologist</td>
<td></td>
<td>Release predatory mites for biological control of spider mites. Predator mites can be released when prey mite levels are between 1-5 mites per leaf. In general, release 2-3 predatory mites per plant when mite populations are low.</td>
<td>1</td>
</tr>
<tr>
<td><strong>Cyclamen Mite</strong></td>
<td>Portal 0.4 EC</td>
<td>2 pt</td>
<td>Portal is restricted to 2 applications of no more than 4 pints per crop cycle.</td>
<td>1</td>
</tr>
</tbody>
</table>

### EARLY BLOOM THROUGH BLOOM

**SAVE THE BEES!! DO NOT APPLY INSECTICIDES DURING BLOOM.**

### POST-BLOOM TO HARVEST

**DO NOT EXCEED 14 FL OZ PER ACRE PER SEASON.**

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use/Acre</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aphids</td>
<td>Actara</td>
<td>1.5-3.0 oz</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Admire Pro</td>
<td>10.5-14 fl oz</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>Leafrollers</td>
<td>Deliver (OMRI*)</td>
<td>0.25-1.5 lb</td>
<td>Deliver contains <em>Bacillus thuringiensis var. kurstaki</em> (BT) formulation.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Entrust 2SC (OMRI*)</td>
<td>4-6 fl oz</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Radiant SC</td>
<td>6-10 fl oz</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Coragen 1.67 SC</td>
<td>3.5-5 fl oz</td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>
### STRAWBERRY INSECT CONTROL

<table>
<thead>
<tr>
<th>Insect</th>
<th>Material and Formulation</th>
<th>Amount to Use/Acre</th>
<th>Remarks/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spotted Wing Drosophila</strong></td>
<td>Brigade WSB</td>
<td>5.3-16 oz</td>
<td>Days of residual activity: 0</td>
</tr>
<tr>
<td></td>
<td>Danitol 2.4EC</td>
<td>16-21.33 fl oz</td>
<td>7 days</td>
</tr>
<tr>
<td></td>
<td>Malathion</td>
<td>1.5-2.0 pt</td>
<td>7 days</td>
</tr>
<tr>
<td></td>
<td>Entrust 2SC (OMRI*)</td>
<td>4-6 oz</td>
<td>5-7 days</td>
</tr>
<tr>
<td></td>
<td>Radiant 1SC</td>
<td>6-10 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pyganic 1.4 (OMRI*)</td>
<td>16-64 fl oz</td>
<td>0-2 days</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Days to Harvest</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><strong>POST-HARVEST</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White Grubs of Japanese Beetle</td>
<td>Admire Pro</td>
<td>7-10.5 fl oz</td>
<td>Admire Pro and Platinum should be a post-harvest soil surface application followed by 0.25 inch of rain or overhead irrigation. DO NOT exceed 32 fl oz per acre per season of Alias or 12 fl oz per acre per season for Platinum.</td>
</tr>
<tr>
<td>Adult Japanese Beetles</td>
<td>Alias 2 F</td>
<td>16-24 fl oz</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>Coragen</td>
<td>3.5-5 fl oz</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Platinum</td>
<td>5-12 oz</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Sevin 4F</td>
<td>1-2 qt</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>RED IMPORTED FIRE ANTS (ALL FIRE ANT BAITS)</strong> – Apply when ants are active and soil temperature is above 60 degrees F. DO NOT treat if rain is anticipated within 6 hours.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-Methoprene (Extinguish)</td>
<td>3-5 Tbsp/mound</td>
<td>Mound-to-mound treatment rate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.0-1.5 lb/acre</td>
<td>Broadcast rate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>This product is an insect growth regulator (IGR). Apply 3 to 4 weeks prior to harvest date.</td>
<td></td>
</tr>
<tr>
<td>Pyriproxyfen (Esteem)</td>
<td>2-4 Tbsp/mound</td>
<td>Mound-to-mound treatment rate.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.5-2.0 lb/acre</td>
<td>Broadcast rate.</td>
<td></td>
</tr>
</tbody>
</table>

*OMRI = Organic Materials Review Institute lists compounds approved for organic production.

**Spotted Wing Drosophila (SWD)** is a new invasive insect pest that was detected in ripening and ripened fruit in many Midwest states, including Arkansas, in 2013. The SWD larvae feed inside and damage ripening soft-skinned fruit, especially blackberry, blueberry, raspberry and strawberry. See the Spotted Wing Drosophila site: [http://www.ipm.msu.edu/invasive_species/spotted_wing_drosophila](http://www.ipm.msu.edu/invasive_species/spotted_wing_drosophila) or the Arkansas SWD fact sheet: [https://www.uaex.edu/publications/PDF/FSA-7079.p](https://www.uaex.edu/publications/PDF/FSA-7079.p)
# VEGETABLE INSECT CONTROL RECOMMENDATIONS (COMMERCIAL)

<table>
<thead>
<tr>
<th>Crop</th>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation Per Acre</th>
<th>Lb ai/Acre</th>
<th>Application</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ASPARAGUS</strong></td>
<td>Asparagus beetle</td>
<td>carbaryl</td>
<td>1 qt</td>
<td>1.0</td>
<td>When damage occurs.</td>
<td>DO NOT apply during bloom.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sevin XLR</td>
<td>1 qt</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sevin 4F</td>
<td>1 qt</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>malathion</td>
<td>2 pt</td>
<td>1.25</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>methomyl (R)</td>
<td>Lannate 2.4 LV</td>
<td>1.5-3 pt</td>
<td>0.45-0.9</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lannate 90 SP</td>
<td>1/2-1 lb</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin (R)</td>
<td>Pounce 25 WP</td>
<td>3.2-6.4 oz</td>
<td>0.05-0.1</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>spinosad</td>
<td>SpinTor 2 SC</td>
<td>4-6 oz</td>
<td>0.062-0.094</td>
<td></td>
<td>For protection of ferns only.</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Beet armyworm</strong></td>
<td></td>
<td>methomyl (R)</td>
<td>1 1/2-3 pt</td>
<td>0.45-0.9</td>
<td>When damage occurs.</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lannate 2.4 LV</td>
<td>1/2-1 lb</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lannate 90 SP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole</td>
<td>Coragen 1.67 SC</td>
<td>3.5-5 oz</td>
<td>0.045-0.065</td>
<td></td>
<td>DO NOT use an adjuvant with Coragen.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Bacillus thuringiensis</td>
<td>Biobit, Dipel, Javelin, etc.</td>
<td>See label for rates.</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td><strong>Beans</strong> (snap or lima)</td>
<td>Seedcorn maggot</td>
<td>Commercial seed protectant (Lorsban)</td>
<td>Use according to label.</td>
<td></td>
<td></td>
<td>Seed treatment only. Maggot damage can be reduced by early spring plowing that reduces plant residue prior to planting.</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>phorate (R)</td>
<td>Thimet 20G</td>
<td>7.6</td>
<td>Distribute 4.5-7.0 oz of the granules evenly in 1,000 row feet over the top of the row at planting time (30-inch row minimum).</td>
<td>DO NOT feed foliage of treated beans. DO NOT place Thimet in contact with seed.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Bean leaf beetle, Mexican bean beetle</strong></td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>2.6-6.4 fl oz</td>
<td>0.04-0.1</td>
<td>When damage occurs.</td>
<td>DO NOT apply during bloom.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>carbaryl</td>
<td>Sevin XLR</td>
<td>1/2-1 qt</td>
<td>0.5-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sevin 4F</td>
<td>1/2-1 qt</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>esfenvalerate (R)</td>
<td>Asana XL 0.66 EC</td>
<td>2.9-5.8 oz</td>
<td>0.015-0.03</td>
<td></td>
<td>Asana is not registered on lima beans.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin</td>
<td>Proaxis 0.5EC</td>
<td>2.56-3.84 oz</td>
<td>0.01-0.015</td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Karate Z</td>
<td>1.28-1.92 oz</td>
<td>0.02-0.03</td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>methomyl (R)</td>
<td>Lannate 90 SP</td>
<td>0.5 lb</td>
<td>0.45</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin (R)</td>
<td>Mustang Maxx 0.8 EC</td>
<td>3.2-4.0 oz</td>
<td>0.02-0.025</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Crop</td>
<td>Insect</td>
<td>Insecticide</td>
<td>Formulation Per Acre</td>
<td>Lb ai/Acre</td>
<td>Application</td>
<td>Remarks/Precautions</td>
<td>Days to Harvest</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------------------</td>
<td>-------------------------------</td>
<td>----------------------</td>
<td>------------</td>
<td>-------------</td>
<td>---------------------------------------------------------------------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>BEANS (snap or lima)</td>
<td>Corn earworm</td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>2.6-6.4 fl oz</td>
<td>0.04-0.1</td>
<td>In spring planted snap bean, scouting (300 sweeps per 50 acres) can be used to reduce insecticide applications.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>carbaryl</td>
<td></td>
<td>40 lb</td>
<td>2.0</td>
<td>When first pods are 1 inch long and weekly thereafter.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>chlorantraniliprole</td>
<td>Coragen 1.67 SC</td>
<td>3.5-5 oz</td>
<td>0.045-0.065</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate (R)</td>
<td>Asana XL 0.66 EC</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td>DO NOT feed treated vines. Asana is not registered on lima beans.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>flubendiamide</td>
<td>Belt SC</td>
<td>2-3 oz</td>
<td>0.0625-0.094</td>
<td></td>
<td>1 (green/edible beans) 14 (dry beans)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gamma-cyhalothrin</td>
<td>Proaxis 0.5EC</td>
<td>2.56-3.84 oz</td>
<td>0.01-0.015</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Karate Z</td>
<td>1.28-1.92 oz</td>
<td>0.02-0.03</td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>methomyl (R)</td>
<td>Lannate 90 SP</td>
<td>0.5 lb</td>
<td>0.45</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lannate 2.4 LV</td>
<td>1 1/2 pt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>spinetoram</td>
<td>Radiant 1 SC</td>
<td>4-8 oz</td>
<td>0.03-0.063</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>zeta-cypermethrin (R)</td>
<td>Mustang Maxx 0.8 EC</td>
<td>3.2-4.0 oz</td>
<td>0.02-0.025</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>zeta-cypermethrin + bifenthrin</td>
<td>Hero</td>
<td>10.3 oz</td>
<td>0.1</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Cabbage looper</td>
<td>Bacillus thuringiensis</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td>Loopers rarely require management on Arkansas snap bean.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate (R)</td>
<td>Asana XL 0.66 EC</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td>Asana is not registered on lima beans.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>flubendiamide</td>
<td>Belt SC</td>
<td>2-3 oz</td>
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<tr>
<td></td>
<td></td>
<td>methomyl (R)</td>
<td>Lannate 90 SP</td>
<td>0.5-1 lb</td>
<td>0.45-0.9</td>
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<tr>
<td></td>
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<td></td>
<td>Lannate 2.4 LV</td>
<td>1 1/2-3 pt</td>
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<td>Crop</td>
<td>Insect</td>
<td>Insecticide</td>
<td>Formulation Per Acre</td>
<td>Lb ai/Acre</td>
<td>Application</td>
<td>Remarks/Precautions</td>
<td>Days to Harvest</td>
</tr>
<tr>
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<tr>
<td>BEANS (snap or lima)</td>
<td>European corn borer</td>
<td>chlorantraniliprole</td>
<td>3.5-5 oz</td>
<td>0.045-0.065</td>
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<td>Corn borers rarely require management on Arkansas snap bean.</td>
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<td></td>
<td></td>
<td>Coragen 1.6’’ SC</td>
<td></td>
<td></td>
<td></td>
<td>1 (green/edible beans) 14 (dry beans)</td>
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<td></td>
<td></td>
<td>flubendiamide</td>
<td>2-3 oz</td>
<td>0.0625-0.094</td>
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<td></td>
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<td>Belt SC</td>
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<tr>
<td></td>
<td></td>
<td>zeta-cypermethrin + bifenthrin</td>
<td>10.3 oz</td>
<td>0.1</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hero</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>Mite</td>
<td>abamectin</td>
<td>1.75-3.5 fl oz</td>
<td>0.01-0.05</td>
<td>For control of spider mites.</td>
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<td></td>
<td></td>
<td>Agri-Mek SC</td>
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<tr>
<td></td>
<td></td>
<td>bifenthrin (R)</td>
<td>6.4 fl oz</td>
<td>0.1</td>
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<tr>
<td></td>
<td></td>
<td>Brigade 2 EC</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>dicofol</td>
<td>1-3 pt</td>
<td>0.5-1.5</td>
<td></td>
<td>DO NOT apply more than once per season.</td>
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<td>Dicofol 4E</td>
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<td></td>
<td></td>
<td>dimethoate</td>
<td>1 pt</td>
<td>0.5</td>
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<td>Dimethoate 4EC</td>
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<tr>
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<td>Stink bug</td>
<td>bifenthrin (R)</td>
<td>2.6-6.4 fl oz</td>
<td>0.04-0.1</td>
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<td></td>
<td>Brigade 2 EC</td>
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<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>1.28-1.92 oz</td>
<td>0.02-0.03</td>
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<tr>
<td></td>
<td></td>
<td>Karate Z</td>
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<td>zeta-cypermethrin (R)</td>
<td>3.2-4.0 oz</td>
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<tr>
<td></td>
<td></td>
<td>Mustang Maxx 0.8 EC</td>
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<tr>
<td></td>
<td></td>
<td>zeta-cypermethrin + bifenthrin</td>
<td>10.3 oz</td>
<td>0.1</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hero</td>
<td></td>
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</tr>
<tr>
<td>BEETS</td>
<td>Flea beetle, webworm</td>
<td>carbaryl</td>
<td>1 qt</td>
<td>1.0</td>
<td>When insects appear in damaging numbers.</td>
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<tr>
<td></td>
<td></td>
<td>Sevin 4F</td>
<td></td>
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<td>DO NOT apply during bloom.</td>
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<td>Sevin XLR Plus</td>
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<td></td>
<td></td>
<td>imidacloprid</td>
<td>3.5 oz</td>
<td>0.044</td>
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<tr>
<td></td>
<td></td>
<td>Prey 1.6 F</td>
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<td></td>
<td>zeta-cypermethrin (R)</td>
<td>1.8-4.0 oz</td>
<td>0.011-0.025</td>
<td></td>
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<td>Mustang Maxx 0.8 EC</td>
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<tr>
<td>CARROTS</td>
<td>Flea beetle, celery worm, leafhopper</td>
<td>beta-cyfluthrin + imidacloprid</td>
<td>2.8 oz</td>
<td>0.066</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Leverage 360</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>carbaryl</td>
<td>1 qt</td>
<td>1.0</td>
<td>When insects appear in damaging numbers.</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sevin 4F</td>
<td></td>
<td></td>
<td></td>
<td>Avoid application when foliage is wet. DO NOT apply during bloom.</td>
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<tr>
<td></td>
<td></td>
<td>Sevin XLR Plus</td>
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<tr>
<td></td>
<td></td>
<td>imidacloprid</td>
<td>3.5 oz</td>
<td>0.044</td>
<td></td>
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<td>7</td>
</tr>
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<td></td>
<td></td>
<td>Prey 1.6 F</td>
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<tr>
<td>Crop</td>
<td>Insect</td>
<td>Insecticide</td>
<td>Formulation Per Acre</td>
<td>Lb ai/Acre</td>
<td>Application</td>
<td>Remarks/Precautions</td>
<td>Days to Harvest</td>
</tr>
<tr>
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</tr>
<tr>
<td><strong>CARROTS</strong> (cont.)</td>
<td>Flea beetle, celery worm, leafhopper</td>
<td>malathion Malathion 57% EC</td>
<td>2 pt</td>
<td>1.25</td>
<td>Use only for leafhoppers.</td>
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<tr>
<td></td>
<td></td>
<td>zeta-cypermethrin (R) Mustang Maxx 0.8 EC</td>
<td>1.8-4.0 oz</td>
<td>0.011-0.025</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>COLE CROPS</strong> (Broccoli, Brussels sprouts, cabbage and cauliflower)</td>
<td>Cutworm</td>
<td>beta-cyfluthrin Baythroid XL</td>
<td>0.8-1.6 oz</td>
<td>0.007-0.013</td>
<td></td>
<td>0</td>
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<tr>
<td></td>
<td></td>
<td>bifenthrin (R) Brigade 2 EC</td>
<td>2.1-6.4</td>
<td>0.033-0.01</td>
<td>Follow label directions.</td>
<td>7</td>
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<tr>
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<td></td>
<td>cypermethrin Ammo 2.5 EC</td>
<td>2.5-5 oz</td>
<td>0.05-0.01</td>
<td>Follow label directions.</td>
<td>1</td>
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<tr>
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<td></td>
<td>diazinon (R) Diazinon AG500 Diazinon AG600 WBC</td>
<td>2-4 qt 51-102 fl oz</td>
<td>2.0-4.0</td>
<td>Broadcast just before planting and incorporate.</td>
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<tr>
<td></td>
<td></td>
<td>esfenvalerate (R) Asana XL 0.66 EC</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td>Apply at base of plants. Use as needed.</td>
<td>3</td>
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<tr>
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<td></td>
<td>zeta-cypermethrin (R) Mustang Maxx 0.8 EC</td>
<td>3.2-4.0 oz</td>
<td>0.02-0.025</td>
<td></td>
<td>1</td>
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</tr>
<tr>
<td><strong>Caterpillars</strong> (cabbage looper, diamondback, imported and cross-striped cabbage worm)</td>
<td>Bacillus thuringiensis (Dipel, Javelin, Agree)</td>
<td>beta-cyfluthrin + imidacloprid Leverage 360</td>
<td>3 oz</td>
<td>0.07</td>
<td>Check label. Slow acting but works well.</td>
<td>0</td>
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<tr>
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<td></td>
<td>bifenthrin (R) Brigade 2 EC</td>
<td>2.6-6.4 fl oz</td>
<td>0.04-0.1</td>
<td>Follow label directions.</td>
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<tr>
<td></td>
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<td>chlorantraniliprole Coragen 1.67 SC Exirel 0.83</td>
<td>3.5-5.0 fl oz 7-12.8 fl oz</td>
<td>0.045-0.065</td>
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<td></td>
<td></td>
<td>chlorantraniliprole + lambda-cyhalothrin (R) Voliam Xpress</td>
<td>6-9 oz</td>
<td>0.06-0.09</td>
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<tr>
<td></td>
<td></td>
<td>endosulfan Thionex 3 EC Thionex 50 WP</td>
<td>1-1 1/3 qt 1 1/2-2 lb</td>
<td>0.75-1.0</td>
<td>When insects appear. DO NOT use on broccoli, Brussels sprouts or cauliflower.</td>
<td>17 (cabbage)</td>
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<td></td>
<td>esfenvalerate (R) Asana XL 0.66 EC</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td>DO NOT feed treated plants to livestock.</td>
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<td>flubendiamide Belt SC Synapse WG</td>
<td>2-2.4 oz 3-5 oz</td>
<td>0.0625-0.075</td>
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<td>Crop</td>
<td>Insect</td>
<td>Insecticide</td>
<td>Formulation Per Acre</td>
<td>Lb ai/Acre</td>
<td>Application</td>
<td>Remarks/Precautions</td>
<td>Days to Harvest</td>
</tr>
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<tr>
<td><strong>COLE CROPS</strong>&lt;br&gt;(Broccoli, Brussels sprouts, cabbage and cauliflower)</td>
<td>Caterpillars (cabbage looper, diamondback, imported and cross-striped cabbage worm)</td>
<td>lambda-cyhalothrin (R) Karate Z</td>
<td>1.28-1.92 fl oz</td>
<td>0.02-0.03</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>methomyl (R) Lannate 2.4 LV Lannate SP</td>
<td>1/2-3 pt 1/2-1 lb</td>
<td>0.45-0.9</td>
<td>Apply when cabbage loopers are small.</td>
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<td>methoxyfenozide Intrepid 2F</td>
<td>4-8 oz</td>
<td>0.06-0.12</td>
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<td>permethrin (R) Ambush 25 W Ambush 2.0 EC Pounce 25 WP</td>
<td>3.2-6.4 oz 3.2-12.8 oz 3.2-6.4 oz</td>
<td>0.05-0.1</td>
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<td>spinosad SpinTor 2 SC</td>
<td>1.5-10 fl oz</td>
<td>0.023-0.156</td>
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<td>tebufenozide Confirm 2F</td>
<td>6-8 fl oz</td>
<td>0.09-0.12</td>
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<td>zeta-cypermethrin (R) Mustang Maxx 0.8 EC</td>
<td>2.24-4.0 oz</td>
<td>0.014-0.025</td>
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<tr>
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<td></td>
<td>zeta-cypermethrin + bifenthrin Hero</td>
<td>10.3 oz</td>
<td>0.1</td>
<td></td>
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<tr>
<td></td>
<td>Harlequin bug, stink bug</td>
<td>bifenthrin (R) Brigade 2 EC</td>
<td>2.1-6.4 oz</td>
<td>0.033-0.10</td>
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<tr>
<td></td>
<td></td>
<td>beta-cyfluthrin + imidacloprid Leverage 360</td>
<td>3 oz</td>
<td>0.07</td>
<td></td>
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<td>7</td>
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<tr>
<td></td>
<td></td>
<td>carbaryl Sevin XLR Plus Sevin 4F</td>
<td>1-2 qt 1-2 qt</td>
<td>1.2</td>
<td>Follow label directions. DO NOT apply during bloom.</td>
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<td>endosulfan Thionex 50 WP Thionex 3 EC</td>
<td>1 1/2-2 lb 1-1 1/3 qt</td>
<td>0.75-1.0</td>
<td>Follow label directions. DO NOT use on broccoli, Brussels sprouts or cauliflower.</td>
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<td>17</td>
</tr>
<tr>
<td></td>
<td>Aphids</td>
<td>beta-cyfluthrin + imidacloprid Leverage 360</td>
<td>3 oz</td>
<td>0.07</td>
<td></td>
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<td>7</td>
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<td></td>
<td></td>
<td>bifenthrin (R) Brigade 2 EC</td>
<td>2.6-6.4 fl oz</td>
<td>0.04-0.1</td>
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<td>7</td>
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<tr>
<td></td>
<td></td>
<td>chlorpyrifos Lorsban 50 W</td>
<td>2 lb</td>
<td>1.0</td>
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<td></td>
<td>endosulfan Thionex 3 EC Thionex 50 WP</td>
<td>1-1 1/3 qt 1 1/2-2 lb</td>
<td>0.75-1.0</td>
<td>When needed.</td>
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## VEGETABLE INSECT CONTROL RECOMMENDATIONS (COMMERCIAL)

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<th>Crop</th>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation Per Acre</th>
<th>Lb ai/Acre</th>
<th>Application</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
</tr>
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<tbody>
<tr>
<td><strong>COLE CROPS</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>(Broccoli, Brussels sprouts, cabbage and cauliflower) (cont.)</td>
<td>Aphids</td>
<td>imidacloprid Prey 1.6 F</td>
<td>3.75 oz</td>
<td>0.047</td>
<td></td>
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<td></td>
<td></td>
<td>lambda-cyhalothrin (R) Karate Z</td>
<td>1.28-1.92 fl oz</td>
<td>0.02-0.03</td>
<td></td>
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<td>1</td>
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<tr>
<td></td>
<td></td>
<td>zeta-cypermethrin (R) Mustang Maxx 0.8 EC</td>
<td>2.24-4.0 oz</td>
<td>0.014-0.025</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>zeta-cypermethrin + bifenthrin Hero</td>
<td>10.3 oz</td>
<td>0.1</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>CUCURBITS</strong></td>
<td>Cucumber beetle, darkling beetle</td>
<td>beta-cyfluthrin Baythroid XL</td>
<td>2.4-2.8 oz</td>
<td>0.019-0.022</td>
<td></td>
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<td>0</td>
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<tr>
<td>(Cantaloupe, pumpkin, squash and watermelon)</td>
<td></td>
<td>bifenthrin (R) Brigade 2 EC</td>
<td>2.6-6.4 fl oz</td>
<td>0.04-0.01</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>carbaryl</td>
<td>1 qt</td>
<td>1.0</td>
<td>When insects first appear.</td>
<td>Sevin is highly toxic to honeybees. Avoid excessive applications. DO NOT apply when foliage is wet. DO NOT apply during bloom.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sevin XLR Plus</td>
<td>1 qt</td>
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<td></td>
<td>Sevin 4F</td>
<td>1 qt</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid Admire 2 F</td>
<td>16-24 fl oz</td>
<td>0.25-0.375</td>
<td></td>
<td>Admire applied into soil is highly effective against cucumber beetles and can reduce seedling loss.</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>lambda-cyhalothrin (R) Karate Z</td>
<td>1.28-1.92 fl oz</td>
<td>0.02-0.03</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion</td>
<td>1.5-2.75 pt</td>
<td>0.94-1.7</td>
<td></td>
<td>Use no more than 1.5 pints on winter squash or pumpkins or 2 pints on watermelons.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>methomyl (R) Lannate 2.4 LV</td>
<td>1 1/2-3 pt</td>
<td>0.45-0.9</td>
<td></td>
<td>DO NOT use Lannate on pumpkins.</td>
<td>1 (lower rate)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lannate SP</td>
<td>1/2-1 lb</td>
<td></td>
<td></td>
<td>3 (higher rate)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>zeta-cypermethrin (R) Mustang Maxx 0.8 EC</td>
<td>2.8-4.0 oz</td>
<td>0.0175-0.025</td>
<td></td>
<td></td>
<td>1</td>
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<tr>
<td></td>
<td></td>
<td>zeta-cypermethrin + bifenthrin Hero</td>
<td>10.3 oz</td>
<td>0.1</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td><strong>PICKLEWORM</strong></td>
<td></td>
<td>beta-cyfluthrin Baythroid XL</td>
<td>1.6-2.4 oz</td>
<td>0.013-0.019</td>
<td></td>
<td>Bifenthrin is the only registered insecticide that provides moderate control of squash bug.</td>
<td>0</td>
</tr>
<tr>
<td>Squash bug</td>
<td></td>
<td>bifenthrin (R) Brigade 2 EC</td>
<td>2.6-6.4 fl oz</td>
<td>0.04-0.01</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>carbaryl</td>
<td>1 qt</td>
<td>1.0</td>
<td>When insects or damage first appears.</td>
<td>Bifenthrin is the only registered insecticide that provides moderate control of squash bug.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sevin XLR Plus</td>
<td>1 qt</td>
<td></td>
<td></td>
<td>Avoid excessive applications. DO NOT apply when foliage is wet. DO NOT apply during bloom.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sevin 4F</td>
<td>1 qt</td>
<td></td>
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</table>
## VEGETABLE INSECT CONTROL RECOMMENDATIONS (COMMERCIAL)

<table>
<thead>
<tr>
<th>Crop</th>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation Per Acre</th>
<th>Lb ai/Acre</th>
<th>Application</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CUCURBITS</strong></td>
<td>Pickleworm, squash bug</td>
<td>endosulfan</td>
<td>1-2 lb</td>
<td>0.5-1.0</td>
<td>When feeding is noticed.</td>
<td></td>
<td>4 (melons, summer squash) 11 (pumpkins, winter squash)</td>
</tr>
<tr>
<td>(Cantaloupe, pumpkin, squash and watermelon)</td>
<td></td>
<td>Thionex 50 WP</td>
<td>2/3-1 1/3 pt</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Thionex 3 EC</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>esfenvalerate (R)</td>
<td>Asana XL 0.66 EC</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td></td>
<td>Asana may cause some phytotoxicity to zucchini squash.</td>
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</tr>
<tr>
<td></td>
<td>flubendiamide</td>
<td>Belt SC</td>
<td>1.5 oz</td>
<td>0.047</td>
<td></td>
<td>Belt and Synapse will not control squash bug.</td>
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<td></td>
<td></td>
<td>Synapse WG</td>
<td>3 oz</td>
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<tr>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Karate Z</td>
<td>1.28-1.92 oz</td>
<td>0.02-0.03</td>
<td></td>
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<tr>
<td></td>
<td>permethrin (R)</td>
<td>Ambush 2.0 EC</td>
<td>6.4-12.8 oz</td>
<td>0.1-0.2</td>
<td>When insects or damage first appear.</td>
<td></td>
<td>0</td>
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<tr>
<td></td>
<td></td>
<td>Pounce 3.2 EC</td>
<td>4-8 oz</td>
<td></td>
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<tr>
<td></td>
<td>spinosad</td>
<td>SpinTor 2 SC</td>
<td>4-8 oz</td>
<td>0.062-0.125</td>
<td></td>
<td>Follow label directions. SpinTor does not control squash bug.</td>
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</tr>
<tr>
<td></td>
<td>zeta-cypermethrin +</td>
<td>Hero</td>
<td>10.3 oz</td>
<td>0.1</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>bifenthrin</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>Aphids</td>
<td>endosulfan</td>
<td>2/3-1 1/3 pt</td>
<td>0.5-1.0</td>
<td></td>
<td></td>
<td>4 (melons, summer squash) 11 (pumpkins, winter squash)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thionex 3 EC</td>
<td>1-2 lb</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thionex 50 WP</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>flonicamid</td>
<td>Beleaf 50 SC</td>
<td>2-2.8 oz</td>
<td>0.062-0.089</td>
<td></td>
<td></td>
<td>0</td>
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</tr>
<tr>
<td></td>
<td>thiamethoxam</td>
<td>Actara 25 WDG</td>
<td>1.5-3 oz</td>
<td>0.02-0.047</td>
<td></td>
<td></td>
<td>0</td>
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</tr>
<tr>
<td></td>
<td>Mite</td>
<td>abamectin (R)</td>
<td>1.75-3.5 fl oz</td>
<td>0.0094-0.01875</td>
<td>When mites first appear.</td>
<td>DO NOT apply unless plants are dry. Pumpkins 3 days before harvest.</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Agri-Mek 0.7 SC</td>
<td></td>
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<tr>
<td></td>
<td>etoxazole</td>
<td>Zeal 2.88 SC</td>
<td>4-6 fl oz</td>
<td>0.09-0.135</td>
<td></td>
<td>DO NOT make more than 1 application per season.</td>
<td>7</td>
</tr>
<tr>
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<tr>
<td></td>
<td>spironesifen</td>
<td>Oberon 2 SC</td>
<td>7-8.5 oz</td>
<td>0.11-0.13</td>
<td></td>
<td></td>
<td>7</td>
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</tr>
<tr>
<td><strong>CUCURBITS</strong></td>
<td>Flea beetle, tobacco budworm, beet armyworm</td>
<td>methomyl (R)</td>
<td>1 1/2-3 pt</td>
<td>0.45-0.9</td>
<td>When insects first appear.</td>
<td>One day up to 2 pt, over 2 pt 3 days. DO NOT apply to pumpkins.</td>
<td>1-3</td>
</tr>
<tr>
<td>(Melons, cucumbers and summer squash)</td>
<td></td>
<td>Lannate 2.4 LV</td>
<td>1/2-1 lb</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Lannate SP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>spinosad</td>
<td>SpinTor 2 SC</td>
<td>4-8 fl oz</td>
<td>0.0625-0.125</td>
<td></td>
<td>Not labeled for flea beetle.</td>
<td>3</td>
</tr>
</tbody>
</table>
## VEGETABLE INSECT CONTROL RECOMMENDATIONS (COMMERCIAL)

<table>
<thead>
<tr>
<th>Crop</th>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation Per Acre</th>
<th>Lb ai/Acre</th>
<th>Application</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CUCURBITS</strong> (Melons, cucumbers and summer squash) (cont.)</td>
<td>Whitefly</td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>0.08-0.1</td>
<td>Follow label directions.</td>
<td>Insecticide use will not effectively reduce high populations of whiteflies. Removal of alternate host plants (weeds) along with field plowing immediately after harvest aids in population suppression.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>chlorantraniliprole Coragen 1.67 SC</td>
<td>5-7 fl oz</td>
<td>0.065-0.09</td>
<td>Use on nymphs only.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>lambda-cyhalothrin (R) Karate Z</td>
<td>1.28-1.92 fl oz</td>
<td>0.02-0.03</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>thiomethoxam Actara 25 WDG</td>
<td>3-5.5 oz</td>
<td>0.047-0.086</td>
<td>Follow label directions.</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>CUCUMBERS</strong></td>
<td>Aphids</td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>0.04-0.1</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>endosulfan</td>
<td>Thionex 3 EC</td>
<td>0.5-1.0</td>
<td></td>
<td>11</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Thionex 50 WP</td>
<td>2/3-1 1/3 pt</td>
<td>1-2 lb</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>flonicamid</td>
<td>Beleaf 50 SG</td>
<td>0.062-0.089</td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>thiamethoxam</td>
<td>Actara 25 WDG</td>
<td>0.02-0.047</td>
<td></td>
<td>0</td>
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<tr>
<td></td>
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<td>zeta-cypermethrin (R) Mustang Maxx 0.8 EC</td>
<td>3.2-4.0</td>
<td>0.02-0.025</td>
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<td>1</td>
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<tr>
<td></td>
<td></td>
<td>zeta-cypermethrin + bifenthrin Hero</td>
<td>10.3 oz</td>
<td>0.1</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cucumber beetle, blister beetle</td>
<td>beta-cyfluthrin</td>
<td>Baythroid XL</td>
<td>0.019-0.022</td>
<td></td>
<td>0</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate (R) Asana XL 0.66 EC</td>
<td>2.4-2.8 oz</td>
<td>0.03-0.05</td>
<td>Apply when needed.</td>
<td>3</td>
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<tr>
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<td></td>
<td>lambda-cyhalothrin (R) Karate Z</td>
<td>1.28-1.92 fl oz</td>
<td>0.02-0.03</td>
<td></td>
<td>1</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>methomyl</td>
<td>Lannate 2.4 LV</td>
<td>0.45-0.9</td>
<td>1 day for 0.45 lb ai; 3 days if over 0.45 lb ai.</td>
<td>1-3</td>
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<tr>
<td></td>
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<td></td>
<td>Lannate SP</td>
<td>1 1/2-3 pt</td>
<td>1/2-1 lb</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Squash bug</td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>0.04-0.1</td>
<td></td>
<td>3</td>
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<tr>
<td></td>
<td></td>
<td>carbaryl</td>
<td>Sevin XLR Plus</td>
<td>1 qt</td>
<td></td>
<td>0</td>
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<td></td>
<td></td>
<td></td>
<td>Sevin 4F</td>
<td>1 qt</td>
<td>DO NOT apply during bloom.</td>
<td></td>
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</tr>
<tr>
<td>Crop</td>
<td>Insect</td>
<td>Insecticide</td>
<td>Formulation Per Acre</td>
<td>Lb ai/Acre</td>
<td>Application</td>
<td>Remarks/Precautions</td>
<td>Days to Harvest</td>
</tr>
<tr>
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<tr>
<td>CUCUMBERS</td>
<td>Squash bug</td>
<td>endosulfan</td>
<td>Thionex 3 EC</td>
<td>2/3-1 pt</td>
<td>0.5-1.0</td>
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<td>11</td>
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<tr>
<td></td>
<td></td>
<td>Thionex 50 WP</td>
<td>1-2 lb</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>esfenvalerate (R)</td>
<td>Asana XL 0.66 EC</td>
<td>5.8-9.6 oz</td>
<td></td>
<td>0.03-0.05</td>
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<tr>
<td></td>
<td>Pickleworm</td>
<td>beta-cyfluthrin</td>
<td>Baythroid XL</td>
<td>1-6 oz</td>
<td>0.013-0.019</td>
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<td>0</td>
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<td></td>
<td></td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>2.1-6 oz</td>
<td>0.033-0.1</td>
<td></td>
<td>3</td>
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<tr>
<td></td>
<td></td>
<td>carbaryl</td>
<td>Sevin XLR Plus</td>
<td>1 qt</td>
<td>1.0</td>
<td>Apply to foliage as needed.</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Sevin 4F</td>
<td>1 lb</td>
<td></td>
<td></td>
<td>DO NOT apply during bloom.</td>
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<td></td>
<td></td>
<td>endosulfan</td>
<td>Thionex 3 EC</td>
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<td>Thionex 50 WP</td>
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<td></td>
<td>0.03-0.05</td>
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<td>3</td>
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<tr>
<td></td>
<td>Pickleworm</td>
<td>flubendiamide</td>
<td>Belt SC</td>
<td>1.5 oz</td>
<td>0.047</td>
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<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Synapse WG</td>
<td>3 oz</td>
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<tr>
<td></td>
<td>Pickleworm</td>
<td>lambda-cyhalothrin (R)</td>
<td>Karate Z</td>
<td>1.28-1.92 oz</td>
<td>0.02-0.03</td>
<td></td>
<td>1</td>
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<tr>
<td></td>
<td>Pickleworm</td>
<td>methomyl (R)</td>
<td>Lannate 2.4 LV</td>
<td>1 1/2-3 pt</td>
<td>0.45-0.9</td>
<td></td>
<td>1-3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lannate SP</td>
<td>1 1/2-1 lb</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Pickleworm</td>
<td>spinosad</td>
<td>SpinTor 2 SC</td>
<td>4-8 oz</td>
<td>0.062-0.125</td>
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</tr>
<tr>
<td></td>
<td>Mite</td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>6.4 oz</td>
<td>0.1</td>
<td></td>
<td>3</td>
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<tr>
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<td></td>
<td>dicofol</td>
<td>Dicofol 4E</td>
<td>1 1/4 pt</td>
<td>0.625</td>
<td>No more than 1 application per season.</td>
<td>2</td>
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<td>etoxazole</td>
<td>Zeal 2.88 SC</td>
<td>4-6 fl oz</td>
<td>0.09-0.135</td>
<td>No more than 1 application per season.</td>
<td>7</td>
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<tr>
<td></td>
<td></td>
<td>spiromesifen</td>
<td>Oberon 2 SC</td>
<td>7-8.5 oz</td>
<td>0.11-0.13</td>
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<td>EGGPLANT</td>
<td>Flea beetle, Colorado potato beetle</td>
<td>beta-cyfluthrin</td>
<td>Baythroid XL</td>
<td>2.8 oz</td>
<td>0.022</td>
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<tr>
<td></td>
<td></td>
<td>beta-cyfluthrin + imidacloprid</td>
<td>Leverage 360</td>
<td>3.8-4.1 oz</td>
<td>0.89-0.096</td>
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<tr>
<td>Crop</td>
<td>Insect</td>
<td>Insecticide</td>
<td>Formulation Per Acre</td>
<td>Lb ai/Acre</td>
<td>Application</td>
<td>Remarks/Precautions</td>
<td>Days to Harvest</td>
</tr>
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<td>EGGPLANT</td>
<td>Flea beetle, Colorado potato beetle</td>
<td>bifenthrin (R) Brigade 2 EC</td>
<td>2.1-6.4 fl oz</td>
<td>0.033-0.1</td>
<td></td>
<td>DO NOT apply during bloom. Use higher rates for Colorado potato beetle.</td>
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<tr>
<td></td>
<td></td>
<td>carbaryl Sevin XLR Plus Sevin 4F</td>
<td>1/2-2 qt</td>
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<td></td>
<td></td>
<td>esfenvalerate (R) Asana XL 0.66 EC</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
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<tr>
<td></td>
<td></td>
<td>imidacloprid Admire Pro 4.6 F</td>
<td>1.3-2.2 fl oz</td>
<td>0.05-0.08</td>
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<td>zeta-cypermethrin (R) Mustang Maxx 0.8 EC</td>
<td>2.24-4.0 oz</td>
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<td>Aphids</td>
<td>beta-cyfluthrin + imidacloprid Leverage 360</td>
<td></td>
<td>3.8-4.1 oz</td>
<td>0.89-0.096</td>
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<tr>
<td></td>
<td>flonicamid Beleaf 50 SG</td>
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<td>2.6-4.28 oz</td>
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<td>0.05-0.08</td>
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<td>thiamethoxam Actara 25 WDG</td>
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<td>2-3 oz</td>
<td>0.03-0.047</td>
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<tr>
<td>Mite</td>
<td>abamectin Agri-Mek 0.7 SC</td>
<td></td>
<td>1.75-3.5 fl oz</td>
<td>0.01-0.019</td>
<td></td>
<td>Must be mixed with an adjuvant.</td>
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<td>spiromesifent Oberon 2 SC</td>
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<tr>
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<td>fenbutatin-oxide (R) Vendex 50 WP</td>
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<td>2-3 lb</td>
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<tr>
<td>Leafminer</td>
<td>permethrin (R) Ambush 2.0 EC Pounce 25 WP</td>
<td></td>
<td>6-12 oz 6.4-9.6 oz</td>
<td>0.1-0.2</td>
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<td></td>
<td>spinosad SpinTor 2 SC</td>
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<td>0.094-0.125</td>
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<td>Follow label directions.</td>
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<td>Lep. larvae</td>
<td>beta-cyfluthrin Baythroid XL</td>
<td></td>
<td>1.6-2.8 oz</td>
<td>0.013-0.022</td>
<td></td>
<td>Use higher rates for loopers, pinworms and armyworms.</td>
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<td>beta-cyfluthrin + imidacloprid Leverage 360</td>
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<td>3.8-4.1 oz</td>
<td>0.89-0.096</td>
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<tr>
<td></td>
<td>chlorantraniliprole Coragen 1.67 SC Exirel 0.83</td>
<td></td>
<td>3.5-5.0 fl oz 7-12.8 fl oz</td>
<td>0.045-0.065</td>
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<td></td>
<td>chlorantraniliprole + lambda-cyhalothrin (R) Voliam Xpress</td>
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<td>6-9 oz</td>
<td>0.06-0.09</td>
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<td>Crop</td>
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<td>Insecticide</td>
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<td>Lb ai/Acre</td>
<td>Application</td>
<td>Remarks/Precautions</td>
<td>Days to Harvest</td>
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<tr>
<td>EGGPLANT</td>
<td>Lep. larvae</td>
<td>flubendiamide</td>
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<td>0.047</td>
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<td></td>
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<td>Belt SC</td>
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<tr>
<td></td>
<td></td>
<td>Synapse WG</td>
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<tr>
<td></td>
<td>methoxyfenozide</td>
<td>Intrepid 2F</td>
<td>4-16 fl oz</td>
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<td>0.06-0.25</td>
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<td></td>
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<td>Confirm 2F</td>
<td>6-8 fl oz</td>
<td>0.09-0.12</td>
<td>0.09-0.12</td>
<td></td>
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<tr>
<td>GREENS (collards)</td>
<td>Caterpillars</td>
<td><em>Bacillus thuringiensis</em></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>beta-cyfluthrin</td>
<td>1.6-3.2 oz</td>
<td>0.013-0.025</td>
<td>0.013-0.025</td>
<td>Use higher rates for earworms, armyworms and European corn borers.</td>
<td>0</td>
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<td>Baythroid XL</td>
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<td></td>
<td>beta-cyfluthrin + imidacloprid</td>
<td>3 oz</td>
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<td>0.07</td>
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<td>Leverage 360</td>
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<td>3.5-5.0 fl oz</td>
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<td>esfenvalerate (R)</td>
<td>5.8-9.6 oz</td>
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<td>Synapse WG</td>
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<td>inoxacarb</td>
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<td>Pounce 25 WP</td>
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<td>tebufenozide</td>
<td>6-8 fl oz</td>
<td>0.09-0.12</td>
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<td></td>
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<td>Confirm 2F</td>
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<td>zeta-cypermethrin (R)</td>
<td>2.24-4.0 oz</td>
<td>0.014-0.025</td>
<td>0.014-0.025</td>
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<td>GREENS (kale and mustard)</td>
<td>Caterpillars</td>
<td><em>Bacillus thuringiensis</em></td>
<td></td>
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<td>beta-cyfluthrin</td>
<td>16-3.2 oz</td>
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<td>Use higher rates for earworms and armyworms.</td>
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<td>Baythroid XL</td>
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</tr>
<tr>
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<td>beta-cyfluthrin + imidacloprid</td>
<td>3 oz</td>
<td>0.07</td>
<td>0.07</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Leverage 360</td>
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</tr>
<tr>
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<td></td>
<td>chlorantraniliprole</td>
<td>3.5-5.0 fl oz</td>
<td>0.045-0.065</td>
<td>0.045-0.065</td>
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<td>Coragen 1.67 SC</td>
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<td>cypermethrin</td>
<td>2.5-5.0 oz</td>
<td>0.05-0.1</td>
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<td></td>
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<td>Ammo 2.5 EC</td>
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## VEGETABLE INSECT CONTROL RECOMMENDATIONS (COMMERCIAL)

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<th>Crop</th>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation Per Acre</th>
<th>Lb ai/Acre</th>
<th>Application</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GREENS (kale and mustard)</strong> (cont.)</td>
<td>Caterpillars</td>
<td>flubendiamide</td>
<td>Synapse WG 2 oz</td>
<td>0.03</td>
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<td></td>
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<td>methoxyfenozide</td>
<td>Intrepid 2F 4-8 fl oz</td>
<td>0.06-0.125</td>
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<td></td>
<td></td>
<td>spinosad</td>
<td>SpinTor 2 SC 3-6 oz</td>
<td>0.047-0.094</td>
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<td>tebufenozide</td>
<td>Confirm 2F 6-8 fl oz</td>
<td>0.09-0.12</td>
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<tr>
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<td></td>
<td>zeta-cypermethrin (R)</td>
<td>Mustang Maxx 0.8 EC</td>
<td>0.014-0.025</td>
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<td><strong>GREENS (turnips)</strong></td>
<td>Caterpillars</td>
<td>Bacillus thuringiensis</td>
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<td>Use higher rates for corn earworms and armyworms.</td>
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<td>beta-cyfluthrin</td>
<td>Baythroid XL 1.6-3.2 oz</td>
<td>0.013-0.025</td>
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<td>beta-cyfluthrin + imidacloprid</td>
<td>Leverage 360 3 oz</td>
<td>0.07</td>
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<td></td>
<td>flubendiamide</td>
<td>Belt SC 1.5 oz Synapse WG 3 oz</td>
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<td>permethrin (R)</td>
<td>Pounce 3.2 EC 2-4 oz</td>
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<td>spinosad</td>
<td>SpinTor 2 SC 3-8 oz</td>
<td>0.047-0.125</td>
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<td>tebufenozide</td>
<td>Confirm 2F 6-8 fl oz</td>
<td>0.09-0.12</td>
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<td></td>
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<td>Mustang Maxx 0.8 EC</td>
<td>0.02-0.025</td>
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<td><strong>OKRA</strong></td>
<td>Aphids</td>
<td>flonicamid</td>
<td>Beleaf 50 SC 2.8-4.28 oz</td>
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<td>imidacloprid</td>
<td>Admire Pro 4.6 F 1.3-2.2 fl oz</td>
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<td>Corn earworm</td>
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<td>Brigade 2 EC 2.1-6.4 oz</td>
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<td>flubendiamide</td>
<td>Belt SC 1.5 oz Synapse WG 3 oz</td>
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<td></td>
<td>spinosad</td>
<td>SpinTor 2 SC 3-6 oz</td>
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<tr>
<td>Crop</td>
<td>Insect</td>
<td>Insecticide</td>
<td>Formulation Per Acre</td>
<td>Lb ai/Acre</td>
<td>Application</td>
<td>Remarks/Precautions</td>
<td>Days to Harvest</td>
</tr>
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<td><strong>ONION</strong></td>
<td>Thrips</td>
<td>lambda-cyhalothrin (R) Karate Z</td>
<td>1.28-1.92 fl oz</td>
<td>0.02-0.03</td>
<td>0.9</td>
<td>Highly toxic to honeybees.</td>
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<td>malathion Malathion 57% EC</td>
<td>1 1/2 pt</td>
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<td>zeta-cypermethrin (R) Mustang Maxx 0.8 EC</td>
<td>2.24-4.0 oz</td>
<td>0.014-0.025</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>PEAS (Garden or English)</strong></td>
<td>Aphids</td>
<td>esfenvalerate (R) Asana XL 0.66 EC</td>
<td>2.9-5.8 oz</td>
<td>0.015-0.05</td>
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<tr>
<td></td>
<td></td>
<td>imidacloprid Admire Pro 4.6F</td>
<td>1.2 fl oz</td>
<td>0.05</td>
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<td></td>
<td>lambda-cyhalothrin (R) Karate Z</td>
<td>1.28-1.92 fl oz</td>
<td>0.02-0.03</td>
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<td>malathion Malathion 57% EC</td>
<td>1 1/2 pt</td>
<td>0.9</td>
<td>When insects appear.</td>
<td>Seven days if forage is to be fed to livestock.</td>
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<td>lambda-cyhalothrin (R) Karate Z</td>
<td>0.96-1.6 fl oz</td>
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<td>1.28-4.0 oz</td>
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<td>zeta-cypermethrin + bifenthrin Hero</td>
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<td>Flea beetle, Colorado potato beetle, earworm, European corn borer, hornworm</td>
<td>beta-cyfluthrin Baythroid XL</td>
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<td>beta-cyfluthrin + imidacloprid Leverage 360</td>
<td>3.8-4.1 oz</td>
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<td>carbaryl Sevin 4F Sevin XLR Plus</td>
<td>1-2 qt 1-2 qt</td>
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## VEGETABLE INSECT CONTROL RECOMMENDATIONS (COMMERCIAL)

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<th>Insect</th>
<th>Insecticide</th>
<th>Formulation Per Acre</th>
<th>Lb ai/Acre</th>
<th>Application</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
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<td>PEPPERS (cont.)</td>
<td>Flea beetle, Colorado potato beetle, earworm,</td>
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<th>Insecticide</th>
<th>Formulation Per Acre</th>
<th>Lb ai/Acre</th>
<th>Application</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
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<td>PEPPERS (cont.)</td>
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<td>flubendiamide</td>
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<td>Synapse WG</td>
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<td>lambda-cyhalothrin (R)</td>
<td>Karate Z</td>
<td>1.28-1.92 fl oz</td>
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<td>Mite</td>
<td>abamectin (R)</td>
<td>Agri-Mek 0.7 SC</td>
<td>1.75-3.5 fl oz</td>
<td>0.0094-0.01875</td>
<td>Use only two times per season.</td>
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<td>Oberon 2 SC</td>
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<td>POTATOES (white or Irish)</td>
<td>Colorado potato beetle, potato leafhopper, flea beetle</td>
<td>beta-cyfluthrin</td>
<td>Baythroid XL</td>
<td>1.6-2.8 oz</td>
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<td>beta-cyfluthrin + imidacloprid</td>
<td>Leverage 360</td>
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<td>carbaryl</td>
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<td>1/2-2 qt</td>
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<td>When insects first appear. DO NOT apply during bloom. Use higher rates on Colorado potato beetle.</td>
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<td>When feeding is noticed.</td>
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<td>esfenvalerate (R)</td>
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<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
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<td>lambda-cyhalothrin (R)</td>
<td>Karate Z</td>
<td>1.28-1.92 fl oz</td>
<td>0.02-0.03</td>
<td>Apply no more than 12 applications. DO NOT graze or feed foliage.</td>
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<td>Pounce 25 WP</td>
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<td>Insecticide</td>
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<td>spinosad</td>
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<td>0.047-0.094</td>
<td>3-6 fl oz</td>
<td>Spintor 2 SC</td>
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<td>0.02-0.025</td>
<td>3.2-4.0 oz</td>
<td>Mustang Maxx 0.8 EC</td>
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<tr>
<td></td>
<td>Aphids</td>
<td>beta-cyfluthrin + imidacloprid</td>
<td></td>
<td>0.066</td>
<td>2.8 oz</td>
<td>Leverage 360</td>
<td>7</td>
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<tr>
<td></td>
<td></td>
<td>endosulfan</td>
<td>2/3-1 1/3 qt</td>
<td>0.5-1.0</td>
<td>1-2 lb</td>
<td>Thionex 3 EC, Thionex 50 WP</td>
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<tr>
<td></td>
<td></td>
<td>fonicamid</td>
<td>2.0-2.8 oz</td>
<td>0.026-0.69</td>
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<td>Thionex 50 WP, Beleaf 50 SG</td>
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<td>thiamethoxam</td>
<td>3 oz</td>
<td>0.047</td>
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<td>Actara 25 WDG</td>
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<td>Wireworm</td>
<td>bifenthrin (R)</td>
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<td>Capture LFR</td>
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<td>phorate (R)</td>
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<td>Thimet 20G</td>
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<td>esfenvalerate (R)</td>
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<td></td>
<td>Asana XL 0.66 EC</td>
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<td></td>
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<td>imidacloprid</td>
<td></td>
<td></td>
<td></td>
<td>Admire Pro 4.6F</td>
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<td></td>
<td></td>
<td>malathion</td>
<td></td>
<td></td>
<td></td>
<td>Malathion 57% EC</td>
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<td>RADISHES</td>
<td>Flea beetle</td>
<td>beta-cyfluthrin</td>
<td></td>
<td>0.013-0.022</td>
<td>1.6-2.8 oz</td>
<td>Baythroid XL</td>
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<td></td>
<td></td>
<td>beta-cyfluthrin + imidacloprid</td>
<td></td>
<td>0.056-0.066</td>
<td>2.4-2.8 oz</td>
<td>Leverage 360</td>
<td>7</td>
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<tr>
<td></td>
<td></td>
<td>carbaryl</td>
<td>1/2-1 qt</td>
<td>0.5-1.0</td>
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<td>Sevin 4F, Sevin XLR Plus</td>
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<td></td>
<td>esfenvalerate (R)</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
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<td>Asana XL 0.66 EC</td>
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<td></td>
<td></td>
<td>imidacloprid</td>
<td>1.3 fl oz</td>
<td>0.044</td>
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<td>Admire Pro 4.6F</td>
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<tr>
<td></td>
<td>Aphids</td>
<td>beta-cyfluthrin + imidacloprid</td>
<td></td>
<td>0.056-0.066</td>
<td>2.4-2.8 oz</td>
<td>Leverage 360</td>
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<td></td>
<td></td>
<td>imidacloprid</td>
<td></td>
<td>0.044</td>
<td>1.3 fl oz</td>
<td>Admire Pro 4.6F</td>
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<td></td>
<td></td>
<td>malathion</td>
<td></td>
<td>1</td>
<td>1 1/2 pt</td>
<td>Malathion 57% EC</td>
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<td>Crop</td>
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<td>Insecticide</td>
<td>Formulation Per Acre</td>
<td>Lb ai/Acre</td>
<td>Application</td>
<td>Remarks/Precautions</td>
<td>Days to Harvest</td>
</tr>
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<tr>
<td>SOUTHERN PEAS</td>
<td>Cowpea aphid</td>
<td>beta-cyfluthrin + imidacloprid</td>
<td>Leverage 360 2.4-2.8 oz</td>
<td>0.056-0.066</td>
<td>Soil application</td>
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<td></td>
<td></td>
<td>Leverage 360</td>
<td>2.4-2.8 oz</td>
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<td></td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC 2.1-6.4 oz</td>
<td>0.033-0.1</td>
<td>Foliar application</td>
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<td>imidacloprid</td>
<td>Admire Pro 4.6 F 7.0-10.5 fl oz</td>
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<td></td>
<td>imidacloprid</td>
<td>Admire Pro 4.6F 1.3 fl oz</td>
<td>0.044</td>
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<tr>
<td></td>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Karate Z 1.28-1.92 fl oz</td>
<td>0.02-0.03</td>
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<tr>
<td></td>
<td></td>
<td>malathion</td>
<td>Malathion 57% EC 1 1/2 pt</td>
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<td></td>
<td></td>
<td>malathion</td>
<td>Malathion SP 1 1/3-3 pt</td>
<td>0.4-0.9</td>
<td>DO NOT apply more than 4.5 lb ai per acre per crop.</td>
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<tr>
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<td>methomyl (R)</td>
<td>Lannate 1.8 LV 1/2-1 qt</td>
<td>0.5-1.0</td>
<td>Plant early. Apply treatment to prevent defoliation. DO NOT apply during bloom. DO NOT use on succulent shelled peas (Group 6B).</td>
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<td>methomyl (R)</td>
<td>Lannate SP 1/2-1 qt</td>
<td>0.02-0.03</td>
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<tr>
<td></td>
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<td>methomyl (R)</td>
<td>Mustang Maxx 0.8 EC 3.2-4.0 oz</td>
<td>0.02-0.025</td>
<td>Aphid control may be variable.</td>
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<tr>
<td>Bean leaf beetle</td>
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<td>beta-cyfluthrin + imidacloprid</td>
<td>Leverage 360 2.4-2.8 oz</td>
<td>0.056-0.066</td>
<td>Soil application</td>
<td>7</td>
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<td></td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC 2.1-6.4 oz</td>
<td>0.033-0.1</td>
<td>Foliar application</td>
<td>3</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>carbaryl</td>
<td>Sevin 4F 1/2-1 qt</td>
<td>0.5-1.0</td>
<td>Plant early. Apply treatment to prevent defoliation. DO NOT apply during bloom. DO NOT use on succulent shelled peas (Group 6B).</td>
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<tr>
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<td></td>
<td>Sevin XLR Plus</td>
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<td>0.02-0.03</td>
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<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Karate Z 1.28-1.92 fl oz</td>
<td>0.02-0.03</td>
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<tr>
<td></td>
<td></td>
<td>zeta-cypermethrin (R)</td>
<td>Mustang Maxx 0.8 EC 2.24-4.0 oz</td>
<td>0.014-0.025</td>
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<tr>
<td>Corn earworm</td>
<td></td>
<td>beta-cyfluthrin</td>
<td>Baythroid XL 1.6-2.1 oz</td>
<td>0.013-0.017</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>beta-cyfluthrin + imidacloprid</td>
<td>Leverage 360 2.4-2.8 oz</td>
<td>0.056-0.066</td>
<td></td>
<td>7</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC 2.1-6.4 oz</td>
<td>0.033-0.1</td>
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<tr>
<td></td>
<td></td>
<td>chlorantraniliprole</td>
<td>Coragen 1.67 SC 3.5-5.0 oz</td>
<td>0.045-0.065</td>
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</table>
### VEGETABLE INSECT CONTROL RECOMMENDATIONS (COMMERCIAL)

<table>
<thead>
<tr>
<th>Crop</th>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation Per Acre</th>
<th>Lb ai/Acre</th>
<th>Application</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
</tr>
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<tbody>
<tr>
<td><strong>SOUTHERN PEAS</strong></td>
<td>Corn earworm</td>
<td>esfenvalerate (R) Asana XL 0.66 EC</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td></td>
<td>DO NOT feed vines.</td>
<td>21</td>
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<tr>
<td>(cont.)</td>
<td></td>
<td>flubendiamide Belt SC</td>
<td>2-3 oz</td>
<td>0.0625-0.094</td>
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<tr>
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<td></td>
<td>lambda-cyhalothrin (R) Karate Z</td>
<td>1.28-1.92 fl oz</td>
<td>0.02-0.03</td>
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<td></td>
<td></td>
<td>zeta-cypermethrin (R) Mustang Maxx</td>
<td>0.8 EC 2.24-4.0 oz</td>
<td>0.014-0.025</td>
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<tr>
<td></td>
<td>Cowpea curculio</td>
<td>beta-cyfluthrin Baythroid XL</td>
<td>1.6-2.1 oz</td>
<td>0.013-0.017</td>
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<td></td>
<td>beta-cyfluthrin + imidacloprid</td>
<td>2.4-2.8 oz</td>
<td>0.056-0.066</td>
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<td></td>
<td></td>
<td>Leverage 360</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
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<td>lambda-cyhalothrin (R) Karate Z</td>
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<td>0.02-0.03</td>
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<td>zeta-cypermethrin (R) Mustang Maxx</td>
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<td>0.014-0.025</td>
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<td></td>
<td>European corn borer</td>
<td>beta-cyfluthrin + imidacloprid</td>
<td>2.4-2.8 oz</td>
<td>0.056-0.066</td>
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<td></td>
<td>Leverage 360</td>
<td>3.5-5.0 oz</td>
<td>0.045-0.065</td>
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<td></td>
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<td>chlorantraniliprole Coragen 1.67 SC</td>
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<td>0.062-0.094</td>
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<td></td>
<td>spinosad SpinTor 2 SC</td>
<td>4-6 fl oz</td>
<td>0.062-0.094</td>
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<td><strong>SPINACH</strong></td>
<td>Aphids, plant bug, leafhopper, leafminer</td>
<td>acetamiprid Assail 70WP</td>
<td>0.8-1.2 oz</td>
<td>0.035-0.054</td>
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<tr>
<td></td>
<td></td>
<td>beta-cyfluthrin + imidacloprid</td>
<td>3 oz</td>
<td>0.07</td>
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<td></td>
<td>Leverage 360</td>
<td>0.25</td>
<td>0.07</td>
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<td>Effectiveness of dimethoate is reduced when aphid colonies are established.</td>
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<td>dimethoate Dimethoate 4 EC</td>
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<td>dinotefuran Venom 70 SG</td>
<td>1-3 oz foliar</td>
<td>0.044-0.131</td>
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<td>Effectiveness of dimethoate is reduced when aphid colonies are established.</td>
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<td>5-6 oz soil</td>
<td>0.219-0.263</td>
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<td>flonicamid Beleaf 50 SG</td>
<td>2.0-2.8 oz</td>
<td>0.026-0.69</td>
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<td>Crop</td>
<td>Insect</td>
<td>Insecticide</td>
<td>Formulation Per Acre</td>
<td>Lb ai/Acre</td>
<td>Application</td>
<td>Remarks/Precautions</td>
<td>Days to Harvest</td>
</tr>
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<tr>
<td>SPINACH</td>
<td>Aphids, plant bug, leafhopper, leafminer</td>
<td>imidacloprid (R) Admire Pro 4.6 F</td>
<td>4.4-10.5 fl oz</td>
<td>0.158-0.337</td>
<td>Soil application</td>
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<td></td>
<td>imidacloprid (R) Admire Pro 4.6F</td>
<td>1.3 fl oz</td>
<td>0.047</td>
<td>Imidacloprid should only be used with an aphid scouting program. Apply only when aphid numbers exceed the threshold.</td>
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<td>zeta-cypermethrin (R) Mustang Maxx 0.8 EC</td>
<td>3.2-4.0 oz</td>
<td>0.02-0.025</td>
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<tr>
<td></td>
<td>Lep. larvae</td>
<td>Bacillus thuringiensis</td>
<td>Follow label directions.</td>
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<td>beta-cyfluthrin</td>
<td>Baythroid XL 2.4-3.2 oz</td>
<td>0.019-0.025</td>
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<td></td>
<td>beta-cyfluthrin + imidacloprid (R) Leverage 360</td>
<td>3 oz</td>
<td>0.07</td>
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<td></td>
<td></td>
<td>bifenfluthrin (R)</td>
<td>Brigade 2 EC 2.1-6.4 oz</td>
<td>0.033-0.1</td>
<td>Pyrethroid use against Leps. can result in increases in aphid populations.</td>
<td>40</td>
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<td>chlorantraniliprole</td>
<td>Coragen 1.67 SC 3.5-5.0 fl oz</td>
<td>0.045-0.065</td>
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<td>flubendiamide</td>
<td>Belt SC 1.5 oz Synapse WG 3 oz</td>
<td>0.047</td>
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<td>methomyl (R)</td>
<td>Lannate 2.4 LV 1 1/2-3 pt Lannate SP 1/2-1 lb</td>
<td>0.45-0.9</td>
<td>When insects appear or as needed to keep crop free of insects. Not labeled on corn earworm.</td>
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<td>methoxyfenozide</td>
<td>Intrepid 2F 4-8 oz</td>
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<td>permethrin (R)</td>
<td>Ambush 2.0 EC 6.4-12.8 oz Ambush 25 WP 6.4-12.8 oz Pounce 25 WP 6.4-12.8 oz</td>
<td>0.1-0.2</td>
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<tr>
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<td></td>
<td>spinosad</td>
<td>SpinTor 2 SC 3-6 fl oz</td>
<td>0.047-0.094</td>
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<td>tebufenozide</td>
<td>Confirm 2F 6-8 fl oz</td>
<td>0.09-0.12</td>
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<td>thiodicarb (R)</td>
<td>Larvin 3.2 24-30 oz</td>
<td>0.6-0.75</td>
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<td>zeta-cypermethrin (R) Mustang Maxx 0.8 EC</td>
<td>3.2-4.0 oz</td>
<td>0.02-0.025</td>
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# VEGETABLE INSECT CONTROL RECOMMENDATIONS (COMMERCIAL)

<table>
<thead>
<tr>
<th>Crop</th>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation Per Acre</th>
<th>Lb ai/Acre</th>
<th>Application</th>
<th>Remarks/Precautions</th>
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<tbody>
<tr>
<td><strong>SUMMER SQUASH</strong></td>
<td>Melonworm, pickleworm</td>
<td>beta-cyfluthrin</td>
<td>Baythroid XL 1.6-2.4 oz</td>
<td>0.013-0.019</td>
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<td></td>
<td></td>
<td>endosulfan</td>
<td>Thionex 3 EC 2/3-1 1/3 qt</td>
<td>0.5-1.0</td>
<td></td>
<td>When larvae appear.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Thionex 50 WP 1-2 lb</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate (R)</td>
<td>Asana XL 0.66 EC 5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td></td>
<td>DO NOT apply to zucchini squash.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>flubendiamide</td>
<td>Belt SC 1.5 oz</td>
<td>0.047</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Synapse WG</td>
<td>3 oz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>Karate Z 1.28-1.92 fl oz</td>
<td>0.02-0.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>methomyl (R)</td>
<td>Lannate 2.4 LV 1 1/2-3 pt</td>
<td>0.45-0.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lannate SP 1/2-1 lb</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>spinosad</td>
<td>SpinTor 2 SC 4-8 fl oz</td>
<td>0.062-0.125</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cabbage looper</td>
<td>beta-cyfluthrin</td>
<td>Baythroid XL 1.6-2.4 oz</td>
<td></td>
<td>0.013-0.019</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Squash bug</td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC 2.6-6.4 oz</td>
<td></td>
<td>0.04-0.1</td>
<td></td>
<td>Bifenthrin is the only registered insecticide that provides moderate but effective control of squash bug.</td>
</tr>
<tr>
<td></td>
<td>endosulfan</td>
<td>Thionex 3 EC 2/3-1 1/3 pt</td>
<td>0.5-1.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thionex 50 WP 1-2 lb</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>esfenvalerate (R)</td>
<td>Asana XL 0.66 EC 5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td></td>
<td>DO NOT exceed 0.25 lb ai per acre per season. DO NOT apply to zucchini as injury may result.</td>
<td></td>
</tr>
<tr>
<td>Cucumber beetle</td>
<td>beta-cyfluthrin</td>
<td>Baythroid XL 2.4-2.8 oz</td>
<td></td>
<td>0.019-0.022</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>imidacloprid</td>
<td>Admire Pro 4.6 F 7.0-10.5 oz</td>
<td></td>
<td>0.25-0.375</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crop</td>
<td>Insect</td>
<td>Insecticide</td>
<td>Formulation Per Acre</td>
<td>Lb ai/Acre</td>
<td>Application</td>
<td>Remarks/Precautions</td>
</tr>
<tr>
<td>----------------------</td>
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<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>SUMMER SQUASH</td>
<td>Cucumber beetle</td>
<td>lambda-cyhalothrin (R) Karate Z</td>
<td>1.28-1.92 fl oz</td>
<td>0.02-0.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>methomyl (R)</td>
<td>1/2-3 pt</td>
<td>0.45-0.9</td>
<td></td>
<td>DO NOT apply before plants start to vine and unless plants are dry.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lannate 2.4 LV</td>
<td>1/2-1 lb</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lannate SP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Squash vine borer</td>
<td>endosulfan</td>
<td>Thionex 3 EC</td>
<td>2/3-1 1/3 qt</td>
<td>0.5-1.0</td>
<td></td>
<td>Preventative measure. Nothing is very effective once borer is in stem.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thionex 50 WP</td>
<td>1-2 lb</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>esfenvalerate (R)</td>
<td>Asana XL 0.66 EC</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>flubendiamide</td>
<td>Belt SC</td>
<td>1.5 oz</td>
<td>0.047</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Synapse WG</td>
<td>3 oz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SWEET CORN</td>
<td>Cutworm, rootworm, seed corn maggot, white grub, wireworm</td>
<td>beta-cyfluthrin Baythroid XL</td>
<td>0.8-1.6 oz</td>
<td>0.007-0.013</td>
<td></td>
<td>Cutworms only.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin (R) Capture LFR</td>
<td>0.39-0.44 oz/1,000 ft row</td>
<td>0.08-0.1</td>
<td>Apply in 5- to 7-inch band or in furrow ahead of press wheel. Compatible with liquid fertilizers.</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>chlorpyrifos Lorsban 15G</td>
<td>8 oz/1,000 sq ft</td>
<td></td>
<td></td>
<td>Banded, T-banded or in furrow</td>
</tr>
<tr>
<td></td>
<td>tefluthrin (R)</td>
<td>Force 3G</td>
<td>4-5 oz/1,000 ft row</td>
<td>0.075-0.165</td>
<td>Banded, T-banded or in furrow</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>zeta-cypermethrin + bifenthrin Hero</td>
<td>2.6-6.1 oz</td>
<td>0.025-0.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flea beetle</td>
<td>beta-cyfluthrin Baythroid XL</td>
<td>0.8-1.6 oz</td>
<td>0.007-0.013</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>carbaryl</td>
<td>Sevin 4F</td>
<td>1-2 qt</td>
<td>1.0-2.0</td>
<td>When damage appears.</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sevin XLR Plus</td>
<td>1-2 qt</td>
<td></td>
<td></td>
<td>DO NOT apply during bloom. Hand harvesting is prohibited.</td>
</tr>
<tr>
<td></td>
<td>esfenvalerate (R)</td>
<td>Asana XL 0.66 EC</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin (R) Mustang Maxx 0.8 EC</td>
<td>2.8-4.0 oz</td>
<td></td>
<td>0.017-0.025</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corn earworm</td>
<td>beta-cyfluthrin Baythroid XL</td>
<td>1.6-2.8 oz</td>
<td>0.013-0.022</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>2.1-6.4 fl oz</td>
<td>0.033-0.1</td>
<td>When larvae are found.</td>
<td>1</td>
</tr>
<tr>
<td>Crop</td>
<td>Insect</td>
<td>Insecticide</td>
<td>Formulation Per Acre</td>
<td>Lb ai/Acre</td>
<td>Application</td>
<td>Remarks/Precautions</td>
</tr>
<tr>
<td>-------------------------------</td>
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<td>-----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>SWEET CORN (cont.)</td>
<td>Corn earworm</td>
<td>carbaryl</td>
<td>1-2 qt</td>
<td>1.0-2.0</td>
<td></td>
<td>DO NOT apply during bloom.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sevin 4F</td>
<td></td>
<td></td>
<td></td>
<td>Plants will tolerate a great deal of feeding with no yield loss.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sevin XLR</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>chlorantraniliprole</td>
<td>3.5-5.0 fl oz</td>
<td>0.045-0.065</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Coragen 1.67 SC</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>esfenvalerate (R)</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Asana XL 0.66 EC</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>1.28-1.92 fl oz</td>
<td>0.02-0.03</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Karate Z</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>methomyl (R)</td>
<td>1-1 1/2 pt</td>
<td>0.3-0.45</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lannate 2.4 LV</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Lannate SP</td>
<td>1/3-1/2 lb</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>permethrin (R)</td>
<td>6.4-12.8 oz</td>
<td>0.1-0.2</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Ambush 2.0 EC</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Ambush 25 WP</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>spinosad</td>
<td>3-6 fl oz</td>
<td>0.047-0.094</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>SpinTor 2 SC</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>thiodicarb (R)</td>
<td>20-30 oz</td>
<td>0.5-0.75</td>
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<tr>
<td></td>
<td></td>
<td>Larvin 3.2</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>zeta-cypermethrin (R)</td>
<td>2.24-4.0 oz</td>
<td>0.014-0.025</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Mustang Maxx 0.8 EC</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Mite</td>
<td>abamectin</td>
<td>1.75-3.5 fl oz</td>
<td>0.01-0.05</td>
<td></td>
<td>For control of spider mites.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Agri-Mek SC</td>
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</tr>
<tr>
<td></td>
<td>Whorl feeder, fall armyworm, corn earworm</td>
<td>beta-cyfluthrin</td>
<td>1.6-2.8 oz</td>
<td>0.013-0.022</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Baythroid XL</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>bifenthrin (R)</td>
<td>2.1-6.4 oz</td>
<td>0.033-0.1</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Brigade 2 EC</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>carbaryl</td>
<td>1-2 qt</td>
<td>1.0-2.0</td>
<td></td>
<td>Apply when needed. Hand harvesting is prohibited.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sevin 4F</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Sevin XLR Plus</td>
<td>1-2 qt</td>
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<tr>
<td></td>
<td></td>
<td>chlorantraniliprole</td>
<td>3.5-5.0 fl oz</td>
<td>0.045-0.065</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Coragen 1.67 SC</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>esfenvalerate (R)</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Asana XL 0.66 EC</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>lambda-cyhalothrin (R)</td>
<td>1.28-1.92 fl oz</td>
<td>0.02-0.03</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Karate Z</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>methomyl (R)</td>
<td>1-1 1/2 pt</td>
<td>0.03-0.45</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Lannate 2.4 LV</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lannate SP</td>
<td>1/3-1/2 pt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>spinosad</td>
<td>3-6 oz</td>
<td>0.042-0.094</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crop</td>
<td>Insect</td>
<td>Insecticide</td>
<td>Formulation Per Acre</td>
<td>Lb ai/Acre</td>
<td>Application</td>
<td>Remarks/Precautions</td>
</tr>
<tr>
<td>-----------------------------</td>
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<td>-------------</td>
<td>------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>SWEET CORN</td>
<td>Whorl feeder, fall armyworm, corn earworm</td>
<td>zeta-cypermethrin (R) Mustang Maxx 0.8 EC</td>
<td>3.2-4.0 oz</td>
<td>0.02-0.025</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>zeta-cypermethrin + bifenthrin Hero</td>
<td>4.0-10.3 oz</td>
<td>0.04-0.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>European corn borer, southwestern corn borer</td>
<td>carbaryl</td>
<td>1 1/2-2 qt</td>
<td>1.5-2.0</td>
<td>When 50% of plants show rows of tiny pinholes in leaves (feeding signs).</td>
<td>Use high volume sprays directed into whorls. DO NOT apply during bloom.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>chlorantraniliprole Coragen 1.67 SC</td>
<td>3.5-5.0 fl oz</td>
<td>0.045-0.065</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate (R) Asana XL 0.66 EC</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>methomyl (R) Lannate 2.4 LV 1/2 pt</td>
<td>0.45</td>
<td></td>
<td>Lannate not labeled on southwestern corn borer.</td>
<td>0 (ears) 3 (forage)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lannate SP 1/2 lb</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>spinosad SpinTor 2 SC 1.5-6.0 fl oz</td>
<td>0.023-0.094</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>thiodicarb (R) Larvin 3.2 20-30 oz</td>
<td>0.05-0.75</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SWEET POTATO</td>
<td>Flea beetle, tortoise beetle</td>
<td>beta-cyfluthrin Baythroid XL</td>
<td>1.6-2.8 oz</td>
<td>0.013-0.022</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>beta-cyfluthrin + imidacloprid Leverage 360</td>
<td>2.4-2.8 oz</td>
<td>0.056-0.066</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin (R) Brigade 2 EC 2.1-6.4 fl oz</td>
<td>0.033-0.1</td>
<td></td>
<td>Follow label directions.</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>carbaryl Sevin 4F 1-2 qt</td>
<td>1.0-2.0</td>
<td></td>
<td>When damage occurs on leaves as needed.</td>
<td>DO NOT apply during bloom.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sevin XLR Plus 1-2 qt</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>lambda-cyhalothrin (R) Karate Z 1.28-1.92 fl oz</td>
<td>0.02-0.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>spinosad SpinTor 2 SC 3-6 fl oz</td>
<td>0.047-0.094</td>
<td></td>
<td>Not labeled for tortoise beetle.</td>
<td>7</td>
</tr>
<tr>
<td>Wireworm, other soil insects</td>
<td></td>
<td>bifenthrin (R) Capture LFR</td>
<td></td>
<td></td>
<td>See label directions.</td>
<td>125</td>
</tr>
<tr>
<td></td>
<td></td>
<td>chlorpyrifos Lorsban 4 EC 4 pt</td>
<td>2.0</td>
<td></td>
<td>Apply broadcast. Preplant and incorporate. Apply Lorsban 15G prior to planting, broadcast and incorporate.</td>
<td>125</td>
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<tr>
<td>Crop</td>
<td>Insect</td>
<td>Insecticide</td>
<td>Formulation Per Acre</td>
<td>Lb ai/Acre</td>
<td>Application</td>
<td>Remarks/Precautions</td>
</tr>
<tr>
<td>--------------</td>
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<tr>
<td>SWEET POTATO</td>
<td>Sweet potato weevil</td>
<td>beta-cyfluthrin Baythroid XL</td>
<td>1.6-2.8 oz</td>
<td>0.013-0.022</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>beta-cyfluthrin + imidacloprid</td>
<td>2.4-2.8 oz</td>
<td>0.056-0.066</td>
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<tr>
<td></td>
<td></td>
<td>Leverage 360</td>
<td></td>
<td></td>
<td></td>
<td>Use as a preplant dip for sweet potato weevil. Just prior to planting, dip sweet potato cuttings in the suspension.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>carbaryl Sevin 4F</td>
<td>2.6 oz/gal</td>
<td>0.02-0.03</td>
<td></td>
<td>DO NOT apply during bloom.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sevin XLR Plus</td>
<td>2.6 oz/gal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>lambda-cyhalothrin (R) Karate Z</td>
<td>1.28-1.92 fl oz</td>
<td></td>
<td></td>
<td>One application.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>phosmet Imidan 5% dust</td>
<td>2-4 oz/50 lb bu stored</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOMATO</td>
<td>Fruitworm, hornworm</td>
<td>Bacillus thuringiensis Check label.</td>
<td></td>
<td></td>
<td></td>
<td>Recommended for tomato hornworms only. DOES NOT control fruitworms.</td>
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<tr>
<td></td>
<td></td>
<td>beta-cyfluthrin Baythroid XL</td>
<td>1.6-2.8 oz</td>
<td>0.013-0.022</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>beta-cyfluthrin + imidacloprid</td>
<td>3.8-4.1 oz</td>
<td>0.089-0.096</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Leverage 360</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>bifenthrin (R) Brigade 2 EC</td>
<td>2.1-5.2 oz</td>
<td>0.033-0.8</td>
<td></td>
<td>DO NOT apply during bloom.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>carbaryl Sevin 4F</td>
<td>1-2 qt</td>
<td>1.0-2.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sevin XLR Plus</td>
<td>1-2 qt</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>chlorantraniliprole Coragen 1.67 SC</td>
<td>3.5-5.0 fl oz</td>
<td>0.045-0.065</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exirel 0.83</td>
<td>7-12.8 fl oz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>chlorantraniliprole + lambda-cyhalothrin (R) Voliam Xpress</td>
<td>6-9 oz</td>
<td>0.06-0.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate (R) Asana XL 0.66 EC</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>flubendiamide Belt SC Synapse WG</td>
<td>1.5 oz 3 oz</td>
<td>0.045</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>lambda-cyhalothrin (R) Karate Z</td>
<td>1.28-1.92 fl oz</td>
<td>0.02-0.03</td>
<td></td>
<td>Five-day intervals.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>methomyl (R) Lannate 2.4 LV Lannate SP</td>
<td>1 1/2-3 pt 1/2-1 lb</td>
<td>0.45-0.9</td>
<td></td>
<td>Bacillus thuringiensis 1/2 lb/acre may be used in combination with methomyl. Other areas have had good results.</td>
</tr>
<tr>
<td>Crop</td>
<td>Insect</td>
<td>Insecticide</td>
<td>Formulation Per Acre</td>
<td>Lb ai/Acre</td>
<td>Application</td>
<td>Remarks/Precautions</td>
</tr>
<tr>
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<td>---------------------------------------------------------</td>
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<tr>
<td>TOMATO (cont.)</td>
<td>Fruitworm, hornworm</td>
<td>methoxyfenozide</td>
<td>4-16 oz</td>
<td>0.06-0.25</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Intrepid 2F</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>spinosad</td>
<td>3-8 fl oz</td>
<td>0.047-0.125</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>SpinTor 2 SC</td>
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<tr>
<td></td>
<td></td>
<td>tebufenozide</td>
<td>6-8 fl oz</td>
<td>0.09-0.12</td>
<td></td>
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<td></td>
<td></td>
<td>Confirm 2F</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>zeta-cypermethrin (R)</td>
<td>2.24-4.0 oz</td>
<td>0.014-0.025</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Mustang Maxx 0.8 EC</td>
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<tr>
<td></td>
<td></td>
<td>zeta-cypermethrin + bifenthrin</td>
<td>4.0-10.3 oz</td>
<td>0.04-0.1</td>
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</tr>
<tr>
<td></td>
<td>Cabbage looper</td>
<td>Bacillus thuringiensis</td>
<td>Check label.</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Dipel</td>
<td>5-8 oz</td>
<td>0.05-0.08</td>
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<tr>
<td></td>
<td></td>
<td>Javelin</td>
<td></td>
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<td></td>
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<td>Biobit</td>
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<td></td>
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<td>Agree</td>
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<tr>
<td></td>
<td></td>
<td>chlorantraniliprole + lambda-cyhalothrin (R)</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td>5-8 oz</td>
<td>Check label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vollam Xpress</td>
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<td>esfenvalerate (R)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Asana XL 0.66 EC</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>flubendiamide</td>
<td>1.5 oz</td>
<td>0.045</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Belt SC</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Synapse WG</td>
<td>3 oz</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>methomyl (R)</td>
<td>1 1/2-3 pt</td>
<td>0.45-0.9</td>
<td>1 1/2-3 pt</td>
<td>Apply on foliage as needed when loopers are small. Methomyl is preferred treatment.</td>
</tr>
<tr>
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<td>Lannate 2.4 LV</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Lannate SP</td>
<td>1/2-1 lb</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>tebufenozide</td>
<td>6-8 fl oz</td>
<td>0.09-0.12</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Colorado potato</td>
<td>beta-cyfluthrin</td>
<td>1.6-2.8 oz</td>
<td>0.013-0.022</td>
<td>2.8 oz for flea beetles.</td>
<td>Apply on foliage as needed.</td>
</tr>
<tr>
<td></td>
<td>beetle, flea beetle, stink bug</td>
<td>Baythroid XL</td>
<td></td>
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<tr>
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<td></td>
<td>beta-cyfluthrin + imidacloprid</td>
<td>3.8-4.1 oz</td>
<td>0.089-0.096</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Leverage 360</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin (R)</td>
<td>2.1-5.2 oz</td>
<td>0.033-0.08</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Brigade 2 EC</td>
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<td></td>
<td></td>
<td>carbaryl</td>
<td>1.0-2.0</td>
<td></td>
<td>Apply on foliage as needed.</td>
<td>DO NOT apply during bloom.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sevin 4F</td>
<td>1-2 qt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sevin XLR Plus</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>imidacloprid</td>
<td>1.3 fl oz</td>
<td>0.047</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Admire Pro 4.6F</td>
<td></td>
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</table>
### VEGETABLE INSECT CONTROL RECOMMENDATIONS (COMMERCIAL)

<table>
<thead>
<tr>
<th>Crop</th>
<th>Insect</th>
<th>Insecticide</th>
<th>Formulation Per Acre</th>
<th>Lb ai/Acre</th>
<th>Application</th>
<th>Remarks/Precautions</th>
<th>Days to Harvest</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOMATO (cont.)</td>
<td>Colorado potato beetle, flea beetle, stink bug</td>
<td>spinosad</td>
<td>Spintor 2 SC</td>
<td>3-6 oz</td>
<td>0.047-0.094</td>
<td>Follow label directions.</td>
<td>1</td>
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<tr>
<td></td>
<td></td>
<td>zeta-cypermethrin (R) Mustang Maxx 0.8 EC</td>
<td>3.2-4.0 oz</td>
<td>0.02-0.025</td>
<td></td>
<td></td>
<td>1</td>
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<tr>
<td></td>
<td></td>
<td>zeta-cypermethrin + bifenthrin Hero</td>
<td>4.0-10.3 oz</td>
<td>0.04-0.1</td>
<td></td>
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<td>1</td>
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<tr>
<td></td>
<td>Leaf miner, aphids</td>
<td>abamectin (R) Agri-Mek 0.7 SC</td>
<td>1.75-3.5 fl oz</td>
<td>0.009-0.019</td>
<td>20 gallons of water/acre required.</td>
<td>7</td>
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<tr>
<td></td>
<td></td>
<td>acetamiprid</td>
<td>Assail 30 SG</td>
<td>2-4 oz</td>
<td>0.038-0.075</td>
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<td>7</td>
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<tr>
<td></td>
<td></td>
<td>beta-cyfluthrin + imidacloprid Leverage 360</td>
<td>3.8-4.1 oz</td>
<td>0.089-0.096</td>
<td></td>
<td></td>
<td>0</td>
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<td></td>
<td></td>
<td>bifenthrin (R) Brigade 2 EC</td>
<td>2.1-5.2 oz</td>
<td>0.033-0.08</td>
<td></td>
<td></td>
<td>1</td>
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<tr>
<td></td>
<td></td>
<td>dimethoate</td>
<td>Dimethoate 400</td>
<td>1/2-1 pt</td>
<td>0.25-0.5</td>
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<td>7</td>
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<td></td>
<td>Dimethoate 4EC</td>
<td>1/2-1 pt</td>
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<td></td>
<td>Dimethoate 5 lb</td>
<td>6.4-12.8 oz</td>
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<td></td>
<td></td>
<td>esfenvalerate (R) Asana XL 0.66 EC</td>
<td>9.6 oz</td>
<td>0.05</td>
<td>Use 5.8-9.6 oz of Asana per acre for aphids.</td>
<td>1</td>
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<tr>
<td></td>
<td></td>
<td>imidacloprid</td>
<td>Admire Pro 4.6F</td>
<td>1.3 fl oz</td>
<td>0.047</td>
<td></td>
<td>0</td>
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<tr>
<td></td>
<td></td>
<td>methomyl (R) Lannate 2.4 LV</td>
<td>1 1/2-3 pt</td>
<td>0.45-0.9</td>
<td>Aphids only.</td>
<td>1</td>
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<tr>
<td></td>
<td></td>
<td>Lannate SP</td>
<td>1/2-1 lb</td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>zeta-cypermethrin (R) Mustang Maxx 0.8 EC</td>
<td>3.2-4.0 oz</td>
<td>0.02-0.025</td>
<td>Aphid control may be variable.</td>
<td>1</td>
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<tr>
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<td></td>
<td>zeta-cypermethrin + bifenthrin Hero</td>
<td>4.0-10.3 oz</td>
<td>0.04-0.1</td>
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<td>1</td>
</tr>
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<td></td>
<td>Cutworm</td>
<td>beta-cyfluthrin + imidacloprid Leverage 360</td>
<td>3.8-4.1 oz</td>
<td>0.089-0.096</td>
<td></td>
<td>Apply in 5- to 7-inch band or in furrow ahead of press wheel.</td>
<td>0</td>
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<td>bifenthrin (R) Brigade 2 EC</td>
<td>2.1-5.2 oz</td>
<td>0.033-0.08</td>
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<td>Compatible with liquid fertilizers.</td>
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<td>bifenthrin (R) Capture LFR</td>
<td>0.29-0.39 oz/1,000 ft row or 3.4-6.8 oz/acre</td>
<td>0.04-0.08</td>
<td></td>
<td></td>
<td>30</td>
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<tr>
<td>Crop</td>
<td>Insect</td>
<td>Insecticide</td>
<td>Formulation Per Acre</td>
<td>Lb ai/Acre</td>
<td>Application</td>
<td>Remarks/Precautions</td>
<td>Days to Harvest</td>
</tr>
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<td>-------------------------------------------------</td>
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<tr>
<td>TOMATO</td>
<td>Cutworm</td>
<td>carbaryl</td>
<td>2 qt</td>
<td>2.0</td>
<td>Apply to soil surface 2-3 days prior to</td>
<td>DO NOT apply during bloom.</td>
<td>3</td>
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<tr>
<td></td>
<td></td>
<td>Sevin 4F</td>
<td></td>
<td></td>
<td>transplanting or when damage occurs.</td>
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<td></td>
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<td>Sevin XLR Plus</td>
<td></td>
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<tr>
<td></td>
<td>diazinon</td>
<td>Diazinon AG500</td>
<td>2-4 qt</td>
<td>2.0-4.0</td>
<td>Broadcast to soil surface just prior</td>
<td>Broadcast to soil surface just prior to</td>
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<tr>
<td></td>
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<td>Diazinon 50 W</td>
<td>4-8 lb</td>
<td></td>
<td>planting. Incorporate into soil 3-6 inches</td>
<td>planting. Incorporate into soil 3-6 inches</td>
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<td>Diazinon AG600C</td>
<td>51-102 oz</td>
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<td>immediately. Mix in a minimum of 5 gallons of</td>
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<td>water/acre.</td>
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<td>esfenvalerate</td>
<td>Asana XL 0.66 EC</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td>Broadcast prior to planting and work into soil</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4-8 inches.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>flubendiamide</td>
<td>Belt SC</td>
<td>1.5 oz</td>
<td>0.047</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Synapse WG</td>
<td>3 oz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>tebufenozide</td>
<td>Confirm 2F</td>
<td>6-8 fl oz</td>
<td>0.09-0.12</td>
<td></td>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin</td>
<td>Mustang Maxx 0.8 EC</td>
<td>1.28-4.0 oz</td>
<td>0.008-0.025</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>zeta-cypermethrin + bifenthrin</td>
<td></td>
<td>0.007</td>
<td>Broadcast prior to planting and work into soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hero</td>
<td>10.3 oz</td>
<td>0.1</td>
<td>4-8 inches.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wireworm</td>
<td>bifenthrin (R)</td>
<td>Capture LFR</td>
<td>0.29-0.39 oz/1,000 ft row or 3.4-6.8 oz/A</td>
<td>0.04-0.08</td>
<td>Apply in 5- to 7-inch band or in furrow</td>
<td>Broadcast to soil surface just prior to</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ahead of press wheel. Compatible with liquid</td>
<td>planting. Incorporate into soil 3-6 inches</td>
<td></td>
</tr>
<tr>
<td></td>
<td>diazinon (R)</td>
<td>Diazinon 50W</td>
<td>6-8 lb</td>
<td>3.0-4.0</td>
<td>Broadcast prior to planting and immediately</td>
<td>Broadcast prior to planting and immediately</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Diazinon AG600</td>
<td>76 1/2-102 oz</td>
<td></td>
<td>work into soil 4-8 inches.</td>
<td>work into soil 4-8 inches.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Diazinon AG500</td>
<td>3-4 qt</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spider</td>
<td>abamectin (R)</td>
<td>Agri-Mek 0.7 SC</td>
<td>1.75-3.5 oz</td>
<td>0.0094-0.019</td>
<td>DO NOT apply Agri-Mek in less than 20</td>
<td>DO NOT apply Agri-Mek in less than 20</td>
<td>7</td>
</tr>
<tr>
<td>mites</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>gallons of water per acre.</td>
<td>gallons of water per acre.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>5.2-6.4 oz</td>
<td>0.08-0.1</td>
<td>Follow label directions.</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>dicyofol</td>
<td>Dicofol 4E</td>
<td>3/4-1 1/2 pt</td>
<td>0.375-0.75</td>
<td>Spray when damaging numbers are present.</td>
<td>Spray when damaging numbers are present.</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DO NOT apply more than once per season.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>spiroimesifen</td>
<td>Oberon 2 SC</td>
<td>7-8.5 oz</td>
<td>0.11-0.13</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Pinworm</td>
<td>abamectin (R)</td>
<td>Agri-Mek 0.7 SC</td>
<td>3.5 oz</td>
<td>0.019</td>
<td></td>
<td>2.8 ounces for flea beetles.</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin</td>
<td>Baythroid XL</td>
<td>2.1-2.8 oz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crop</td>
<td>Insect</td>
<td>Insecticide</td>
<td>Formulation Per Acre</td>
<td>Lb ai/Acre</td>
<td>Application</td>
<td>Remarks/Precautions</td>
<td>Days to Harvest</td>
</tr>
<tr>
<td>------------</td>
<td>--------------</td>
<td>--------------------------------------------------</td>
<td>----------------------</td>
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<td>-------------</td>
<td>----------------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>TOMATO</td>
<td>(cont.)</td>
<td>Pinworm</td>
<td>beta-cyfluthrin + imidacloprid</td>
<td>3.8-4.1 oz</td>
<td>0.089-0.096</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Leverage 360</td>
<td></td>
<td></td>
<td></td>
<td>DO NOT exceed 0.5 lb ai/acre per season.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate (R)</td>
<td>Asana XL 0.66 EC</td>
<td>5.8-9.6 oz</td>
<td>0.03-0.05</td>
<td>Follow label directions.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gamma-cyhalothrin</td>
<td>Proaxis 0.5 EC</td>
<td>2.56-3.84 oz</td>
<td>0.01-0.015</td>
<td>Follow label directions.</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>indoxacarb</td>
<td>Avaunt 30 DG</td>
<td>3.5 oz</td>
<td>0.065</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>methomyl (R)</td>
<td>Lannate LV</td>
<td>1 1/2-3 pt</td>
<td>0.45-0.9</td>
<td>All are alternatives. Check dosage on label.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lannate SP</td>
<td>1/2-1 lb</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>No-Mate</td>
<td>Spiral Bioinsecticide</td>
<td></td>
<td></td>
<td>Comes in a plastic coil that is wrapped around tomato vines or support stakes.</td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Thrips</td>
<td>beta-cyfluthrin + imidacloprid</td>
<td>3.8-4.1 oz</td>
<td>0.089-0.096</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Leverage 360</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin (R)</td>
<td>Brigade 2 EC</td>
<td>2.1-5.2 oz</td>
<td>0.033-0.08</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>VEGETABLES</td>
<td>Red Imported Fire Ant</td>
<td>ALL FIRE ANT BAITS – Apply when ants are active and soil temperature is above 60 degrees F. DO NOT treat if rain is anticipated within 6 hours.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(See labels for specific crops)</td>
<td></td>
<td>S-Methoprene</td>
<td>3-5 Tbsp/mound</td>
<td>Mound-to-mound treatment rate</td>
<td>Mound-to-mound treatment rate</td>
<td>Apply 3 to 4 weeks prior to harvest date.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Extinguish</td>
<td>1.0-1.5 lb/acre</td>
<td>Broadcast rate</td>
<td>Broadcast rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>pyriproxyfen</td>
<td>2-4 Tbsp/mound</td>
<td>Mound-to-mound treatment rate</td>
<td>Mound-to-mound treatment rate</td>
<td>See label for specific rate and application instructions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Esteem</td>
<td>1.5-2.0 lb/acre</td>
<td>Broadcast rate</td>
<td>Broadcast rate</td>
<td>Acceptable for organic production.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>spinosad</td>
<td>Eliminator Fire Ant Bait</td>
<td>4-6 Tbsp/mound</td>
<td>Mound-to-mound treatment rate</td>
<td>Mound-to-mound treatment rate</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Green Light Fire Ant Control</td>
<td>2.5-5.0 lb/acre</td>
<td>Broadcast rate</td>
<td>Broadcast rate</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ortho Fire Ant Bait</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Safer Fire Ant Bait</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### HOME GARDEN VEGETABLE INSECT CONTROL – Products for Use by the General Public

The following table provides home garden vegetable insect control recommendations with pesticides for use by the homeowner. All chemical information provided below is given with the understanding that no endorsement of named products is intended nor is criticism implied of similar products that are not mentioned. Individuals who use pesticides are responsible for ensuring that the intended use complies with current regulations and conforms to the product label. Before purchasing or using any pesticide, always read and carefully follow the label directions.

Insecticides listed below are identified by common chemical name. A trade name in parentheses may also be listed as a convenience for the reader. Additional trade names that may be available locally are listed in the HOMEOWNER INSECTICIDE PRODUCT LIST beginning on page 324.

The complete Organic Materials Review Institute (OMRI) products list can be viewed by visiting this link: http://www.omri.org/OMRI_products_list.php.

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Insect</th>
<th>Insecticide and Formulation</th>
<th>Amount of Formulation Per Gallon of Spray</th>
<th>Minimum Interval (Days) Between Last Application and Harvest</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASPARAGUS</td>
<td>Asparagus beetle, Japanese beetle, grasshopper, aphids</td>
<td>carbaryl (various brands) see label</td>
<td>1</td>
<td>Repeat applications as necessary up to a total of 3 times prior to harvest or a total of 5 times per crop but not more often than once every 7 days. Sevin is not effective against aphids.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 57% (various brands) 50% (Bonide)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>permethrin 2.5% EC (various brands)</td>
<td>1.5 fl oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BEAN</td>
<td>Aphids</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>Maximum applications per season (3). Days to wait to reapply (7).</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>Apply as necessary to maintain control waiting at least 7 days between each application.</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho, Bonide)</td>
<td>see label</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corn earworm</td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
<td>DO NOT apply within 14 days of grazing or harvest for forage or within 3 days of harvest of fresh beans or peas or within 21 days of harvest of dried beans or peas, seed or hay.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>carbaryl (various brands) see label</td>
<td>3/14/21</td>
<td></td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>Apply as necessary to maintain control waiting at least 7 days between each application.</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>spinosad (Naturalyte) 0.5% F</td>
<td>4 Tbsp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commodity</td>
<td>Insect</td>
<td>Insecticide and Formulation</td>
<td>Amount of Formulation Per Gallon of Spray</td>
<td>Minimum Interval (Days) Between Last Application and Harvest</td>
<td>Precautions and Remarks</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------------------------------------------</td>
<td>-----------------------------------------------------------------</td>
<td>------------------------------------------</td>
<td>-------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>BEAN</strong> (cont.)</td>
<td>Mexican bean beetle, bean leaf beetle, flea beetle, Japanese beetle, cucumber beetle</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (3). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>3</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>carbaryl (various)</td>
<td>see label</td>
<td>3/14/21</td>
<td>DO NOT apply within 14 days of grazing or harvest for forage or within 3 days of harvest of fresh beans or peas or within 21 days of harvest of dried beans or peas, seed or hay.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>21 dry beans</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho, Bonide)</td>
<td>see label</td>
<td>1</td>
<td>Refer to label.</td>
</tr>
<tr>
<td>Potato leafhopper, flea hopper, lygus, stink bug</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (3). Days to wait to reapply (7).</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>3</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>21 dry beans</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>Leafhoppers ONLY. This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>1</td>
<td>NOT for stink bugs. Refer to label.</td>
</tr>
<tr>
<td>Spider mite</td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Apply when mites appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho, Bonide)</td>
<td>see label</td>
<td>1</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
<td>0</td>
<td>Apply treatment at first sign of mites and speckled plants.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sulfur 90%</td>
<td>2 Tbsp</td>
<td>0</td>
<td>DO NOT use if temperature is above 95°F.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DO NOT use within 3 weeks of oil spray.</td>
</tr>
<tr>
<td>Commodity</td>
<td>Insect</td>
<td>Insecticide and Formulation</td>
<td>Amount of Formulation Per Gallon of Spray</td>
<td>Minimum Interval (Days) Between Last Application and Harvest</td>
<td>Precautions and Remarks</td>
</tr>
<tr>
<td>-----------</td>
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<td>-----------------------------</td>
<td>------------------------------------------</td>
<td>-------------------------------------------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>BEAN</td>
<td>Thrips, leafminer</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (3). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>3</td>
<td>Leafminer ONLY. Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>carbaryl (various brands)</td>
<td>see label</td>
<td>3/14/21</td>
<td>DO NOT apply within 14 days of grazing or harvest for forage or within 3 days of harvest of fresh beans or peas or within 21 days of harvest of dried beans or peas, seed or hay.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>21</td>
<td>Leafminer ONLY. Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Thrips ONLY. Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidaclorpid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>Thrips ONLY. This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>1</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Beauveria bassiana (Mycotrol WP)</td>
<td>1/4 lb/20 gal water</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>3</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
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<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>21</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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<td></td>
<td></td>
<td>imidaclorpid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>1</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Whitefly</td>
<td></td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (3). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Beauveria bassiana (Mycotrol WP)</td>
<td>1/4 lb/20 gal water</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>3</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>21</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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<tr>
<td></td>
<td></td>
<td>imidaclorpid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>1</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>BEET</td>
<td>Aphids</td>
<td>imidaclorpid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 57% (various brands) 50% (Ortho, Bonide)</td>
<td>see label</td>
<td>7</td>
<td>Refer to label. DO NOT apply to sugar beets.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>carbaryl (various brands)</td>
<td>see label</td>
<td>7</td>
<td>Repeat applications as necessary up to a total of 6 times but not more often than once every 7 days.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>Flea beetles ONLY. DO NOT spray more than 5 times per season.</td>
</tr>
<tr>
<td>Commodity</td>
<td>Insect</td>
<td>Insecticide and Formulation</td>
<td>Amount of Formulation Per Gallon of Spray</td>
<td>Minimum Interval (Days) Between Last Application and Harvest</td>
<td>Precautions and Remarks</td>
</tr>
<tr>
<td>------------------</td>
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<td>------------------------------------------------------------------</td>
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<td>-------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>BEET (cont.)</strong></td>
<td>Flea beetle, beet webworm, blister beetle</td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>Flea beetles ONLY. This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 5 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho, Bonide)</td>
<td>see label</td>
<td>7</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td>Leafhopper</td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 5 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>7</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td>Thrips</td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>7</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td>Whitefly</td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>7</td>
<td>Refer to label.</td>
</tr>
<tr>
<td><strong>BROCCOLI, CAULIFLOWER, BRUSSELS SPROUTS, RUTABAGA</strong></td>
<td>Aphids, flea beetle</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7). NOT labeled on rutabaga.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>NOT for use on Brussels sprouts or rutabaga. Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season, 5 times for rutabaga.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>3</td>
<td>NOT for use on Brussels sprouts or rutabaga. Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>1</td>
<td>NOT for use on rutabaga. Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
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<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>lambda-cyhalothrin 0.5% (Bonide)</td>
<td>ready-to-use premix</td>
<td>1</td>
<td>NOT for use on rutabaga. Apply thoroughly as a foliar cover spray to both sides of plant leaves and all plant surfaces where insects are present. DO NOT spray more than 9 times per season. Referr to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 57% (various brands)</td>
<td>see label</td>
<td>2, 7 for rutabaga</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50% (Ortho, Bonide)</td>
<td>see label</td>
<td>7, 3 for broccoli</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
<td>0</td>
<td>On foliage as needed.</td>
</tr>
<tr>
<td>Commodity</td>
<td>Insect</td>
<td>Insecticide and Formulation</td>
<td>Amount of Formulation Per Gallon of Spray</td>
<td>Minimum Interval (Days) Between Last Application and Harvest</td>
<td>Precautions and Remarks</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>---------------------------------------------</td>
<td>-----------------------------------------------------</td>
<td>------------------------------------------</td>
<td>---------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Broccoli, Cabbage, Brussels Sprouts, Rutabaga (cont.)</td>
<td>Cabbage looper, diamondback moth, imported cabbageworm</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7). NOT labeled on rutabaga.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bacillus thuringiensis (DiPel) 2 X 4 L (Javelin) WG</td>
<td>1 Tbsp 2 tsp 2 tsp</td>
<td>0</td>
<td>On foliage as needed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>NOT for use on Brussels sprouts or rutabaga. Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season, 5 times for rutabaga.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>3</td>
<td>NOT for use on Brussels sprouts or rutabaga. Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>1</td>
<td>NOT for use on rutabaga. Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>lambda-cyhalothrin 0.5% (Bonide) ready-to-use premix</td>
<td></td>
<td>1</td>
<td>NOT for use on rutabaga. Apply thoroughly as a foliar cover spray to both sides of plant leaves and all plant surfaces where insects are present. DO NOT spray more than 9 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 57% (various brands) see label 2, 7 for rutabaga 7, 3 for broccoli</td>
<td></td>
<td></td>
<td>NOT for diamondback moth. Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho, Bonide)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>spinosad 0.5% (Naturalyte)</td>
<td>4 Tbsp</td>
<td>1</td>
<td>On foliage as needed.</td>
</tr>
<tr>
<td>Harlequin bug</td>
<td></td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit and Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7). NOT labeled on rutabaga.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>NOT for use on Brussels sprouts or rutabaga. Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season, 5 times for rutabaga.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>3</td>
<td>NOT for use on Brussels sprouts or rutabaga. Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>1</td>
<td>NOT for use on rutabaga. Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
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<tr>
<td></td>
<td></td>
<td>lambda-cyhalothrin 0.5% (Bonide) ready-to-use premix</td>
<td></td>
<td>1</td>
<td>NOT for use on rutabaga. Apply thoroughly as a foliar cover spray to both sides of plant leaves and all plant surfaces where insects are present. DO NOT spray more than 9 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho) see label 7, 3 for broccoli</td>
<td></td>
<td></td>
<td>Refer to label.</td>
</tr>
<tr>
<td>Commodity</td>
<td>Insect</td>
<td>Insecticide and Formulation</td>
<td>Amount of Formulation Per Gallon of Spray</td>
<td>Minimum Interval (Days) Between Last Application and Harvest</td>
<td>Precautions and Remarks</td>
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<td>-------------------------</td>
</tr>
<tr>
<td>BROCCOLI, CAULIFLOWER, BRUSSELS SPROUTS, RUTABAGA (cont.)</td>
<td>Leafhopper</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7). NOT labeled on rutabaga.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>NOT for use on Brussels sprouts or rutabaga. Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season, 5 times for rutabaga.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>3</td>
<td>NOT for use on Brussels sprouts or rutabaga. Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between each application.</td>
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<td></td>
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<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>1</td>
<td>NOT for use on rutabaga. Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
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<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>lambda-cyhalothrin 0.5% (Bonide)</td>
<td>ready-to-use premix</td>
<td>1</td>
<td>NOT for use on rutabaga. Apply thoroughly as a foliar cover spray to both sides of plant leaves and all plant surfaces where insects are present. DO NOT spray more than 9 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>7, 3 for broccoli</td>
<td>Refer to label.</td>
</tr>
<tr>
<td>Thrips</td>
<td></td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7). NOT labeled on rutabaga.</td>
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<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season, 5 times for rutabaga.</td>
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<td></td>
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<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>1</td>
<td>NOT for use on rutabaga. Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>lambda-cyhalothrin 0.5% (Bonide)</td>
<td>ready-to-use premix</td>
<td>1</td>
<td>NOT for use on rutabaga. Apply thoroughly as a foliar cover spray to both sides of plant leaves and all plant surfaces where insects are present. DO NOT spray more than 9 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>7, 3 for broccoli</td>
<td>Refer to label.</td>
</tr>
<tr>
<td>Whitefly</td>
<td></td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7). NOT labeled on rutabaga.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>NOT for use on Brussels sprouts or rutabaga. Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
</tbody>
</table>
## HOME GARDEN VEGETABLE INSECT CONTROL – Products for Use by the General Public

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Insect</th>
<th>Insecticide and Formulation</th>
<th>Amount of Formulation Per Gallon of Spray</th>
<th>Minimum Interval (Days) Between Last Application and Harvest</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BROCCOLI, CAULIFLOWER, BRUSSELS SPROUTS, RUTABAGA (cont.)</strong></td>
<td>Whitefly</td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>Adults ONLY. DO NOT spray more than 4 times per season, 5 times for rutabaga.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>3</td>
<td>NOT for use on Brussels sprouts or rutabaga. Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>1</td>
<td>NOT for use on rutabaga. Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>lambda-cyhalothrin 0.5% (Bonide)</td>
<td>ready-to-use premix</td>
<td>1</td>
<td>NOT for use on rutabaga. Apply thoroughly as a foliar cover spray to both sides of plant leaves and all plant surfaces where insects are present. DO NOT spray more than 9 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Malathion 50% (Ortho)</td>
<td>see label</td>
<td>7, 3 for broccoli</td>
<td>Refer to label.</td>
</tr>
<tr>
<td><strong>CABBAGE</strong></td>
<td>Aphids</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>3</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
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<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
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<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
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<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<td>lambda-cyhalothrin 0.5% (Bonide)</td>
<td>ready-to-use premix</td>
<td>1</td>
<td>Apply thoroughly as a foliar cover spray to both sides of plant leaves and all plant surfaces where insects are present. DO NOT spray more than 9 times per season.</td>
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<tr>
<td></td>
<td></td>
<td>Malathion</td>
<td>see label</td>
<td>7</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>57% (various brands)</td>
<td>see label</td>
<td>1.5 tsp</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>55% (Hi-Yield, Bonide)</td>
<td>see label</td>
<td></td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
<td>0</td>
<td>Refer to label.</td>
</tr>
</tbody>
</table>
### CABBAGE (cont.)

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Insect</th>
<th>Insecticide and Formulation</th>
<th>Amount of Formulation Per Gallon of Spray</th>
<th>Minimum Interval (Days) Between Last Application and Harvest</th>
<th>Precautions and Remarks</th>
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</thead>
<tbody>
<tr>
<td><strong>CABBAGE</strong></td>
<td>Cabbage looper, imported cabbageworm, diamondback moth, cutworm</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7). NOT labeled for cutworm.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bacillus thuringiensis (DiPel) 2X</td>
<td>1 Tbsp 2 tsp</td>
<td>0</td>
<td>Start control program when worms are small, and treat foliage every 5 to 7 days.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bacillus thuringiensis (Javelin) WG</td>
<td>1 Tbsp</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>carbaryl (various brands) see label</td>
<td></td>
<td></td>
<td>3</td>
<td>Repeat applications as needed up to a total of 4 times but not more than once every 7 days.</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>3</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>1</td>
<td>Apply when insects first appear or when damage occurs. DO NOT spray more than 9 times per growing season.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin 0.5% (Bonide) ready-to-use premix</td>
<td></td>
<td>1</td>
<td>Apply thoroughly as a foliar cover spray to both sides of plant leaves and all plant surfaces where insects are present. DO NOT spray more than 9 times per season.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>malathion 57% (various brands)</td>
<td>see label</td>
<td>7</td>
<td>NOT for diamondback moth. Refer to label.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>1 Tbsp</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>spinosad 0.5% F (Naturalyte)</td>
<td>4 Tbsp</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flea beetle, thrips</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7). Flea beetles ONLY. Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Repeat applications as needed up to a total of 4 times but not more than once every 7 days. DO NOT spray more than 4 times per season.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>carbaryl (various brands) see label</td>
<td></td>
<td></td>
<td>3</td>
<td>Flea beetle ONLY. Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
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<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>3</td>
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<tr>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>1</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
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<td>Commodity</td>
<td>Insect</td>
<td>Insecticide and Formulation</td>
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<td>-------------------------</td>
</tr>
<tr>
<td>CABBAGE (cont.)</td>
<td>Flea beetle, thrips</td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<tr>
<td></td>
<td></td>
<td>lambda-cyhalothrin 0.5% (Bonide)</td>
<td>ready-to-use premix</td>
<td>1</td>
<td>Apply thoroughly as a foliar cover spray to both sides of plant leaves and all plant surfaces where insects are present. DO NOT spray more than 9 times per season.</td>
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<tr>
<td></td>
<td></td>
<td>malathion</td>
<td>57% (various brands) 50% (Ortho)</td>
<td>see label 1 Tbsp</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Harlequin bug</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
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<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season. Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>3</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season. Apply thoroughly as a foliar cover spray to both sides of plant leaves and all plant surfaces where insects are present. DO NOT spray more than 9 times per season.</td>
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<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>1</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season. Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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<td>ready-to-use premix</td>
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<td>Apply thoroughly as a foliar cover spray to both sides of plant leaves and all plant surfaces where insects are present. DO NOT spray more than 9 times per season.</td>
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<td></td>
<td></td>
<td>malathion</td>
<td>50% (Ortho)</td>
<td>1 Tbsp</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Leafhopper</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
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<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
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<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season. Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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<td></td>
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<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
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<td>Apply thoroughly as a foliar cover spray to both sides of plant leaves and all plant surfaces where insects are present. DO NOT spray more than 9 times per season.</td>
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<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>1</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season. Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<td>Commodity</td>
<td>Insect</td>
<td>Insecticide and Formulation</td>
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</tr>
<tr>
<td>CABBAGE (cont.)</td>
<td>Leafhopper</td>
<td>lambda-cyhalothrin 0.5% (Bonide) ready-to-use premix</td>
<td>1</td>
<td>Apply thoroughly as a foliar cover spray to both sides of plant leaves and all plant surfaces where insects are present. DO NOT spray more than 9 times per season.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>1 Tbsp</td>
<td>Refer to label.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Whitefly</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
<td></td>
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<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>Adults ONLY. DO NOT spray more than 4 times per season.</td>
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<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
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<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<td></td>
<td></td>
<td>lambda-cyhalothrin 0.5% (Bonide) ready-to-use premix</td>
<td>1</td>
<td>Apply thoroughly as a foliar cover spray to both sides of plant leaves and all plant surfaces where insects are present. DO NOT spray more than 9 times per season.</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>1 Tbsp</td>
<td>Refer to label.</td>
<td></td>
</tr>
<tr>
<td>CANTALOUPE</td>
<td>Aphids, thrips</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>Maximum applications per season (5). Days to wait to reapply (5).</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>Aphids ONLY. Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>Aphids ONLY. Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 57% (various brands) 50% (Ortho, Bonide) see label</td>
<td>1</td>
<td>Refer to label.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
<td>On foliage as needed.</td>
<td></td>
</tr>
<tr>
<td>Commodity</td>
<td>Insect</td>
<td>Insecticide and Formulation</td>
<td>Amount of Formulation Per Gallon of Spray</td>
<td>Minimum Interval (Days) Between Last Application and Harvest</td>
<td>Precautions and Remarks</td>
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<td>-----------------------------------------------------------------------</td>
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</tr>
<tr>
<td>CANTALOUPE (cont.)</td>
<td>Cucumber beetle (spotted and striped), pickleworm, squash bug, squash vine borer</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>0</td>
<td>Maximum applications per season (5). Days to wait to reapply (5).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>3</td>
<td>APHIDS only. Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>carbaryl (various brands)</td>
<td>see label</td>
<td>3</td>
<td>Repeat applications as needed up to a total of 6 times but not more than once every 7 days. For optimum control of squash bugs, apply sufficient spray volume for thorough coverage and time sprays for early morning or late afternoon.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>NOT for squash vine borer. DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>3</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>Cucumber beetles ONLY. This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 57% (various brands) 50% (Ortho, Bonide)</td>
<td>see label</td>
<td>1</td>
<td>Refer to label. NOT for squash bug.</td>
</tr>
<tr>
<td></td>
<td>Leafhopper</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>0</td>
<td>Maximum applications per season (5). Days to wait to reapply (5).</td>
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<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>3</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
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<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
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<td></td>
<td></td>
<td>malathion 57% (various brands) 50% (Ortho)</td>
<td>see label</td>
<td>1</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td>Spider mite</td>
<td>malathion 57% (various brands) 50% (Ortho, Bonide)</td>
<td>see label</td>
<td>1</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
<td>0</td>
<td>On foliage as needed.</td>
</tr>
<tr>
<td>Commodity</td>
<td>Insect</td>
<td>Insecticide and Formulation</td>
<td>Amount of Formulation Per Gallon of Spray</td>
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</tr>
<tr>
<td>CANTALOPE (cont.)</td>
<td>Whitefly</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>0</td>
<td>Maximum applications per season (5). Days to wait to reapply (5).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>3</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>Adults ONLY. DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>3</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>1 Tbsp</td>
<td>1</td>
<td>Refer to label.</td>
</tr>
<tr>
<td>CARROT</td>
<td>Aphids</td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>7</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
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<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<tr>
<td></td>
<td></td>
<td>malathion 57% (various brands) 50% (Bonide)</td>
<td>see label</td>
<td>7</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td>Armyworm, leafminer, leafhopper</td>
<td>Bacillus thuringiensis (DiPel) 2X DiPel 4L (Javelin) WG</td>
<td>1 Tbsp 2 tsp 2 tsp</td>
<td>0</td>
<td>B.t. will not control leafhoppers.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>carbaryl (various brands)</td>
<td>see label</td>
<td>7</td>
<td>Repeat applications as necessary up to a total of 6 times but not more often than once every 7 days. For cutworm control, this product is most effective against species which feed on the upper portions of the plant.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 5 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>7</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>Leaffoppers ONLY. This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<td></td>
<td></td>
<td>malathion 57% (various brands) 50% (Bonide)</td>
<td>see label</td>
<td>7</td>
<td>Refer to label. NOT for armyworms. Bonide product labeled for leafhoppers ONLY.</td>
</tr>
</tbody>
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## HOME GARDEN VEGETABLE INSECT CONTROL – Products for Use by the General Public

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<tr>
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<th>Insect</th>
<th>Insecticide and Formulation</th>
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<tr>
<td><strong>CARROT</strong> (cont.)</td>
<td>Flea beetle</td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 5 times per season. Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>7</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<tr>
<td></td>
<td></td>
<td>imidaclorpid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Thrips</td>
<td>imidaclorpid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
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<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<td></td>
<td>Whitefly</td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>7</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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<td><strong>CELERY</strong></td>
<td>Aphids, flea beetle, leafminer, fleahopper, looper</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidaclorpid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>45</td>
<td>Aphids and flea beetles ONLY. This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 57% (various brands) 50% (Ortho, Bonide)</td>
<td>see label</td>
<td>7</td>
<td>Refer to label.</td>
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<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>7</td>
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<td></td>
<td>Leafhopper</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
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<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
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<td></td>
<td></td>
<td>imidaclorpid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
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<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<td></td>
<td>Spider mite</td>
<td>malathion 50% (Bonide)</td>
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<td><strong>CELERY</strong> (cont.)</td>
<td>Thrips</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
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<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
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<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>45</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>7</td>
<td>Refer to label.</td>
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<tr>
<td>Whitefly</td>
<td></td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
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<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>Adults ONLY. DO NOT spray more than 4 times per season.</td>
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<td></td>
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<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
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<td>Refer to label.</td>
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<tr>
<td><strong>COLLARD</strong></td>
<td>Aphids, flea beetle</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
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<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
</tr>
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<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>7</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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<td>malathion 57% (various brands) 50% (Ortho, Bonide)</td>
<td>see label</td>
<td>7</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
<td>0</td>
<td>On foliage as needed.</td>
</tr>
<tr>
<td></td>
<td>Cabbage looper, diamondback moth, imported cabbageworm</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
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<tr>
<td></td>
<td></td>
<td>Bacillus thuringiensis (DiPel) 2X (DiPel) 4L (Javelin) WG</td>
<td>1 Tbsp, 2 tsp</td>
<td>0</td>
<td>Begin foliage treatments early and repeat as necessary. Include a spreader/sticker.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
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<td>Commodity</td>
<td>Insect</td>
<td>Insecticide and Formulation</td>
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<tr>
<td>COLLARD (cont.)</td>
<td>Cabbage looper, diamondback moth, imported cabbageworm</td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>7</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho, Bonide)</td>
<td>see label</td>
<td>7</td>
<td>NOT for diamondback moth. Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>spinosad 0.5% F (Naturalyte)</td>
<td>4 Tbsp</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Harlequin bug</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
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<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
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<td>malathion 57% (various brands)</td>
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<td>Refer to label.</td>
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<td></td>
<td></td>
<td>50% (Ortho, Bonide)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Leafhopper</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
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<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
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<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<td></td>
<td></td>
<td>malathion 57% (various brands)</td>
<td>see label</td>
<td>7</td>
<td>Refer to label.</td>
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<td></td>
<td></td>
<td>50% (Ortho)</td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>Thrips</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
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<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
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<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
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<td>see label</td>
<td>7</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td>Whitefly</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
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<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>Adults ONLY. DO NOT spray more than 4 times per season.</td>
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<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>7</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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### HOME GARDEN VEGETABLE INSECT CONTROL – Products for Use by the General Public

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<td><strong>COLLARD</strong></td>
<td>Whitefly</td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
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<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>7</td>
<td>Refer to label.</td>
</tr>
<tr>
<td><strong>CORN (SWEET)</strong></td>
<td>Aphids</td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>3</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
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<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 10 times per season.</td>
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<td>esfenvalerate 0.425% (Monterey)</td>
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<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>21</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 5 times per growing season.</td>
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<tr>
<td></td>
<td></td>
<td>lambda-cyhalothrin 0.5% (Bonide) ready-to-use premix</td>
<td></td>
<td>21</td>
<td>Apply thoroughly as a foliar cover spray to both sides of plant leaves and all plant surfaces where insects are present. DO NOT spray more than 5 times per season.</td>
</tr>
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<td></td>
<td></td>
<td>malathion 57% (various brands) 50% (Bonide)</td>
<td>see label</td>
<td>5</td>
<td>Refer to label. Bonide product labeled for sap beetles ONLY.</td>
</tr>
<tr>
<td><strong>Corn earworm, sap beetle, flea beetle, Japanese beetle</strong></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
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<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
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<tr>
<td></td>
<td></td>
<td>carbaryl (various brands)</td>
<td>see label</td>
<td>2/14/48</td>
<td>DO NOT apply within 2 days of harvest of ears or within 14 days of harvest or grazing of forage or within 48 days of harvest of fodder.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 10 times per season.</td>
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| **CORN (SWEET)** (cont.) | Corn earworm, European corn borer, fall armyworm | *Bacillus thuringiensis* (various brands) | 2 tsp | 0 | Consult specific label. *B.t.* is effective while worms are feeding on the foliage.  
Corn earworm and European corn borer ONLY. Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.  
DO NOT apply within 2 days of harvest of ears or within 14 days of harvest or grazing of forage or within 48 days of harvest of fodder.  
DO NOT spray more than 10 times per season.  
Corn earworm and European corn borer ONLY. Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.  
Apply when insects first appear or when damage occurs.  
DO NOT apply more than 5 times per growing season.  
Apply thoroughly as a foliar cover spray to both sides of plant leaves and all plant surfaces where insects are present. DO NOT spray more than 5 times per season. |
| | | bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens) | 1.5 fl oz | 3 | |
| | | carbaryl (various brands) | see label | 2/14/48 | DO NOT apply within 2 days of harvest of ears or within 14 days of harvest or grazing of forage or within 48 days of harvest of fodder. |
| | | cyfluthrin 0.75% (Bayer Advanced) | 0.5 fl oz | 0 | |
| | | esfenvalerate 0.425% (Monterey) | 1 fl oz | 1 | |
| | | gamma-cyhalothrin 0.08% (Spectracide) | 1.5 fl oz | 21 | Apply when insects first appear or when damage occurs.  
DO NOT apply more than 5 times per growing season. |
| | | lambda-cyhalothrin 0.5% (Bonide) | ready-to-use premix | 21 | |
| | | permethrin 2.5% EC (various brands) | 1.5 fl oz | 3 | DO NOT spray more than 5 times per season.  
Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.  
This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection. |
| | | spinosad (Naturalyte) 0.5% F | 2 Tbsp | 1 | |
| **CUCUMBER** | Aphids | acetamiprid 0.5% (Ortho Flower, Fruit & Vegetable Insect Killer) | 1.5 fl oz | 0 | Maximum applications per season (5). Days to wait to reapply (5). |
| | | bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens) | 1.5 fl oz | 3 | Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.  
Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application. |
| | | esfenvalerate 0.425% (Monterey) | 1 fl oz | 3 | |
| | | imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate) | 0.5 fl oz/1 qt of water/10 sq ft of row as a drench | 21 | |
| | | malathion 57% (various brands) 50% (Ortho, Bonide) | see label | 1 | Refer to label. |

**Cucumber beetle** (spotted and striped), pickleworm, squash bug  
acetamiprid 0.5% (Ortho Flower, Fruit & Vegetable Insect Killer)  
bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)  
1.5 fl oz  
Maximum applications per season (5). Days to wait to reapply (5).  
Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.
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<tr>
<td>CUCUMBER (cont.)</td>
<td>Cucumber beetle (spotted and striped), pickleworm, squash bug</td>
<td>carbaryl (various brands)</td>
<td>see label</td>
<td>3</td>
<td>Repeat applications as needed up to a total of 6 times but not more than once every 7 days. For optimum control of squash bugs, apply sufficient spray volume for thorough coverage and time sprays for early morning or late afternoon.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
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<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
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<td>imidaclorpid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>Cucumber beetles ONLY. This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<td>malathion 57% (various brands) 50% (Ortho, Bonide)</td>
<td>see label</td>
<td>1</td>
<td>NOT for squash bug. Refer to label.</td>
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<tr>
<td></td>
<td>Leafhopper</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>0</td>
<td>Maximum applications per season (5). Days to wait to reapply (5).</td>
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<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
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<td>malathion 57% (various brands) 50% (Ortho)</td>
<td>see label</td>
<td>1</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td>Spider mite</td>
<td>malathion 57% (various brands) 50% (Ortho, Bonide) soap (insecticidal, M-Pede 49 EC)</td>
<td>see label</td>
<td>1</td>
<td>Refer to label. On foliage as needed.</td>
</tr>
<tr>
<td></td>
<td>Thrips</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>0</td>
<td>Maximum applications per season (5). Days to wait to reapply (5).</td>
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<td>CUCUMBER (cont.)</td>
<td>Thrips</td>
<td>malathion 57% (various) 50% (Ortho)</td>
<td>See label</td>
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<td>Refer to label.</td>
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<td>Whitefly</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
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<td>Maximum applications per season (5). Days to wait to reapply (5).</td>
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<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
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<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
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<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>Adults ONLY. DO NOT spray more than 4 times per season.</td>
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<td>esfenvalerate 0.425% (Monterey)</td>
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<td>malathion 50% (Ortho)</td>
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<td></td>
<td></td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
<td>0</td>
<td>On foliage as needed.</td>
</tr>
<tr>
<td>EGGPLANT</td>
<td>Aphids, thrips</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
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<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
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<td>7</td>
<td>Aphids ONLY. Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
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<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>5</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
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<td>3</td>
<td>Refer to label.</td>
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<tr>
<td></td>
<td>Colorado potato, corn earworm</td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
<td>0</td>
<td>On foliage as needed.</td>
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<tr>
<td></td>
<td></td>
<td>Bacillus thuringiensis var. tennebrionus (Trident II)</td>
<td>2-4 Tbsp</td>
<td>0</td>
<td>Colorado potato beetles ONLY. Treat when small larvae are present. NOT effective against adults or large larvae.</td>
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<tr>
<td>EGGPLANT (cont.)</td>
<td>Colorado potato beetle, hornworm, corn earworm</td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
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<td></td>
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<td>carbaryl (various brands)</td>
<td>see label</td>
<td>3</td>
<td>Repeat applications as needed up to a total of 7 times but not more than once every 7 days.</td>
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<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>Colorado potato beetles ONLY. This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>spinosad 0.5% F (Naturalyte)</td>
<td>4 Tbsp</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Flea beetle</td>
<td></td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>carbaryl (various brands)</td>
<td>see label</td>
<td>3</td>
<td>Repeat applications as needed up to a total of 7 times but not more than once every 7 days.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>7</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>5</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 57% (various brands) 50% (Ortho, Bonide)</td>
<td>see label</td>
<td>3</td>
<td>Refer to label.</td>
</tr>
<tr>
<td>Lace bug, spider mite, whitefly</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Whiteflies ONLY. Maximum applications per season (4). Days to wait to reapply (7).</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Lace bugs and whiteflies ONLY. Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td>Commodity</td>
<td>Insect</td>
<td>Insecticide and Formulation</td>
<td>Amount of Formulation Per Gallon of Spray</td>
<td>Minimum Interval (Days) Between Last Application and Harvest</td>
<td>Precautions and Remarks</td>
</tr>
<tr>
<td>-----------</td>
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<td>------------------------------------------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>EGGPLANT (cont.)</td>
<td>Lace bug, spider mite, whitefly</td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>7</td>
<td>Whiteflies ONLY. Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>5</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidaclorpid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>Whiteflies ONLY. This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho, Bonide)</td>
<td>see label</td>
<td>3</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
<td>0</td>
<td>On foliage as needed.</td>
</tr>
<tr>
<td></td>
<td>Leafhopper</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>7</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>5</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidaclorpid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>3</td>
<td>Refer to label.</td>
</tr>
<tr>
<td>KALE</td>
<td>Aphids</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidaclorpid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion</td>
<td>see label</td>
<td>7</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
<td>0</td>
<td>On foliage as needed.</td>
</tr>
<tr>
<td>Commodity</td>
<td>Insect</td>
<td>Insecticide and Formulation</td>
<td>Amount of Formulation Per Gallon of Spray</td>
<td>Minimum Interval (Days) Between Last Application and Harvest</td>
<td>Precautions and Remarks</td>
</tr>
<tr>
<td>---------------</td>
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<td>------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>KALE (cont.)</td>
<td>Cabbage looper, diamondback moth, imported cabbageworm</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bacillus thuringiensis (DiPel) 2X</td>
<td>1 Tbsp</td>
<td>0</td>
<td>On foliage as needed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Javelin) WG</td>
<td>2 tsp</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 57% (various brands)</td>
<td>see label</td>
<td>7</td>
<td>NOT for diamondback moth. Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50% (Ortho, Bonide)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>spinosad 0.5% F (Naturalyte)</td>
<td>4 Tbsp</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Harlequin bug</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>7</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td>Leafhopper</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>7</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td>Thrips</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>7</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td>Vegetable weevil</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td>Whitefly</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>Adults ONLY. DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>7</td>
<td>Refer to label.</td>
</tr>
<tr>
<td>Commodity</td>
<td>Insect</td>
<td>Insecticide and Formulation</td>
<td>Amount of Formulation Per Gallon of Spray</td>
<td>Minimum Interval (Days) Between Last Application and Harvest</td>
<td>Precautions and Remarks</td>
</tr>
<tr>
<td>-----------</td>
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<td>-----------------------------</td>
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<td>----------------------------------------------------------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>LETTUCE</td>
<td>Aphids</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>HEAD LETTUCE ONLY. Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>1</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 57% (various brands) 50% (Ortho, Bonide)</td>
<td>see label</td>
<td>14</td>
<td>Refer to label. Preharvest interval (PHI) for Bonide product is 7 head and 14 leaf.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
<td>0</td>
<td>On foliage as needed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bacillus thuringiensis (DiPel) 2X (Javelin) WG</td>
<td>1 Tbsp</td>
<td>0</td>
<td>On foliage as needed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>HEAD LETTUCE ONLY. Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>carbaryl (various brands)</td>
<td>see label</td>
<td>14</td>
<td>Repeat applications as needed up to a total of 5 times but not more than once every 7 days. Will not control cabbage looper.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>1</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 57% (various brands) 50% (Ortho, Bonide)</td>
<td>see label</td>
<td>14</td>
<td>Cabbage loopers ONLY. Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>spinosad 0.5% F (Naturalyte)</td>
<td>4 Tbsp</td>
<td>1</td>
<td>On foliage as needed.</td>
</tr>
<tr>
<td>Cabbage looper, corn earworm</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
<td></td>
</tr>
<tr>
<td>Bacillus thuringiensis (DiPel) 2X (Javelin) WG</td>
<td></td>
<td>1 Tbsp</td>
<td>0</td>
<td>On foliage as needed.</td>
<td></td>
</tr>
<tr>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td></td>
<td>1.5 fl oz</td>
<td>7</td>
<td>HEAD LETTUCE ONLY. Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
<td></td>
</tr>
<tr>
<td>carbaryl (various brands)</td>
<td>see label</td>
<td>14</td>
<td>Repeat applications as needed up to a total of 5 times but not more than once every 7 days. Will not control cabbage looper.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td></td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
<td></td>
</tr>
<tr>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td></td>
<td>1.5 fl oz</td>
<td>1</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
<td></td>
</tr>
<tr>
<td>malathion 57% (various brands) 50% (Ortho, Bonide)</td>
<td>see label</td>
<td>14</td>
<td>Cabbage loopers ONLY. Refer to label.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>spinosad 0.5% F (Naturalyte)</td>
<td></td>
<td>4 Tbsp</td>
<td>1</td>
<td>On foliage as needed.</td>
<td></td>
</tr>
<tr>
<td>Leafhopper</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
<td></td>
</tr>
<tr>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td></td>
<td>1.5 fl oz</td>
<td>7</td>
<td>HEAD LETTUCE ONLY. Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
<td></td>
</tr>
<tr>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td></td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
<td></td>
</tr>
<tr>
<td>Commodity</td>
<td>Insect</td>
<td>Insecticide and Formulation</td>
<td>Amount of Formulation Per Gallon of Spray</td>
<td>Minimum Interval (Days) Between Last Application and Harvest</td>
<td>Precautions and Remarks</td>
</tr>
<tr>
<td>--------------</td>
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<td>-----------------------------------------------------------------</td>
<td>------------------------------------------</td>
<td>-----------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>LETTUCE</td>
<td>Leafhopper</td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>1</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 57% (various brands) 50% (Ortho, Bonide)</td>
<td>see label</td>
<td>14</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td>Thrips</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>1</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
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<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>14</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td>Whitefly</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>HEAD LETTUCE ONLY. Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Adults ONLY. DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>14</td>
<td>Refer to label.</td>
</tr>
<tr>
<td>LIMA BEANS</td>
<td>Aphids</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (3). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>3</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
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<tr>
<td></td>
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<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
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<tr>
<td></td>
<td></td>
<td>malathion 50% (Bonide)</td>
<td>see label</td>
<td>1</td>
<td>Refer to label.</td>
</tr>
</tbody>
</table>
### LIMA BEANS (cont.)

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide and Formulation</th>
<th>Amount of Formulation Per Gallon of Spray</th>
<th>Minimum Interval (Days) Between Last Application and Harvest</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leafhopper</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (3). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>3</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td>Lima bean vine borer, plant bug, Mexican bean beetle, corn earworm</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Plant bug and Mexican bean beetle ONLY. Maximum applications per season (3). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>3</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td>carbaryl (various brands)</td>
<td>see label</td>
<td>3/14/21</td>
<td>DO NOT apply within 14 days of grazing or harvest for forage or within 3 days of harvest of fresh beans or peas or within 21 days of harvest of dried beans or peas, seed or hay.</td>
</tr>
<tr>
<td>Thrips</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (3). Days to wait to reapply (7).</td>
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<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<tr>
<td>Whitefly</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (3). Days to wait to reapply (7).</td>
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<tr>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
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</table>

### MUSTARD GREENS

<table>
<thead>
<tr>
<th>Aphids, flea beetle</th>
<th>Insecticide and Formulation</th>
<th>Amount of Formulation Per Gallon of Spray</th>
<th>Minimum Interval (Days) Between Last Application and Harvest</th>
<th>Precautions and Remarks</th>
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<tbody>
<tr>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
<td></td>
</tr>
<tr>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
<td></td>
</tr>
<tr>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
<td></td>
</tr>
<tr>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
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## HOME GARDEN VEGETABLE INSECT CONTROL – Products for Use by the General Public

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<th>Commodity</th>
<th>Insect</th>
<th>Insecticide and Formulation</th>
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<th>Precautions and Remarks</th>
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<tbody>
<tr>
<td>MUSTARD GREENS</td>
<td>Aphids, flea beetle</td>
<td>malathion 57% (various brands)</td>
<td>see label</td>
<td>7</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
<td>0</td>
<td>On foliage as needed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bacillus thuringiensis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(DiPel) 2X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Javelin) WG</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075%</td>
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<tr>
<td></td>
<td></td>
<td>spinosad 0.5% F (Naturalyte)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cabbage looper,</td>
<td>diamondback moth, imported</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>cabbageworm</td>
<td>Bacillus thuringiensis</td>
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<td>Leafhopper</td>
<td></td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
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<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>Thrips</td>
<td></td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
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<td>malathion 50% (Ortho)</td>
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<tr>
<td>Vegetable weevil</td>
<td></td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
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<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Refer to label.*

Maximum applications per season (4). Days to reapply (7).

Begin foliage treatments early and repeat as necessary.

Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.

DO NOT spray more than 4 times per season.

Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.

This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.

Refer to label.

Maximum applications per season (4). Days to reapply (7).

DO NOT spray more than 4 times per season.

This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.

Refer to label.

Maximum applications per season (4). Days to reapply (7).

DO NOT spray more than 4 times per season.

Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.

Adults ONLY. DO NOT spray more than 4 times per season.
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<th>Precautions and Remarks</th>
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<tbody>
<tr>
<td>MUSTARD GREENS (cont.)</td>
<td>Whitefly</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
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<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>Adults ONLY. DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
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<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>7</td>
<td>Refer to label.</td>
</tr>
<tr>
<td>OKRA</td>
<td>Aphids, leafminer</td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>Aphids ONLY. This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>Aphids</td>
<td>carbaryl (various brands)</td>
<td>see label</td>
<td>3</td>
<td>Flea beetles ONLY. This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<td></td>
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<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td>Stink bug</td>
<td>carbaryl 5% dust (Hi-Yield)</td>
<td>see label</td>
<td>3</td>
<td>Dust lightly to cover upper leaf surface with a thin, even film of dust. Apply when air is calm. DO NOT repeat applications more often than every 7 days. DO NOT exceed more than 4 applications per year.</td>
</tr>
<tr>
<td></td>
<td>Thrips</td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<td></td>
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<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>1</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td>Whitefly</td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
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<td>see label</td>
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### HOME GARDEN VEGETABLE INSECT CONTROL – Products for Use by the General Public

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<tbody>
<tr>
<td><strong>ONION</strong></td>
<td>Onion thrips</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>lambda-cyhalothrin 0.5% (Bonide)</td>
<td>ready-to-use premix</td>
<td>14</td>
<td>Apply thoroughly as a foliar cover spray to both sides of plant leaves and all plant surfaces where insects are present. DO NOT spray more than 9 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 57% (various brands) 50% (Ortho, Bonide)</td>
<td>see label</td>
<td>3</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>PEAS</strong></td>
<td>Aphids, leafminer</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (3). Days to wait to reapply (7).</td>
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<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>3</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>21 dry peas 3 green peas</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
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<td>7</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
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<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>Aphids ONLY. This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<td></td>
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<td>malathion 57% (various brands) 50% (Ortho)</td>
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<td>3</td>
<td>Refer to label.</td>
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<td></td>
<td></td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
<td>0</td>
<td></td>
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<tr>
<td><strong>Cowpea curculio</strong></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>3</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>carbaryl (various brands)</td>
<td>see label</td>
<td>3/14/21</td>
<td>Suppression ONLY. DO NOT apply within 14 days of grazing or harvest for forage or within 3 days of harvest of fresh beans or peas or within 21 days of harvest of dried beans or peas, seed or hay.</td>
</tr>
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<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>21 dry peas 3 green peas</td>
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<tr>
<td>PEAS (cont.)</td>
<td>Leafhopper</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (3). Days to wait to reapply (7).</td>
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<tr>
<td>PEAS (cont.)</td>
<td>Leafhopper</td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
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<td>Leafhopper</td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
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<td>PEAS (cont.)</td>
<td>Leafhopper</td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
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<tr>
<td>Spider Mite</td>
<td></td>
<td>sulfur 90%</td>
<td>2 tbsp</td>
<td>0</td>
<td>DO NOT use if temperature is above 95°F. DO NOT use within 3 weeks of oil spray.</td>
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<td>Thrips</td>
<td></td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
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<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
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<td>esfenvalerate 0.425% (Monterey)</td>
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<td>PEPPER</td>
<td>Aphids, leafminer, thrips</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7). Aphid and leafminer ONLY. Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
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<tr>
<td>PEPPER (cont.)</td>
<td>Aphids, leafminer, thrips</td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>7</td>
<td>DO NOT spray more than 6 times per season.</td>
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<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
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<td>Aphid and leafminer ONLY. Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>5</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
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<td>carbaryl (various brands) 50% (Ortho, Bonide)</td>
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<td></td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
<td>0</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
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<tr>
<td></td>
<td>European corn borer, flea beetle, tomato fruitworm, hornworm, stink bug</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
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<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
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<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
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<td></td>
<td>carbaryl (various brands)</td>
<td>see label</td>
<td>3</td>
<td>Repeat applications as needed up to a total of 7 times but not more than once every 7 days.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>7</td>
<td>DO NOT spray more than 6 times per season.</td>
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<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
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<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>5</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
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<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>Flea beetles ONLY. This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<tr>
<td></td>
<td></td>
<td>permethrin 2.5% EC (various brands)</td>
<td>2 fl oz</td>
<td>3</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>spinosad 0.5% F (Naturalyte)</td>
<td>4 Tbsp</td>
<td>1</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td>Leafhopper</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
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<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
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<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
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<td>PEPPER</td>
<td>Leafhopper</td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>7</td>
<td>DO NOT spray more than 6 times per season.</td>
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<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
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<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>5</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
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<td>imidaclorpid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
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<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<td></td>
<td>malathion 50% (Ortho)</td>
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<td>3</td>
<td>Refer to label.</td>
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<td></td>
<td>Whitefly</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
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<td></td>
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<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
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<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>7</td>
<td>Adults ONLY. DO NOT spray more than 6 times per season.</td>
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<td></td>
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<td>esfenvalerate 0.425% (Monterey)</td>
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<td>3</td>
<td>Refer to label.</td>
</tr>
<tr>
<td>POTATO, IRISH</td>
<td>Aphids</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
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<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 6 times per season.</td>
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<td></td>
<td>malathion 57% (various brands)</td>
<td>see label</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>55% (Hi-Yield)</td>
<td>1.5 tsp</td>
<td>7</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50% (Ortho, Bonide)</td>
<td>2 tsp</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>European corn borer</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
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<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
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<td></td>
<td></td>
<td>carbaryl (various brands)</td>
<td>see label</td>
<td>7</td>
<td>Repeat applications as necessary up to a total of 6 times but not more often than once every 7 days.</td>
</tr>
<tr>
<td>Commodity</td>
<td>Insect</td>
<td>Insecticide and Formulation</td>
<td>Amount of Formulation Per Gallon of Spray</td>
<td>Minimum Interval (Days) Between Last Application and Harvest</td>
<td>Precautions and Remarks</td>
</tr>
<tr>
<td>-----------</td>
<td>--------</td>
<td>-----------------------------</td>
<td>------------------------------------------</td>
<td>----------------------------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>POTATO, IRISH (cont.)</td>
<td>European corn borer</td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 6 times per season. Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Potato leafhopper, potato flea beetle, Colorado potato beetle, blister beetle, stink bug</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7). NOT labeled for blister beetles. Colorado potato beetles ONLY. Treat when small larvae are present. NOT effective against adults or large larvae.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bacillus thuringiensis var. san diego (M-Trak)</td>
<td>1.5-3 Tbsp</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>var. tennebrionus (Trident II)</td>
<td>2-4 Tbsp</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>carbaryl (various brands)</td>
<td>see label</td>
<td>7</td>
<td>Repeat applications as necessary up to a total of 6 times but not more often than once every 7 days.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 6 times per season. Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 57% (various brands)</td>
<td>see label</td>
<td>0</td>
<td>Leafhoppers and blister beetles ONLY. Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50% (Ortho, Bonide)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>phosmet 70W (Imidan)</td>
<td>follow label</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Potato tuberworm</td>
<td>Bacillus thuringiensis (DiPel) 2X</td>
<td>1 Tbsp</td>
<td>0</td>
<td></td>
<td>DO NOT spray more than 6 times per season. Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
</tr>
<tr>
<td></td>
<td>(DiPel) 4L</td>
<td>2 tsp</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PUMPKIN</td>
<td>See SQUASH and PUMPKIN.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RADISH</td>
<td>Aphids</td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 5 times per season. Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application. This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 57% (various)</td>
<td>see label</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>50% (Ortho)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### HOME GARDEN VEGETABLE INSECT CONTROL – Products for Use by the General Public

<table>
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<th>Commodity</th>
<th>Insect</th>
<th>Insecticide and Formulation</th>
<th>Amount of Formulation Per Gallon of Spray</th>
<th>Minimum Interval (Days) Between Last Application and Harvest</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RADISH</strong> (cont.)</td>
<td>Flea beetle, imported cabbageworm</td>
<td>carbaryl (various brands)</td>
<td>see label</td>
<td>7</td>
<td>Repeat applications as necessary up to a total of 6 times but not more often than once every 7 days.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 5 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>7</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>Flea beetles ONLY. This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>7</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td>Leafhopper</td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 5 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>7</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>7</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td>Thrips</td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>7</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td>Whitefly</td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>7</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>7</td>
<td>Refer to label.</td>
</tr>
<tr>
<td><strong>SPINACH</strong></td>
<td>Aphids, thrips, leafminer</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>Aphids and thrips ONLY. This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
</tbody>
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## HOME GARDEN VEGETABLE INSECT CONTROL – Products for Use by the General Public

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<th>Commodity</th>
<th>Insect</th>
<th>Insecticide and Formulation</th>
<th>Amount of Formulation Per Gallon of Spray</th>
<th>Minimum Interval (Days) Between Last Application and Harvest</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SPINACH</strong></td>
<td>Aphids, thrips, leafminer</td>
<td>malathion 57% (various brands)</td>
<td></td>
<td></td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho, Bonide)</td>
<td></td>
<td></td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 tsp</td>
<td></td>
<td>On foliage as needed.</td>
</tr>
<tr>
<td></td>
<td>Corn earworm, looper</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bacillus thuringiensis (DiPel) 2X</td>
<td>1 Tbsp</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bacillus thuringiensis (DiPel) 4L</td>
<td>2 tsp</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>7</td>
<td>Cabbage loopers ONLY. Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>spinosad 0.5% F (Naturalyte)</td>
<td>4 Tbsp</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Leafhopper</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td></td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td>Whitefly</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>Adults ONLY. DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td></td>
<td>Refer to label.</td>
</tr>
<tr>
<td><strong>SQUASH, PUMPKIN</strong></td>
<td>Aphids</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (5). Days to reapply (5).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>3</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>3</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
</tbody>
</table>
### Commodity
- **SQUASH, PUMPKIN (cont.)**

### Insect
- Aphids

### Insecticide and Formulation
- Malathion 57% (various) 50% (Ortho, Bonide) see label 1
- Soap (insecticidal, M-Pede 49 EC) 2 Tbsp 0

### Amount of Formulation Per Gallon of Spray
- Malathion 57% (various) 50% (Ortho, Bonide) see label 1 (squash) 3 (pumpkin)

### Minimum Interval (Days) Between Last Application and Harvest
- Refer to label.

### Precautions and Remarks
- Maximum applications per season (5). Days to wait to reapply (5).

### Commodity
- **Cucumber beetle (spotted and striped), flea beetle, leafhopper**

### Insect
- Acetamiprid 0.5% (Ortho Flower, Fruit & Vegetable Insect Killer)
- Bifenthrin 0.3% + Zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)
- Carbaryl (various brands) see label 3
- Cyfluthrin 0.75% (Bayer Advanced)
- Esfenvalerate 0.425% (Monterey)
- Imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)
- Malathion 57% (various brands) 50% (Ortho, Bonide) see label 1 (squash) 3 (pumpkin)

### Amount of Formulation Per Gallon of Spray
- Acetamiprid 0.5% (Ortho Flower, Fruit & Vegetable Insect Killer) 1.5 fl oz 0
- Bifenthrin 0.3% + Zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens) 1.5 fl oz 3
- Carbaryl (various brands) see label 3
- Cyfluthrin 0.75% (Bayer Advanced) 0.5 fl oz 0
- Esfenvalerate 0.425% (Monterey) 1 fl oz 3
- Imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate) 0.5 fl oz/1 qt of water/10 sq ft of row as a drench 21
- Malathion 57% (various brands) 50% (Ortho, Bonide) see label 1 (squash) 3 (pumpkin)

### Minimum Interval (Days) Between Last Application and Harvest
- Acetamiprid 0.5% (Ortho Flower, Fruit & Vegetable Insect Killer) 1.5 fl oz 0
- Bifenthrin 0.3% + Zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens) 1.5 fl oz 3
- Carbaryl (various brands) see label 3
- Cyfluthrin 0.75% (Bayer Advanced) 0.5 fl oz 0
- Esfenvalerate 0.425% (Monterey) 1 fl oz 3
- Malathion 57% (various brands) 50% (Ortho, Bonide) see label 1 (squash) 3 (pumpkin)

### Precautions and Remarks
- Maximum applications per season (5). Days to wait to reapply (5).
- Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.
- Repeat applications as needed up to a total of 6 times but not more than once every 7 days.
- DO NOT spray more than 4 times per season.
- Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.
- This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.
- Refer to label.

### Commodity
- **Pickleworm**

### Insect
- Acetamiprid 0.5% (Ortho Flower, Fruit & Vegetable Insect Killer)
- Bifenthrin 0.3% + Zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)
- Carbaryl (various brands) see label 3
- Cyfluthrin 0.75% (Bayer Advanced)
- Esfenvalerate 0.425% (Monterey)
- Malathion 57% (various brands) 50% (Ortho, Bonide) see label 1 (squash) 3 (pumpkin)
- Spinosad 0.5% F (Naturalyte)

### Amount of Formulation Per Gallon of Spray
- Acetamiprid 0.5% (Ortho Flower, Fruit & Vegetable Insect Killer) 1.5 fl oz 0
- Bifenthrin 0.3% + Zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens) 1.5 fl oz 3
- Carbaryl (various brands) see label 3
- Cyfluthrin 0.75% (Bayer Advanced) 0.5 fl oz 0
- Esfenvalerate 0.425% (Monterey) 1 fl oz 3
- Malathion 57% (various brands) 50% (Ortho, Bonide) see label 1 (squash) 3 (pumpkin)
- Spinosad 0.5% F (Naturalyte) 4 Tbsp 3

### Minimum Interval (Days) Between Last Application and Harvest
- Acetamiprid 0.5% (Ortho Flower, Fruit & Vegetable Insect Killer) 1.5 fl oz 0
- Bifenthrin 0.3% + Zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens) 1.5 fl oz 3
- Carbaryl (various brands) see label 3
- Cyfluthrin 0.75% (Bayer Advanced) 0.5 fl oz 0
- Esfenvalerate 0.425% (Monterey) 1 fl oz 3
- Malathion 57% (various brands) 50% (Ortho, Bonide) see label 1 (squash) 3 (pumpkin)
- Spinosad 0.5% F (Naturalyte) 4 Tbsp 3

### Precautions and Remarks
- Maximum applications per season (5). Days to wait to reapply (5).
- Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.
- Repeat applications as needed up to a total of 6 times but not more than once every 7 days.
- DO NOT spray more than 4 times per season.
- Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.
- Refer to label.
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<tbody>
<tr>
<td>SQUASH, PUMPKIN</td>
<td>Spider mite</td>
<td>malathion 50% (Ortho, Bonide)</td>
<td>see label</td>
<td>1 (squash)</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td>Squash bug</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>0</td>
<td>Maximum applications per season (5). Days to wait to reapply (5).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>3</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>carbaryl (various brands)</td>
<td>see label</td>
<td>3</td>
<td>Repeat applications as needed up to a total of 6 times but not more than once every 7 days. For optimum control of squash bugs, apply sufficient spray volume for thorough coverage and time sprays for early morning or late afternoon.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>3</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 57% (various brands)</td>
<td>see label</td>
<td>1 (squash)</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50% (Ortho, Bonide)</td>
<td></td>
<td>3 (pumpkin)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Squash vine borer</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>0</td>
<td>Maximum applications per season (5). Days to wait to reapply (5).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>3</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>3</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 57% (various brands)</td>
<td>see label</td>
<td>1 (squash)</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50% (Ortho, Bonide)</td>
<td></td>
<td>3 (pumpkin)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Thrips</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>0</td>
<td>Maximum applications per season (5). Days to wait to reapply (5).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection. Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 57% (various brands)</td>
<td>see label</td>
<td>1 (squash)</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50% (Ortho)</td>
<td></td>
<td>3 (pumpkin)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>WhitelFly</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>0</td>
<td>Maximum applications per season (5). Days to wait to reapply (5).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>3</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td>Commodity</td>
<td>Insect</td>
<td>Insecticide and Formulation</td>
<td>Amount of Formulation Per Gallon of Spray</td>
<td>Minimum Interval (Days) Between Last Application and Harvest</td>
<td>Precautions and Remarks</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------</td>
<td>---------------------------------------------------------------</td>
<td>------------------------------------------</td>
<td>----------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>SQUASH, PUMPKIN</td>
<td>Whitefly</td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>Adults ONLY. DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>3</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>1 (squash) 3 (pumpkin)</td>
<td>Refer to label.</td>
</tr>
<tr>
<td>SWEET POTATO</td>
<td>Wireworm</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
</tr>
<tr>
<td>TOMATO</td>
<td>Aphids</td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>1</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 6 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>1</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>5</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>lambda-cyhalothrin 0.5% (Bonide)</td>
<td>ready-to-use premix</td>
<td>5</td>
<td>Apply thoroughly as a foliar cover spray to both sides of plant leaves and all plant surfaces where insects are present. DO NOT spray more than 9 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 57% (various brands)</td>
<td>see label</td>
<td>1</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>55% (Hi-Yield)</td>
<td>1.5 tsp</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>50% (Ortho, Bonide)</td>
<td>see label</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cutworm (surface type)</td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>1</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>carbaryl (various brands)</td>
<td>see label</td>
<td>3</td>
<td>Repeat applications as needed up to a total of 7 times but not more than once every 7 days.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 6 times per season.</td>
</tr>
<tr>
<td>Commodity</td>
<td>Insect</td>
<td>Insecticide and Formulation</td>
<td>Amount of Formulation Per Gallon of Spray</td>
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<td>Precautions and Remarks</td>
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<td>---------------------------------------------</td>
<td>-----------------------------------------------------------------</td>
<td>-------------------------------------------</td>
<td>---------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>TOMATO (cont.)</td>
<td>Cutworm (surface type)</td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>1</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>5</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>lambda-cyhalothrin 0.5% (Bonide) ready-to-use premix</td>
<td></td>
<td>5</td>
<td>Apply thoroughly as a foliar cover spray to both sides of plant leaves and all plant surfaces where insects are present. DO NOT spray more than 9 times per season.</td>
</tr>
<tr>
<td></td>
<td>Flea beetle, Colorado potato beetle</td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7). Colorado potato beetles ONLY. Treat when small larvae are present. NOT effective against adults or large larvae.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bacillus thuringiensis var. san diego (M-Trak)</td>
<td>1.5-3 Tbsp</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>var. tennebrinus (Trident II)</td>
<td>2-4 Tbsp</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>1</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>carbaryl (various brands)</td>
<td>see label</td>
<td>3</td>
<td>Repeat applications as needed up to a total of 7 times but not more than once every 7 days. DO NOT spray more than 6 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application. DO NOT spray more than 9 times per growing season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>5</td>
<td>Apply when insects first appear or when damage occurs. This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>Apply thoroughly as a foliar cover spray to both sides of plant leaves and all plant surfaces where insects are present. DO NOT spray more than 9 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>lambda-cyhalothrin 0.5% (Bonide) ready-to-use premix</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>spinosad 0.5% (Naturalyte)</td>
<td>4 Tbsp</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grasshopper</td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>1</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications. Repeat applications as needed up to a total of 7 times but not more than once every 7 days. Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>carbaryl (various brands)</td>
<td>see label</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>5</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
</tr>
</tbody>
</table>
## HOME GARDEN VEGETABLE INSECT CONTROL – Products for Use by the General Public

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Insect</th>
<th>Insecticide and Formulation</th>
<th>Amount of Formulation Per Gallon of Spray</th>
<th>Minimum Interval (Days) Between Last Application and Harvest</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TOMATO (cont.)</strong></td>
<td><strong>Leafhopper</strong></td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>1</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 6 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>1</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>5</td>
<td>Apply when insects first appear or when damage occurs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>lambda-cyhalothrin 0.5% (Bonide)</td>
<td>ready-to-use premix</td>
<td>5</td>
<td>Apply thoroughly as a foliar cover spray to both sides of plant leaves and all plant surfaces where insects are present. DO NOT spray more than 9 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>1</td>
<td>Refer to label.</td>
</tr>
<tr>
<td><strong>Leafminer</strong></td>
<td></td>
<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>1</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 6 times per season.</td>
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<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>1</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping.</td>
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<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>5</td>
<td>Apply when insects first appear or when damage occurs.</td>
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<td>ready-to-use premix</td>
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<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>1</td>
<td>Refer to label.</td>
</tr>
<tr>
<td><strong>Spider mite</strong></td>
<td></td>
<td>malathion 57% (various brands)</td>
<td>see label</td>
<td>1</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>55% (Hi-Yield)</td>
<td>1.5 tsp</td>
<td>7</td>
<td>On foliage as needed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50% (Ortho, Bonide)</td>
<td>see label</td>
<td>1</td>
<td>DO NOT use if temperature is above 95°F.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
<td>0</td>
<td>DO NOT use within 3 weeks of oil spray.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sulfur 90%</td>
<td>2 Tbsp</td>
<td>0</td>
<td>DO NOT use if temperature is above 95°F.</td>
</tr>
</tbody>
</table>
### Commodity Insecticide and Formulation

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Insect</th>
<th>Amount of Formulation Per Gallon of Spray</th>
<th>Minimum Interval (Days) Between Last Application and Harvest</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TOMATO</strong> (cont.)</td>
<td>Stink bug acetamiprid (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>1</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 6 times per season.</td>
</tr>
<tr>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>1</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>5</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin 0.5% (Bonide)</td>
<td>ready-to-use premix</td>
<td>5</td>
<td>Apply thoroughly as a foliar cover spray to both sides of plant leaves and all plant surfaces where insects are present. DO NOT spray more than 9 times per season.</td>
</tr>
<tr>
<td></td>
<td>permethrin 2.5% EC (various brands)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>DO NOT apply on cherry tomatoes or varieties less than 1 inch in diameter.</td>
</tr>
<tr>
<td></td>
<td>Thrips acetamiprid (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 6 times per season.</td>
</tr>
<tr>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>1</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tomato fruitworm, cabbage looper, tomato hornworm acetamiprid (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
</tr>
<tr>
<td></td>
<td>Bacillus thuringiensis (DiPel) 2X (DiPel) 4L (Javelin) WG (Biobit) FC</td>
<td>1 Tbsp</td>
<td>0</td>
<td>Treat weekly, if necessary. Begin when fruits are 0.5 inch in diameter. Fruitworms are most serious after August 1. DO NOT tank mix B.t. formulations with Dyrene.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>1</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td>carbaryl (various brands)</td>
<td>see label</td>
<td>3</td>
<td>Repeat applications as needed up to a total of 7 times but not more than once every 7 days.</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 6 times per season.</td>
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</tbody>
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# HOME GARDEN VEGETABLE INSECT CONTROL – Products for Use by the General Public

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<tr>
<th>Commodity</th>
<th>Insect</th>
<th>Insecticide and Formulation</th>
<th>Amount of Formulation Per Gallon of Spray</th>
<th>Minimum Interval (Days) Between Last Application and Harvest</th>
<th>Precautions and Remarks</th>
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<tbody>
<tr>
<td>TOMATO (cont.)</td>
<td>Tomato fruitworm, cabbage looper, tomato hornworm</td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>1</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>1.5 fl oz</td>
<td>5</td>
<td>Apply when insects first appear or when damage occurs. DO NOT apply more than 9 times per growing season.</td>
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<tr>
<td></td>
<td></td>
<td>lambda-cyhalothrin 0.5% (Bonide)</td>
<td>ready-to-use premix</td>
<td>5</td>
<td>Apply thoroughly as a foliar cover spray to both sides of plant leaves and all plant surfaces where insects are present. DO NOT spray more than 9 times per season.</td>
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<td></td>
<td></td>
<td>permethrin 2.5% EC (various brands)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>DO NOT apply on cherry tomatoes or varieties less than 1 inch in diameter.</td>
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<tr>
<td></td>
<td></td>
<td>spinosad 0.5% F (Naturalyte)</td>
<td>4 Tbsp</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Whitefly</td>
<td>acetamiprid (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (4). Days to wait to reapply (7).</td>
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<tr>
<td></td>
<td></td>
<td>Beauveria bassiana (Mycotrol WP)</td>
<td>1/4 lb/20 gal water</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>1</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
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<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>Adults ONLY. DO NOT spray more than 6 times per season.</td>
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<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
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<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<td></td>
<td>lambda-cyhalothrin 0.5% (Bonide)</td>
<td>ready-to-use premix</td>
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<td>Apply thoroughly as a foliar cover spray to both sides of plant leaves and all plant surfaces where insects are present. DO NOT spray more than 9 times per season.</td>
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<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>1</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>pyrethrum products</td>
<td>follow label</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>TURNIP, TURNIP GREENS</td>
<td>Aphids, flea beetle</td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
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<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
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<tr>
<td></td>
<td></td>
<td>malathion 57% (various brands)</td>
<td>see label</td>
<td>1</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50% (Ortho, Bonide)</td>
<td></td>
<td>7</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
<td>0</td>
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<tr>
<td>TURNIP, TURNIP GREENS (cont.)</td>
<td>Cabbage looper, diamondback moth, imported cabbageworm</td>
<td><em>Bacillus thuringiensis</em> (DiPel) 2X (Javelin) WG</td>
<td>1 Tbsp 2 tsp</td>
<td>0</td>
<td>On foliage as needed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz 0</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 57% (various brands) 50% (Ortho)</td>
<td>see label 1</td>
<td>7</td>
<td>NOT for diamondback moth. Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>spinosad 0.5% F (Naturalyte) 4 Tbsp</td>
<td>1</td>
<td>On foliage as needed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Harlequin bug</td>
<td>carbaryl (various brands)</td>
<td>0.5-1.0 qt/acre 14</td>
<td>Repeat applications as needed up to a total of 4 times but not more than once every 7 days.</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz 0</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
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<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label 7</td>
<td>Refer to label.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Leafhopper</td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz 0</td>
<td>DO NOT spray more than 4 times per season.</td>
<td></td>
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<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench 21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
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<td>malathion 50% (Ortho)</td>
<td>see label 7</td>
<td>Refer to label.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Thrips</td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz 0</td>
<td>DO NOT spray more than 4 times per season.</td>
<td></td>
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<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
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<td>malathion 50% (Ortho)</td>
<td>see label 7</td>
<td>Refer to label.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vegetable weevil</td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz 0</td>
<td>Adults ONLY. DO NOT spray more than 4 times per season.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Whitefly</td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz 0</td>
<td>Adults ONLY. DO NOT spray more than 4 times per season.</td>
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<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
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<td>malathion 50% (Ortho)</td>
<td>see label 7</td>
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</tr>
<tr>
<td>WATERMELON</td>
<td>Aphids</td>
<td>acetamiprid (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz 0</td>
<td>Maximum applications per season (5). Days to wait to reapply (5).</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz 3</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
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<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz 0</td>
<td>DO NOT spray more than 4 times per season.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz 3</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
<td></td>
</tr>
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<td>Commodity</td>
<td>Insect</td>
<td>Insecticide and Formulation</td>
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<td></td>
<td></td>
<td>malathion 57% (various brands)</td>
<td>see label</td>
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<td>Refer to label.</td>
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<td></td>
<td></td>
<td>50% (Ortho, Bonide)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
<td>0</td>
<td>On foliage as needed.</td>
</tr>
<tr>
<td></td>
<td>Cucumber beetle (spotted and striped)</td>
<td>acetamiprid (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
<td>7</td>
<td>Maximum applications per season (5). Days to wait to reapply (5).</td>
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<tr>
<td></td>
<td></td>
<td>bifenthrin 0.3% + zeta-cypermethrin 0.075% (Ortho Bug-G-Gon Insect Killer for Lawns and Gardens)</td>
<td>1.5 fl oz</td>
<td>3</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
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<tr>
<td></td>
<td></td>
<td>carbaryl (various brands)</td>
<td>see label</td>
<td>3</td>
<td>Repeat applications as needed up to a total of 6 times but not more than once every 7 days.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>3</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
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<td>Leafhopper</td>
<td>acetamiprid (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
<td>1.5 fl oz</td>
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<td>Maximum applications per season (5). Days to wait to reapply (5).</td>
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<td>Spider mite</td>
<td>malathion 50% (Ortho, Bonide)</td>
<td>see label</td>
<td>1</td>
<td>Refer to label.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>soap (insecticidal, M-Pede 49 EC)</td>
<td>2 Tbsp</td>
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<td>0</td>
<td>Maximum applications per season (5). Days to wait to reapply (5).</td>
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<td></td>
<td></td>
<td>carbaryl (various brands)</td>
<td>see label</td>
<td>3</td>
<td>Repeat applications as needed up to a total of 6 times but not more than once every 7 days.</td>
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<td><strong>Whitefly</strong></td>
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<td>acetamiprid 0.5% (Ortho Flower, Fruit &amp; Vegetable Insect Killer)</td>
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<td>0</td>
<td>Maximum applications per season (5). Days to wait to reapply (5).</td>
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<td>1.5 fl oz</td>
<td>3</td>
<td>Apply when insects first appear. Reapply as necessary to maintain control waiting at least 7 days between applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>0.5 fl oz</td>
<td>0</td>
<td>Adults ONLY. DO NOT spray more than 4 times per season.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>esfenvalerate 0.425% (Monterey)</td>
<td>1 fl oz</td>
<td>3</td>
<td>Spray plants to wet upper and lower leaf surfaces until dripping. Apply as necessary to maintain control waiting at least 7 days between each application.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>imidacloprid 0.235% (Bayer Advanced Fruit, Citrus and Vegetable Insect Control Concentrate)</td>
<td>0.5 fl oz/1 qt of water/10 sq ft of row as a drench</td>
<td>21</td>
<td>This systemic insecticide dissolved in water moves down through the soil, where it is absorbed by the roots. Once absorbed, it moves up through the plant providing insect protection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>malathion 50% (Ortho)</td>
<td>see label</td>
<td>1</td>
<td>Refer to label.</td>
</tr>
</tbody>
</table>

### WITHIN GARDEN TREATMENT (See labels for specific crops)

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide and Formulation</th>
<th>Mound-to-mound treatment rate</th>
<th>Broadcast rate</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red imported fire ant</td>
<td>S-methoprene (Extinguish)</td>
<td>3-5 Tbsp/mound</td>
<td>1.0-1.5 lb/acre</td>
<td>This product is an insect growth regulator (IGR).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2-4 Tbsp/mound</td>
<td>1.5-2.0 lb/acre</td>
<td>This product is an insect growth regulator (IGR).</td>
</tr>
<tr>
<td></td>
<td>pyriproxyfen (Esteem)</td>
<td></td>
<td></td>
<td>See label for specific rate and application instructions. Conserve Fire Ant Bait is OMRI listed for organic production.</td>
</tr>
<tr>
<td></td>
<td>spinosad (Conserve Fire Ant Bait, Ferti-lome Come and Get It Fire Ant Killer)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Insect Control in Recreation Areas

#### Repellents for: Mosquitoes, Biting Flies, Gnats, Chiggers and Ticks

<table>
<thead>
<tr>
<th>Insect</th>
<th>Repellent</th>
<th>Rate</th>
<th>Application</th>
<th>Comments/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DEET or N, N-Diethyl-meta-toluamide</td>
<td>---</td>
<td>Hand Application: Protect skin by applying a few drops on the palm and rubbing onto exposed skin.</td>
<td>Wash hands after applying. Keep out of eyes and mouth. Higher concentrations provide longer protection, but complete coverage is required.</td>
</tr>
<tr>
<td></td>
<td>DEET or N, N-Diethyl-meta-toluamide</td>
<td>---</td>
<td>Aerosol Application: Hold 6-8 inches from skin or clothing and apply with a slow sweeping motion. Rub gently to spread over skin evenly. Also spray on clothing.</td>
<td>DEET may damage watch crystals or other plastic materials. Children should use 30% concentrations or less. Product should be applied by parents. Apply to parent's hand and then spread onto child's skin. Approved for use on children over 2 months of age.</td>
</tr>
<tr>
<td></td>
<td>IR3535 (Amino acid based)</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>oil of lemon eucalyptus</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>picarid</td>
<td>---</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin (many brands and formulations)</td>
<td>---</td>
<td>To be used clothing only.</td>
<td>Good choice when exposed to DEET for children over 3 years old.</td>
</tr>
</tbody>
</table>

#### Insecticides

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Rate</th>
<th>Application</th>
<th>Comments/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ants</td>
<td>alpha cypermethrin (Fendona CS)</td>
<td>see label</td>
<td>Apply as directed on label.</td>
<td>Treating mounds and surrounding area or apply broadcast.</td>
</tr>
<tr>
<td></td>
<td>carbaryl (various brands)</td>
<td>see label</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>pyrethroids (Advanced Garden, DeltaGard, Scimitar, Talstar, Tempo)</td>
<td>see label</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ants (Red Imported Fire)</td>
<td>abamectin B1 0.011% (Award II)</td>
<td>0.33 lb in 26.6 gal water</td>
<td>Mound drench only</td>
<td></td>
</tr>
<tr>
<td></td>
<td>acephate 75% (Orthene T, T&amp;O WSP)</td>
<td>0.33 lb in 26.6 gal water</td>
<td>Mound drench only</td>
<td></td>
</tr>
<tr>
<td></td>
<td>acetamiprid + bifenthrin 22.73% + 27.27% (Transport)</td>
<td>0.33 lb in 26.6 gal water</td>
<td>Mound drench only</td>
<td></td>
</tr>
<tr>
<td></td>
<td>acephate 75% (Orthene T, T&amp;O WSP)</td>
<td>0.33 lb in 26.6 gal water</td>
<td>Mound drench only</td>
<td></td>
</tr>
<tr>
<td></td>
<td>fipronil 0.0143% granular insecticide (Quali-Pro Fipronil, Top Choice)</td>
<td>2 lb/1,000 sq ft or 87 lb/acre</td>
<td>Broadcast only</td>
<td></td>
</tr>
<tr>
<td></td>
<td>fipronil 0.0143% granular insecticide (Quali-Pro Fipronil, Top Choice)</td>
<td>2 lb/1,000 sq ft or 87 lb/acre</td>
<td>Broadcast only</td>
<td></td>
</tr>
<tr>
<td></td>
<td>hydramethylnon (Amdro, Amdro Pro, Combat Fire Ant Bait, Maxforce)</td>
<td>2-5 Tbsp/mound 1.0-1.5 lb/acre</td>
<td>Mound-to-mound treatment rate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>indoxacarb 0.045% (Advion)</td>
<td>1.0-1.5 lb/acre</td>
<td>Broadcast rate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>metaflumizone 0.063% (Siesta Fire Ant Bait)</td>
<td>1.0-1.5 lb/acre</td>
<td>Broadcast rate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>metaflumizone 0.063% (Siesta Fire Ant Bait)</td>
<td>1.0-1.5 lb/acre</td>
<td>Broadcast rate</td>
<td></td>
</tr>
</tbody>
</table>

*Apply all bait products when ants are active and soil temperature is above 60 degrees F. DO NOT treat if rain is anticipated within 6 hours.*

For use on home lawns, golf courses, commercial and recreational turf, and sod farms. One application per year. **Restricted Use Pesticide.**
### Insect Control in Recreation Areas

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Rate</th>
<th>Application</th>
<th>Comments/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ants (Red Imported Fire)</strong>&lt;br&gt; (cont.)</td>
<td><strong>Apply all bait products when ants are active and soil temperature is above 60 degrees F. DO NOT treat if rain is anticipated within 6 hours.</strong>&lt;br&gt;pyrethroids (various brands)&lt;br&gt;bifenthrin (Talstar)&lt;br&gt;cyfluthrin (Tempo)&lt;br&gt;deltamethrin (DeltaGard)&lt;br&gt;lambda-cyhalothrin (Scimitar CS, GC)&lt;br&gt;permethrin (various brands)</td>
<td>see label</td>
<td><strong>This is an insect growth regulator (IGR).</strong>&lt;br&gt;pyriproxyfen (Distance, Esteem) 1-4 Tbsp/mound 1.0-1.5 lb/acre</td>
<td>Mound-to-mound treatment rate</td>
</tr>
<tr>
<td></td>
<td>S-methoprene (Extinguish) 3-5 Tbsp/mound 1.0-1.5 lb/acre</td>
<td>Broadcast rate</td>
<td>This is an IGR.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>S-methoprene + hydramethylnon (Extinguish Plus) 3-5 Tbsp/mound 1.0-1.5 lb/acre</td>
<td>Broadcast rate</td>
<td>This is an IGR plus a toxicant.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>spinosad 0.015%&lt;br&gt;(Conserve Fire Ant Bait/OMRI Listed, Ferti-lome Come and Get It Fire Ant Killer) 4-6 Tbsp/mound 2.5-5.0 lb/acre</td>
<td></td>
<td>Mound-to-mound treatment rate</td>
<td>Broadcast rate</td>
</tr>
<tr>
<td><strong>Eye Gnats</strong></td>
<td>tetramethrin 0.2% and phenothrin 0.2% (Cutter Backyard Bug Control Outdoor Fogger)</td>
<td>--</td>
<td>see label</td>
<td>Air movement from electric fans will give protection in a limited area. Commercial repellents are not very satisfactory. However, devices like the Thermocell Mosquito Repellent or the Off Power Pad Lamp may provide localized relief. NOT suitable control for indoor use. Fogging and space sprays give temporary relief to limited areas (patio, porch, etc.). Mosquito adulticides will provide temporary relief.</td>
</tr>
<tr>
<td></td>
<td>prallethrin 0.04% and cyfluthrin 0.03% (OFF! Outdoor Fogger Backyard Pretreat)</td>
<td>--</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>tetramethrin 0.15%, deltamethrin 0.15%, piperonyl butoxide 0.75% (Bonide Mosquito Beater Yard Fog)</td>
<td>--</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td><strong>Midge</strong></td>
<td>temephos (5% Skeeter Abate)</td>
<td>2-10 lb/acre</td>
<td>For control of mosquito and midge larvae, apply uniformly by conventional air or ground equipment. Application of this product by Belly-Grinder is prohibited. For use in wastewater treatment facilities. Uniformly apply at the influent side over a 24-hour period. Apply to natural and manmade aquatic habitats. High rate recommended for wastewater.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>methoprene 20% EC (Strike) 4-5 oz/1 million gal wastewater</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.25% pellet (Strike)</td>
<td>---</td>
<td>5-10 lb/acre</td>
<td></td>
</tr>
<tr>
<td></td>
<td>spinosad 2.5% G (Natular XRG) ready to use</td>
<td>5-20 lb</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Insect Control in Recreation Areas

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Rate</th>
<th>Application</th>
<th>Comments/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ticks and Chiggers</td>
<td>acetamiprid + bifenthrin 22.73% + 27.27% (Transport)</td>
<td></td>
<td>Apply 0.11% concentration of active ingredient to cover 1,000 sq ft.</td>
<td>DO NOT apply more than 0.11% finished dilution per 1,000 square feet. Apply outdoors as an exterior perimeter treatment around structures.</td>
</tr>
<tr>
<td></td>
<td>alpha cypermethrin (Fendona CS)</td>
<td></td>
<td>Apply as directed on label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (Tempo)</td>
<td>6-12 fl oz/acre</td>
<td>Use high rate for chiggers. Apply when pests first appear. Reapply as needed based on pest reinfestation. DO NOT treat more than 6 times per year. Keep children and pets off treated areas until lawn has dried.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SC Ultra 11.8% Ultra WP</td>
<td>7.7-15.4 oz/acre</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Talstar) EZ Granular Insecticide 0.2%</td>
<td>100-200 lb/acre</td>
<td>Ready to use</td>
<td>DO NOT make spot applications. Treat the entire area where exposure to ticks may occur. DO NOT allow public use of treated areas during application.</td>
</tr>
<tr>
<td></td>
<td>P Professional Insecticide 7.9%</td>
<td>0.5-1.0 fl oz/1,000 sq ft</td>
<td>Broadcast treatment rate</td>
<td>DO NOT make spot applications. Treat the entire area where exposure to ticks may occur. Use application volumes of up to 10 gal/1,000 sq ft to get uniform coverage when treating dense grass foliage. Limit repeat application to no more than once every 7 days.</td>
</tr>
<tr>
<td></td>
<td>carbaryl (Sevin) 80 WSP SL</td>
<td>2.5 to 5 lb/acre</td>
<td>Repeat applications as necessary up to a total of 4 times per year but not more often than once every 7 days.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>deltamethrin (Suspend 0.42 SC)</td>
<td>17.5-26.0 fl oz/acre</td>
<td>Apply when pests become evident. Apply as a broadcast spray in a minimum of 2 gal of water/1,000 sq ft.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>imidacloprid-cyfluthrin (Temprid) 0.075% - 0.15% fl oz/gal water</td>
<td>43 gal/Acre</td>
<td>Apply at rate not to cause drip/run-off from site.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>rosemary oil, Geraniol, Winter-green (Essentria IC3)</td>
<td>1 to 8 ounces of Essentria IC3 per gallon of water</td>
<td>2 gallons per 1,000 square feet.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>tetrachlorvinphos (Rabon 50% WP)</td>
<td>0.5 lb/6 gal water</td>
<td>Apply as a spot treatment using a low pressure handwand sprayer only. Apply along woody borders of kennels, yards, campgrounds, recreational parks, footpaths, and roadways leading to such areas.</td>
<td></td>
</tr>
<tr>
<td>Insect</td>
<td>Insecticide</td>
<td>Mixing Instructions and Application Equipment</td>
<td>Application Rate @ 10 mph</td>
<td>Droplet Size Requirements on Label (μm)</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------------------------------------</td>
<td>------------------------------------------------</td>
<td>---------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>Mosquitoes, Adults</td>
<td>alpha cypermethrin (Fendona CS)</td>
<td>0.33-1.0 fl oz/gal water in backpack or hydraulic sprayer</td>
<td>Varies with dilution</td>
<td>VMD-7-30 um</td>
</tr>
<tr>
<td></td>
<td>bifenthrin 7.9L (Bifen l/T)</td>
<td>0.33-1.0 fl oz/gal water in backpack or hydraulic sprayer</td>
<td></td>
<td>Dv 0.9 &lt; 50 μm</td>
</tr>
<tr>
<td></td>
<td>deltamethrin (Suspend Polyzone)</td>
<td>0.33 to 1.0 fl oz/gal water in backpack or hydraulic sprayer</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>etofenprox (Zenivex E20)</td>
<td>Apply undiluted or up to 1:4.5 dilution</td>
<td></td>
<td>VMD &lt; 30 μm</td>
</tr>
<tr>
<td></td>
<td>garlic oil 0.04% (Terminix ALLCLEAR ATSB Mosquito Bait Concentrate)</td>
<td>Thoroughly mix 1 part concentrate in 3 parts water and apply with ground-based spray equipment such as motorized portable, pump-up, backpack, handheld, vehicle-mounted and other ground-based spray equipment capable of medium to heavy spray droplets.</td>
<td></td>
<td>Dv 0.9 &lt; 50 μm</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (Cyonara 9.7, Demand CS, Cysmic CS)</td>
<td>0.8 fl oz/gal. water in backpack or hydraulic sprayer</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>malathion 96.5% concentrate (Fyfanon ULV)</td>
<td>Use undiluted with aerosol ULV sprayer.</td>
<td>2.0-4.3 fl oz/min</td>
<td>VMD &lt; 30 μm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dilute 3.9-5.2 gal to 100 gal with No. 2 fuel or diesel oil; use in thermal fog sprayer.</td>
<td></td>
<td>Dv 0.9 &lt; 50 μm</td>
</tr>
<tr>
<td></td>
<td>naled 87.4% concentrate (Dibrom)</td>
<td>10 fl oz to 10 gal No. 2 fuel or diesel oil; use in thermal fog sprayer.</td>
<td>80 gal/hr</td>
<td>VMD &lt; 40 μm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dilute 0.5 gal to 5 gal with soybean oil or HAN; use in ULV sprayer.</td>
<td>6-12 fl oz/min</td>
<td>VMD &lt; 40 μm</td>
</tr>
<tr>
<td></td>
<td>permethrin 10%-57% concentrate (Permanone) 10% EC</td>
<td>Apply undiluted or mix with refined mineral or soybean oil.</td>
<td>0.31-15.0 oz/min depending on dilution</td>
<td>VMD = 150 to 300 μm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dilute 1:20 with water (6.5 fl oz/1 gal water).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin (20%) and piperonyl butoxide (20%) (Aqua-Reslin)</td>
<td>Dilute 1 gal with 2-12 gal water.</td>
<td>2.1-9.0 oz/min depending on dilution</td>
<td>VMD &lt; 30 μm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dv 0.9 &lt; 50 μm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin and piperonyl butoxide (Permanone 31-66, Biomist 4+12 ULV)</td>
<td>Dilute 1 to 2.4 gal with lightweight oil; use in ULV sprayer.</td>
<td>0.5-3.0 fl oz/min</td>
<td>VMD &lt; 30 μm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dv 0.9 &lt; 50 μm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Insect Control in Recreation Areas

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Mixing Instructions and Application Equipment</th>
<th>Application Rate @ 10 mph</th>
<th>Droplet Size Requirements on Label (μm)</th>
<th>Comments/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mosquitoes, Adults (Ground application)</strong> (cont.)</td>
<td>prallethrin (1%) and sumithrin (5%) and piperonyl butoxide (5%) (Duet)</td>
<td>Apply diluted with aerosol ULV sprayer.</td>
<td>2.5-7.5 oz/min</td>
<td>VMD = 8 to 30 μm Dv 0.9 &lt; 50 μm</td>
<td>DO NOT allow drift onto pastureland, rangeland or potable water supplies.</td>
</tr>
<tr>
<td></td>
<td>pyrethrins (5%) and piperonyl butoxide (25%) (Aquahalt)</td>
<td>Apply undiluted or diluted with water and applied as an ultra low volume (ULV)</td>
<td>0.27 to 0.76 oz/ac</td>
<td>VMD &lt; 30 μm Dv 0.9 &lt; 50 μm</td>
<td>Do not apply more than 0.2 pounds of pyrethrins/acre/year or 1.0 pound PBO/acre/year in any treated area</td>
</tr>
<tr>
<td></td>
<td>sumithrin and piperonyl butoxide (Anvil 10+10 ULV or 2+2 ULV)</td>
<td>Use undiluted or dilute 10+10 formulation with light mineral oil.</td>
<td>1.3-18.6 oz/min</td>
<td>VMD &lt; 30 μm Dv 0.9 &lt; 50 μm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>malathion 96.5% concentrate (Fyfanon ULV)</td>
<td>Use undiluted.</td>
<td>2.6-3.0 fl oz/acre</td>
<td>VMD &lt; 60 μm Dv 0.9 &lt; 50 μm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>naled 87.4% concentrate (Dibrom)</td>
<td>Use undiluted.</td>
<td>0.5-1.0 fl oz/acre</td>
<td>VMD &lt; 60 μm Dv 0.9 &lt; 115 μm</td>
<td>Toxic to fish, aquatic invertebrates, and wildlife. Do not directly apply to water or to areas where runoff into water is likely to occur. Do not retreat a site more than three times in any one week except in emergencies.</td>
</tr>
<tr>
<td></td>
<td>permethrin (20%) and piperonyl butoxide (20%) (Aqua-Reslin)</td>
<td>Dilute 50-100 fl oz to 100 gal with No. 2 fuel oil or diesel oil</td>
<td>1 gal/acre</td>
<td>VMD = 60 μm Dv 0.9 &lt; 115 μm</td>
<td>Dilute with water only. Toxic to fish and aquatic invertebrates.</td>
</tr>
<tr>
<td></td>
<td>prallethrin (1%) and sumithrin (5%) and piperonyl butoxide (5%) (Duet)</td>
<td>Apply diluted with aerosol ULV sprayer.</td>
<td>0.41-1.24 oz/acre</td>
<td>VMD &lt; 60 μm Dv 0.9 &lt; 100 μm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pyrethrins (5%) and piperonyl butoxide (25%) (Aquahalt Water-Based Adulticide)</td>
<td>Apply undiluted or diluted with water and applied as an ultra low volume (ULV).</td>
<td>0.28-0.76 fl oz/acre</td>
<td>VMD &lt; 60 μm Dv 0.9 &lt; 100 μm</td>
<td>DO NOT treat a site with more than 0.0025 lb ai/acre per day. Do NOT apply more than 0.0625 lb ai/acre per year.</td>
</tr>
<tr>
<td></td>
<td>sumithrin (10%) and piperonyl butoxide (10%) (Anvil 10+10 ULV)</td>
<td>Use undiluted or dilute with light mineral oil if dilution is preferred.</td>
<td>0.21-0.62 fl oz/acre</td>
<td>VMD &lt; 60 μm Dv 0.9 &lt; 115 μm</td>
<td>Application should be made at 75 to 300 feet for rotary aircraft and 100 to 300 feet for fixed-wing aircraft.</td>
</tr>
</tbody>
</table>

**KEY:**
- Dv 0.9 = 90% of the spray volume droplets are smaller than value given
- VMD = Volume Median Diameter
- μm = micrometer

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**RECREATION AREAS**
## INSECT CONTROL IN RECREATION AREAS

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide</th>
<th>Mixing Instructions and Application Equipment</th>
<th>Application Rate Per Acre</th>
<th>Comments/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mosquitoes Immatures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Bacillus sphaericus</em> (Vectolex)</td>
<td>ready to use ground (5-10 gal water/acre)</td>
<td>5-20 lb</td>
<td>Only effective against larvae. Apply uniformly by aerial or conventional ground equipment. Reapply as needed after 1-4 weeks. Use higher rates in areas where extended residual control is necessary or in habitats having deep water or dense surface cover.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ready to use aerial (0.5-10 gal water/acre)</td>
<td>0.5-1.5 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Bacillus thuringiensis</em>, var. <em>israelensis</em> (Bactimos, Teknar, Vectobac)</td>
<td>ready to use</td>
<td>1 pouch/50 sq ft</td>
<td></td>
</tr>
<tr>
<td>Mosquitoes Immatures</td>
<td></td>
<td>Dilute with sufficient water to obtain uniform coverage.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Bacillus thuringiensis</em>, var. <em>israelensis</em> (Bactimos) briquettes 10%</td>
<td>ready to use</td>
<td>---</td>
<td>Use one briquette per 100 sq ft of surface area regardless of depth.</td>
</tr>
<tr>
<td></td>
<td><em>Bacillus thuringiensis</em>, var. <em>israelensis</em> (Bactimos, Teknar, Vectobac) granules 0.2% pellets 0.4%</td>
<td>ready to use</td>
<td>---</td>
<td>Apply 4-10 lb per acre with aircraft or ground equipment.</td>
</tr>
<tr>
<td></td>
<td>methoprene 20% EC (Altosid)</td>
<td>3-4 fl oz/gal water</td>
<td>1 gal</td>
<td>Apply when larvae are in 3rd and 4th instar. Methoprene will not kill pupae or adults.</td>
</tr>
<tr>
<td></td>
<td>methoprene (Altosid) briquette 2.1%, 8.6% (Altosid) pellet 4.2% (Altosid) granule 0.27%, 1.5%</td>
<td>ready to use</td>
<td>---</td>
<td>Water less than 2 ft; 1 briquette per 100 sq ft deeper or flowing water; 1 briquette per 10 cu ft, 2.5- to 10-lb pellet per acre; use high rate in breeding sites with high organic content.</td>
</tr>
<tr>
<td></td>
<td>monomolecular surface film (Agnique MMF)</td>
<td>---</td>
<td>0.2-0.5 gal</td>
<td>Use in conjunction with indicator oil to avoid overtreatment. Can be used for semipermanent or permanent fresh water sources (including potable and irrigation).</td>
</tr>
<tr>
<td></td>
<td>proprietary mosquito control oils (GB-1111, etc.)</td>
<td>---</td>
<td>1-5 gal</td>
<td>Dosage depends on amount of flotage and vegetation in water.</td>
</tr>
<tr>
<td></td>
<td>spinosad 2.5% G (Natular XRG)</td>
<td>ready to use</td>
<td>5-20 lb</td>
<td>For control of mosquito and midge larvae, apply uniformly by conventional air or ground equipment. Application of this product by Belly-Grinder is prohibited.</td>
</tr>
<tr>
<td></td>
<td>temephos (5% Skeeter Abate)</td>
<td>ready to use</td>
<td>2-10 lb/acre</td>
<td></td>
</tr>
</tbody>
</table>
### MOSQUITO CONTROL BY COMMERCIAL AND GOVERNMENT AGENCIES

<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide Active Ingredient</th>
<th>Trade Name</th>
<th>Application Flow Rate (fl oz/min)</th>
<th>Application Speed (MPH)</th>
<th>Comments/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mosquitoes, Adults (ULV and Low Volume Sprays by Ground Application)</td>
<td>chlorpyrifos</td>
<td>Mosquitomist One ULV</td>
<td>3.9-7.8</td>
<td>10</td>
<td>Non-corrosive, quick knockdown, low odor and low mammalian toxicity. 100-foot water set back. Breaks down quickly.</td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos + permethrin</td>
<td>ULV mosquito Master 412</td>
<td>2.3-12.9</td>
<td>5-15</td>
<td>A choice where insecticide resistance is a serious concern.</td>
</tr>
<tr>
<td></td>
<td>deltamethrin</td>
<td>DeltaGard</td>
<td>1.0-60.9</td>
<td>5-20</td>
<td>NO piperonyl butoxide (pbo) in formulation, Type II pyrethroid.</td>
</tr>
<tr>
<td></td>
<td>etofenprox</td>
<td>Aqualuer 20-20</td>
<td>1.6-6.2</td>
<td>10-20</td>
<td>Can be diluted with water.</td>
</tr>
<tr>
<td></td>
<td>malathion</td>
<td>Fyfanon ULV</td>
<td>1.0-8.6</td>
<td>5-20</td>
<td>Newer product that may be helpful if resistance is a concern.</td>
</tr>
<tr>
<td></td>
<td>naled</td>
<td>Dibrom Concentrate</td>
<td>0.6-1.8</td>
<td>5-15</td>
<td>Best choice for salt-marsh mosquitoes, very safe environmentally, no water set back. However, highly corrosive to all equipment.</td>
</tr>
<tr>
<td></td>
<td>permethrin/pbo</td>
<td>Aqua Perm-X UL 30-30</td>
<td>0.5-21.5</td>
<td>10-20</td>
<td>Widely used and highly effective. Maintain dose in the 0.0035 lb/acre range. Some resistance along Gulf Coast. 100 foot water set back.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aqua-Reslin</td>
<td>0.7-35.4</td>
<td>10-20</td>
<td>Can be diluted with water or oil.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Biomist 3+15</td>
<td>1.5-27</td>
<td>5-15</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Biomist 4+4</td>
<td>4.5-18</td>
<td>5-15</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Biomist 30+30</td>
<td>1-6</td>
<td>5-15</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Biomist 31+66</td>
<td>1-6</td>
<td>5-15</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environ</td>
<td>0.5-25.8</td>
<td>10-20</td>
<td>Can be diluted with water or oil.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environ RTU</td>
<td>2.4-16.5</td>
<td>10</td>
<td>Pre-mixed, water diluted, ready-to-use formulation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Evolver 31-66 ULV</td>
<td>see label</td>
<td>see label</td>
<td>Application equipment must be tested at least annually to confirm that pressure at the nozzle and nozzle flow rates(s) are properly calibrated.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aqua-Kontrol Concentrate</td>
<td>2.0-15.5</td>
<td>5-20</td>
<td>May be diluted with water.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aqua-Kontrol 30-30</td>
<td>0.46-25.8</td>
<td>10-20</td>
<td>May be diluted with water.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kontrol 4-4</td>
<td>4-16</td>
<td>5-20</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kontrol 30-30</td>
<td>0.27-64.3</td>
<td>5-20</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Permanone – Ready-to-use</td>
<td>6-18</td>
<td>5-15</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Permanone 30-30</td>
<td>0.5-2</td>
<td>5-20</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Permanone 31-66</td>
<td>0.5-15</td>
<td>5-20</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perm-X UL 4-4</td>
<td>1.4-105</td>
<td>5-20</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perm-X UL 30-30</td>
<td>0.3-38.2</td>
<td>5-20</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perm-X UL 31-66</td>
<td>0.2-33.6</td>
<td>5-20</td>
<td></td>
</tr>
<tr>
<td></td>
<td>sumithrin/pbo</td>
<td>Anvil 2+2 ULV</td>
<td>3.1-37.2</td>
<td>5-20</td>
<td>NO water set back; good for truck applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anvil 10+10 ULV</td>
<td>0.6-7.6</td>
<td>5-20</td>
<td></td>
</tr>
<tr>
<td></td>
<td>prallethrin/sumithrin/pbo</td>
<td>AquaDUET Water Based</td>
<td>2.5-7.5</td>
<td>5-20</td>
<td>Combines two active ingredients + pbo, causes benign agitation, may have uses against Asian tiger mosquito.</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide Active Ingredient</th>
<th>Trade Name</th>
<th>Application Flow Rate (fl oz/min)</th>
<th>Application Speed (MPH)</th>
<th>Comments/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mosquito Adults</td>
<td>chlorpyrifos</td>
<td>Mosquitomist One ULV</td>
<td>9.6</td>
<td>5</td>
<td>Non-corrosive, quick knockdown, low odor and low mammalian toxicity. 100 foot water set back. Breaks down quickly.</td>
</tr>
<tr>
<td>Thermal Aerosols by Ground Application</td>
<td>PyroFos 1.5 ULV</td>
<td>6.4</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>etofenprox</td>
<td>Aqua Zenivex E20</td>
<td>0.9-40.4</td>
<td>10-20</td>
<td>Apply at the rate of 0.00175-0.0070 lb ai/acre.</td>
</tr>
<tr>
<td></td>
<td>Zenivex E4 RTU</td>
<td>3-48</td>
<td>5-15</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Zenivex E20</td>
<td>0.9-52.8</td>
<td>10-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>malathion</td>
<td>Fyfanon ULV</td>
<td>1.6-2.1</td>
<td>5</td>
<td>Long time standard and still effective and cost efficient. Odor present, excites mosquitoes prior to mortality.</td>
</tr>
<tr>
<td></td>
<td>naled</td>
<td>Dibrom Concentrate</td>
<td>1.6-2.1</td>
<td>5-15</td>
<td>Best choice for salt-marsh mosquitoes, very safe environmentally, no water set back; however, highly corrosive to all equipment.</td>
</tr>
<tr>
<td></td>
<td>permethrin/pbo</td>
<td>Aqualuer 20-20</td>
<td>0.7-25.5</td>
<td>10-20</td>
<td>DO NOT exceed 0.007 lb ai/acre.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aqua Perm-X UL 30-30</td>
<td>0.5-21.5</td>
<td>10-20</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environ</td>
<td>2.2-25.8</td>
<td>10-20</td>
<td>Rate not to exceed 0.007 lb/acre.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environ RTU</td>
<td>1.2-32.9</td>
<td>5-20</td>
<td>Droplet size will range from 0.1-1 micron.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Evolver 31-66 ULV</td>
<td>0.75-36.0</td>
<td>5-20</td>
<td>Application equipment must be tested at least annually to confirm that pressure at the nozzle and nozzle flow rates(s) are properly calibrated.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kontrol 4-4</td>
<td>21.0-64</td>
<td>5-20</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kontrol 30-30</td>
<td>21.0-64</td>
<td>5-20</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Permanone 30-30</td>
<td>0.41-3</td>
<td>5-20</td>
<td>Flow rate depends on concentration. Rate not to exceed 0.007 lb permethrin/acre.</td>
</tr>
<tr>
<td></td>
<td>Perm-X UL 4-4</td>
<td>1.4-105</td>
<td>5-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perm-X UL 30-30</td>
<td>0.3-38.2</td>
<td>5-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perm-X UL 31-66</td>
<td>0.2-33.6</td>
<td>5-20</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>sumithrin/phenothrin/pbo</td>
<td>Anvil 2+2 ULV</td>
<td>3.1-37.2</td>
<td>5-20</td>
<td>NO water set back; good for truck applications.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anvil 10+10 ULV</td>
<td>0.6-7.6</td>
<td>5-20</td>
<td></td>
</tr>
</tbody>
</table>

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### Insect Insecticide

<table>
<thead>
<tr>
<th>Insect</th>
<th>Active Ingredient</th>
<th>Trade Name</th>
<th>Gross Amount Per Acre (oz)</th>
<th>Comments/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mosquito Adults</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Sprays by Aerial</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Application)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos</td>
<td>Mosquitomist One ULV</td>
<td>3</td>
<td>Non-corrosive, quick knockdown, low odor and low mammalian toxicity. 100 foot water set back. Breaks down quickly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PyroFos 1.5 ULV</td>
<td>0.87</td>
<td></td>
</tr>
<tr>
<td></td>
<td>etofenprox</td>
<td>Aqua Zenivex E20</td>
<td></td>
<td>Apply diluted or undiluted at rates up to 0.007 lb ai/acre. Minimum application height 100 feet.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Zenivex E4 RTU</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Zenivex E20</td>
<td></td>
<td>Apply at 100-300 feet altitude.</td>
</tr>
<tr>
<td></td>
<td>malathion</td>
<td>Fyfanon ULV</td>
<td>2.6-3</td>
<td>Long time standard and still effective and cost efficient. Odor present, excites mosquitoes prior to mortality.</td>
</tr>
<tr>
<td></td>
<td>naled</td>
<td>Dibrom Concentrate</td>
<td>0.5-1</td>
<td>Best choice for salt-marsh mosquitoes, very safe environmentally, no water set back, however, highly corrosive to all equipment.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Trumpet EC</td>
<td>0.6-1.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin/pbo</td>
<td>AquaHalt</td>
<td>0.28-0.76</td>
<td>Water based, labeled for use over crops. Apply diluted or undiluted at rates up to 0.007 lb ai/acre. Widely used and highly effective. Maintain dose in the 0.0035 lb/acre range. Some resistance along Gulf Coast. 100 foot water set-back.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aqualuer 20-20</td>
<td>0.25-0.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aqua-Reslin</td>
<td>0.33-1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Biomist 4.0+4.0 ULV</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Biomist 30+30 ULV</td>
<td>0.33-1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Biomist 31+66 ULV</td>
<td>0.33-1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Envion</td>
<td></td>
<td>Apply diluted or undiluted at rates up to 0.007 lb. Permethrin/PBO/acre.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Envion RTU</td>
<td>up to 2.72</td>
<td>Apply at altitudes between 100-300 feet.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aqua-Kontrol Concentrate</td>
<td>up to 1.5</td>
<td>Apply at sufficient air speed to deliver the appropriate amount of ai/acre (from 0.00175-0.007 lb).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kontrol 4+4</td>
<td>up to 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kontrol 30+30</td>
<td>up to 0.35</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Permanone 31-66</td>
<td>0.16-0.6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perm-X UL 4-4</td>
<td>up to 3.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perm-X UL 30-30</td>
<td>up to 0.32</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Perm-X UL 31-66</td>
<td>up to 0.36</td>
<td></td>
</tr>
<tr>
<td></td>
<td>sumithrin/pbo</td>
<td>Anvil 2+2 ULV</td>
<td>1-3</td>
<td>No water set back.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Anvil 10+10 ULV</td>
<td>0.21-0.62</td>
<td></td>
</tr>
<tr>
<td></td>
<td>prallethrin/sumithrin/pbo</td>
<td>AquaDUET Water-Based Dual-Action Adulticide</td>
<td>0.41-1.24</td>
<td>Combines two active ingredients + pbo, causes benign agitation, option for Asian tiger mosquito.</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Insect</th>
<th>Insecticide Active Ingredient</th>
<th>Trade Name</th>
<th>Gross Amount Per Acre (oz)</th>
<th>Comments/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mosquito Larvae</td>
<td>mineral oil</td>
<td>BVA 2 Mosquito Larvicide Oil</td>
<td>1-5 gal</td>
<td>Surface film material. Effective against both larvae and pupae, low labor input required. Use higher rates for areas with more vegetation or pollution.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>COCObear Mosquito Larvicide Oil</td>
<td>3-5 gal</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kontrol Mosquito Larvicide Oil</td>
<td>1-5 gal</td>
<td></td>
</tr>
<tr>
<td>Methoprene</td>
<td></td>
<td>Altosid Liquid Larvicide</td>
<td>3-4 fl oz</td>
<td>Significant residual effect possible, up-front cost more, can save labor costs. Approved for use in stock waters. Newly approved for ULV applications. Used to prepare Altosan granular formulation for areas up to 2 ft in depth. Effective up to 150 days, rate depends on species targeted. Use lower rates when water is shallow or vegetation and/or pollution is minimal. Effective up to 30 days.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Altosid Liquid Larvicide Concentrate</td>
<td>0.75-1 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>methoprene</td>
<td>Altosid Briquets</td>
<td>1/100 sq ft</td>
<td>Rate depends on target species.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Altosid XR Briquets</td>
<td>1 briquet/100-200 sq ft</td>
<td>May be applied prior to flooding.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Altosid Pellets</td>
<td>2.5-10 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Altosid Pellets Water Soluble Pouch (WSP)</td>
<td>up to 135 sq ft</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Altosid SBG II</td>
<td>3-20 lb</td>
<td></td>
</tr>
<tr>
<td>Bacillus thuringiensis subsp. israelensis</td>
<td></td>
<td>Aquabac XT 12AS</td>
<td>1-2 pt</td>
<td>Biological control agent, very effective, environmentally sound. Store products in cool areas and use by expiration date. Timing of application critical for maximum effectiveness. Use higher label rates when large larval populations are present, larvae are in the late 3rd or 4th instars or local experience has demonstrated that higher rates are required to achieve high levels of mortality.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aquabac 200G</td>
<td>2.5-10 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aquabac 400G</td>
<td>1.25-8 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>FourStar Bti Briquets Sustained Release</td>
<td>1 briquet/100 sq ft</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>150 Day Microbial Briquets</td>
<td>1 briquet/100 sq ft</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mosquito Dunks</td>
<td>1 briquet/100 sq ft</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Teknar CG</td>
<td>2.5-20 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vectobac WDG</td>
<td>1.75-14.0 oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vectobac 12AS</td>
<td>5-100 gal</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vectobac G</td>
<td>2-20 lb</td>
<td></td>
</tr>
<tr>
<td>Bacillus sphaericus</td>
<td>Vectolex FG</td>
<td>5-20 lbs</td>
<td>20-80 lbs for waste tires</td>
<td>Biological control agent with residual effect. Targets specific species, especially Culex. Not recommended for salt-marsh mosquitoes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vectolex WSP</td>
<td>1 pouch/50 sq ft</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vectolex WDG</td>
<td>0.5-1.5 lb</td>
<td></td>
</tr>
<tr>
<td>Bacillus thuringiensis subsp. israelensis and Bacillus sphaericus</td>
<td>Fourstar 45 - Day Briquet</td>
<td>1 briquet/100 sq ft</td>
<td>Effective against all pest species of mosquitoes, will reduce likelihood of resistance. Approved for use in organic crops and sensitive areas.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fourstar 90 - Day Briquet</td>
<td>1 briquet/100 sq ft</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fourstar 180 - Day Briquet</td>
<td>1 briquet/100 sq ft</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fourstar Multi-Brood Granule</td>
<td>5-20 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fourstar Multi-Brood Controlled Release Granule</td>
<td>7.5-20 lb</td>
<td></td>
</tr>
<tr>
<td>Spinosad</td>
<td>Natular G</td>
<td>3.5-9 lb</td>
<td>New product, registered as a reduced risk pesticide by EPA.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Natular G30</td>
<td>5-20 lb</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Natular 2EC</td>
<td>1-3.2 fl oz/acre</td>
<td>30-day residual.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Natular T30</td>
<td>1 tablet/100 sq ft</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Natular XRT</td>
<td>1 tablet/100 sq ft</td>
<td>180-day residual.</td>
<td></td>
</tr>
</tbody>
</table>
## MOSQUITO CONTROL BY COMMERCIAL AND GOVERNMENT AGENCIES

<table>
<thead>
<tr>
<th>Insect Larvae</th>
<th>Insecticide Active Ingredient</th>
<th>Trade Name</th>
<th>Gross Amount Per Acre (oz)</th>
<th>Comments/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mosquito Larvae&lt;br&gt;(Control by Aerial Application)</td>
<td>mineral oil</td>
<td>BVA 2 Mosquito Larvicide Oil</td>
<td>3-5 gal</td>
<td>Surface film material. Not for use in environmentally sensitive areas.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>COCObear Mosquito Larvicide Oil</td>
<td>3-5 gal</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kontrol Mosquito Larvicide Oil</td>
<td>2-4 gal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>methoprene</td>
<td>Altosid (various formulations)</td>
<td>see labels</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bacillus thuringiensis subsp. israelensis</td>
<td>Aquabac XT</td>
<td>0.25-2 pt</td>
<td>Biological control agent, very effective, environmentally sound.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fourstar Single Brood Bti Sand Granule</td>
<td>3-20 lb</td>
<td>Store products in cool areas and use by expiration date. Timing of application critical for maximum effectiveness.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fourstar Multi-Brood Controlled Release Granule</td>
<td>7.5-20 lb/acre</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sustain MBG</td>
<td>5-20 lbs</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Teknar CG</td>
<td>0.25-1 pt</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vectobac 12 AS</td>
<td>0.25-2 pt</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vectobac WDG</td>
<td>1.75-14.0 oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vectobac G</td>
<td>2.5-5 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bacillus sphaericus</td>
<td>Vectolex CG</td>
<td>5-20 lb</td>
<td>Biological control agent with residual effect. Targets specific species, especially <em>Culex</em>.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vectolex WDG</td>
<td>0.5-1.5 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vectolex WSP</td>
<td>1 pouch/50 sq ft</td>
<td>Water soluble pouch, good choice for catch basins.</td>
</tr>
<tr>
<td></td>
<td>Bacillus thuringiensis subsp. israelensis and Bacillus sphaericus</td>
<td>Fourstar Multi-Brood Granule</td>
<td>5-20 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fourstar Multi-Brood Controlled Release Granule</td>
<td>5-20 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>spinosad</td>
<td>Natular G</td>
<td>3.5-9 lb</td>
<td>New product, registered as a reduced risk pesticide by EPA.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Natular G30</td>
<td>5-20 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Natular 2EC</td>
<td>1.3-2.8 fl oz/A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>temephos</td>
<td>5% Skeeter Abate</td>
<td>2-10 lb</td>
<td></td>
</tr>
</tbody>
</table>

All chemical information provided is given with the understanding that no endorsement of named products is intended, nor is criticism implied of similar products that are not mentioned. Individuals who use pesticides are responsible for ensuring that the intended use complies with current regulations and conforms to the product label. Before purchasing or using any pesticide, always read and carefully follow the label directions.
INSECT CONTROL FOR ORNAMENTALS GROWN IN NURSERIES OR LANDSCAPES

**NOTE:** The following list of pesticides is labeled for the uses listed; however, there are different formulations of particular compounds and you must make sure the pesticide used is properly labeled. The plant which is being damaged and the site where the plant is located (nursery or landscape) must be listed on the label. The pests that a compound is registered for are also listed on the label.

Many insects are developing resistance to currently available pesticides. Practice resistance management and rotate the insecticides used to manage a pest. With most pesticides, you should rotate the compounds used at least once during a generation time for that insect. In addition, it is desirable to rotate mode of action of compounds used. A guide to rotating modes of action is the Insecticide Resistance Action Committee (IRAC) classification of the different mode of action sites and a letter for subgroups. In resistance management rotations, these number/letter codes can be used to determine which compounds have different modes of action. These are listed in the table under the column heading "Mode of Action Group" (un = unknown).

Some of the insecticides listed are extremely toxic. Handle with caution and use protective equipment required by the label. A minimum interval between application and reentry has been established. Make sure of the proper reentry period for the insecticide has been observed before allowing people without label prescribed personal protective equipment to enter the treated area. These are listed in the table under the column heading "Minimum Hours Between Application and Reentry."

Phytotoxicity (damage to the plant as the result of the application of a chemical) is an important consideration in controlling pests of ornamentals. Phytotoxicity is generally expressed as damage to the leaves, flowers, or stems and is observed as "burn" (browning of tissue), "chlorosis" (yellowing or bleaching of tissue), or modification of growth by deformation or stunting. There are many species and cultivars of ornamental plants with varying sensitivity to chemicals. Other environmental conditions, such as your particular growing conditions, will also affect phytotoxicity. You are encouraged to evaluate a pesticide for phytotoxicity on a few plants under your particular conditions before treating all plants.

Insecticides listed below are identified by common chemical name. A trade name in parentheses may also be listed as a convenience for the reader. Some additional trade names that may be available to homeowners are listed in the HOMEOWNER INSECTICIDE PRODUCT LIST section beginning on page 324.

All chemical information provided below is given with the understanding that no endorsement of named products is intended nor is criticism implied of similar products that are not mentioned. Individuals who use pesticides are responsible for ensuring that the intended use complies with current regulations and conforms to the product label. Before purchasing or using any pesticide, always read and carefully follow the label directions.

<table>
<thead>
<tr>
<th>Insect or Mite</th>
<th>Pesticide Common Name (Trade Name)</th>
<th>Minimum Hours Between Application and Reentry</th>
<th>IRAC Mode of Action Group</th>
<th>Permitted Application Sites:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>G = greenhouse</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>L = landscape</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>N = nursery</td>
</tr>
<tr>
<td>Adelgid</td>
<td>acetamiprid (TriStar)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole (Acelepryn)</td>
<td>4 hours</td>
<td>28</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Safari)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>horticultural oil (various brands)</td>
<td>4 hours</td>
<td></td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Merit, Marathon, others)</td>
<td>12 hours</td>
<td>4A</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>insecticidal soap (various brands)</td>
<td>12 hours</td>
<td>---</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>spirotetramat (Kontos)</td>
<td>24 hours foliar (see exception for drench application)</td>
<td>23</td>
<td>G, N</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam (Flagship)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, N</td>
</tr>
<tr>
<td>Aphids</td>
<td>abamectin (Avid)</td>
<td>12 hours</td>
<td>6</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>acephate (Orthene)</td>
<td>24 hours</td>
<td>1B</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>acetamiprid (TriStar)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>afidopyropen (Ventigra)</td>
<td>follow label directions</td>
<td>9D</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>azadirachtin (Azatin XL, Ornazin)</td>
<td>4 hours</td>
<td>18B</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td><em>Beauveria bassiana</em> (BotaniGard)</td>
<td>4 hours</td>
<td>---</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>bifenthrin + clothianidin (Aloft)</td>
<td>12 hours</td>
<td>4 + 4A</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>bifenthrin + imidacloprid (Allectus)</td>
<td>12 hours</td>
<td>3 + 4A</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>carbaryl (Sevin)</td>
<td>12 hours</td>
<td>1A</td>
<td>L, N</td>
</tr>
<tr>
<td></td>
<td>clothianidin (Arena)</td>
<td>12 hours</td>
<td>4A</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin (Decathlon)</td>
<td>follow label directions</td>
<td>3</td>
<td>G, N</td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Safari)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>fluvalinate (Mavrik)</td>
<td>follow label directions</td>
<td>3</td>
<td>G, L</td>
</tr>
</tbody>
</table>
### INSECT CONTROL FOR ORNAMENTALS GROWN IN NURSERIES OR LANDSCAPES

<table>
<thead>
<tr>
<th>Insect or Mite</th>
<th>Pesticide Common Name (Trade Name)</th>
<th>Minimum Hours Between Application and Reentry</th>
<th>IRAC Mode of Action Group</th>
<th>Permitted Application Sites:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aphids</strong></td>
<td>Horticultural oil (various brands)</td>
<td>4 hours</td>
<td>—</td>
<td>G, L, N</td>
</tr>
<tr>
<td>(cont.)</td>
<td>Imidacloprid (Merit, Marathon)</td>
<td>12 hours</td>
<td>4A</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td><em>Isaria fumosorosea</em> (Preferal)</td>
<td>4 hours</td>
<td>UN</td>
<td>G, N</td>
</tr>
<tr>
<td></td>
<td>Insecticidal soap (various brands)</td>
<td>12 hours follow label directions</td>
<td>—</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>Neem oil (Triact 70)</td>
<td>4 hours</td>
<td>16B</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>Permethrin (Astro, Perm-UP, others)</td>
<td>12 hours</td>
<td>3</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>Pyrethrin (various brands)</td>
<td>12 hours</td>
<td>3A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>Spinetoram + sulfoxaflor (XXpire)</td>
<td>12 hours</td>
<td>4C + 5</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>Spinetoram (Kontos)</td>
<td>24 hours foliar (see exception for drench application)</td>
<td>23</td>
<td>G, N</td>
</tr>
<tr>
<td></td>
<td>Thiamethoxam (Flagship)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, N</td>
</tr>
<tr>
<td><strong>Armored Scale</strong> (such as juniper scale, oystershell scale, pine needle scale, tea scale, euonymus scale, white peach scale)</td>
<td>Acephate (Orthene)</td>
<td>24 hours</td>
<td>1B</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>Acetamiprid (TriStar)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>Aldicloprid (Ventigra)</td>
<td>follow label directions.</td>
<td>9D</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>(nymphs and crawlers only)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bifenthrin (Talstar S Select)</td>
<td>12 hours</td>
<td>3</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>Buprofezin (Talus)</td>
<td>12 hours</td>
<td>16</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>Carbaryl (Sevin)</td>
<td>follow label directions.</td>
<td>1A</td>
<td>L, N</td>
</tr>
<tr>
<td></td>
<td>Dinotefuran (Safari)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>Horticultural oil (various brands)</td>
<td>4 hours</td>
<td>---</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>Insecticidal soap (various brands)</td>
<td>12 hours follow label directions</td>
<td>---</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>Neem oil (Triact 70)</td>
<td>4 hours</td>
<td>18B</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>Pyriproxyfen (Distance)</td>
<td>12 hours</td>
<td>7C</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>Spinetoram + sulfoxaflor (XXpire)</td>
<td>12 hours</td>
<td>4C + 5</td>
<td>G, L, N</td>
</tr>
<tr>
<td><strong>Bagworm</strong></td>
<td>Acephate (Orthene)</td>
<td>24 hours</td>
<td>1B</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>Acetamiprid (TriStar)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>Azadirachtin (Azatin)</td>
<td>4 hours</td>
<td>18B</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>Bacillus thuringiensis kurstaki</td>
<td>4 hours</td>
<td>11B2</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>(Biobit HP, DiPel or Foray)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bifenthrin (Talstar)</td>
<td>12 hours</td>
<td>3</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>Bifenthrin + clothianidin (Aloft)</td>
<td>12 hours</td>
<td>4 + 4A</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>Bifenthrin + imidacloprid (Allectus)</td>
<td>12 hours</td>
<td>3 + 4A</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>Carbaryl (Sevin)</td>
<td>follow label directions.</td>
<td>1A</td>
<td>L, N</td>
</tr>
<tr>
<td></td>
<td>Chlorantraniliprole (Acelepyrin)</td>
<td>4 hours</td>
<td>28</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>Fluvalinate (Mavrik)</td>
<td>follow label directions.</td>
<td>3</td>
<td>G, L</td>
</tr>
<tr>
<td></td>
<td>Indoxacarb (Provaunt)</td>
<td>12 hours</td>
<td>22</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td><em>Isaria fumosorosea</em> (Preferal)</td>
<td>4 hours</td>
<td>UN</td>
<td>G, N</td>
</tr>
<tr>
<td></td>
<td>Novaluron (Pedestal)</td>
<td>12 hours</td>
<td>15</td>
<td>G, N</td>
</tr>
<tr>
<td></td>
<td>Spinetoram + sulfoxaflor (XXpire)</td>
<td>12 hours</td>
<td>4C + 5</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>Spinosad (Conserve SC)</td>
<td>4 hours</td>
<td>5</td>
<td>G, N</td>
</tr>
</tbody>
</table>
## INSECT CONTROL FOR ORNAMENTALS GROWN IN NURSERIES OR LANDSCAPES

<table>
<thead>
<tr>
<th>Insect or Mite</th>
<th>Pesticide Common Name (Trade Name)</th>
<th>Minimum Hours Between Application and Reentry</th>
<th>IRAC Mode of Action Group</th>
<th>Permitted Application Sites:</th>
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<tbody>
<tr>
<td></td>
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<tr>
<td><strong>Bark Beetle</strong></td>
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</tr>
<tr>
<td></td>
<td>bifenthrin (Onyx, Talstar)</td>
<td>follow label directions</td>
<td>3</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>permethrin (Astro, Perm-UP, others)</td>
<td>12 hours</td>
<td>3</td>
<td>follow label</td>
</tr>
<tr>
<td><strong>Black Vine Weevil</strong></td>
<td></td>
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<tr>
<td></td>
<td>acephate (Orthene)</td>
<td>follow label directions</td>
<td>1A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>Beauveria bassiana (BotaniGard)</td>
<td>4 hours</td>
<td>---</td>
<td>G, L, N</td>
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<tr>
<td></td>
<td>bifenthrin (Onyx, Talstar)</td>
<td>follow label directions</td>
<td>3</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin + imidacloprid (Discus)</td>
<td>12 hours</td>
<td>3 + 4A</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Safari)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>fluvalinate (Mavrik)</td>
<td>follow label directions</td>
<td>3</td>
<td>G, L</td>
</tr>
<tr>
<td></td>
<td>Isaria fumosorosea (Preferal)</td>
<td>4 hours</td>
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<td>G, N</td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Merit, Marathon, others)</td>
<td>12 hours</td>
<td>4A</td>
<td>follow label</td>
</tr>
<tr>
<td><strong>Borers</strong> (clearwing, flatheaded, and roundheaded borers are included in this section. Make sure label specifically lists the type of borer you are trying to control.)</td>
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<tr>
<td></td>
<td>azadirachtin (Azatin)</td>
<td>4 hours</td>
<td>18B</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Onyx, Talstar)</td>
<td>follow local regulations for landscape reentry</td>
<td>3</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole (Acelepyrin)</td>
<td>4 hours</td>
<td>2B</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin + imidacloprid (Discus)</td>
<td>12 hours</td>
<td>3 + 4A</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Safari)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Merit, Marathon II, others)</td>
<td>12 hours</td>
<td>4A</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>permethrin (Astro, Perm-UP, Permethrin Pro)</td>
<td>12 hours</td>
<td>3</td>
<td>follow label</td>
</tr>
<tr>
<td><strong>Caterpillars</strong> (such as armyworm, budworm, eastern tent caterpillar, fall webworm, orangestriped oakworm, leafrollers)</td>
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<tr>
<td></td>
<td>acephate (Orthene)</td>
<td>24 hours</td>
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<td>acetamiprid (TriStar)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>azadirachtin (Azatin)</td>
<td>4 hours</td>
<td>18B</td>
<td>G, L, N</td>
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<tr>
<td></td>
<td>Bacillus thuringiensis kurstaki (DiPel)</td>
<td>4 hours</td>
<td>11B2</td>
<td>G, L, N</td>
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<tr>
<td></td>
<td>bifenthrin (Onyx, Talstar)</td>
<td>follow label directions</td>
<td>3</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>bifenthrin + clothianidin (Aloft)</td>
<td>12 hours</td>
<td>4 + 4A</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>bifenthrin + imidacloprid (Allectus)</td>
<td>12 hours</td>
<td>3 + 4A</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>carbaryl (Sevin)</td>
<td>12 hours</td>
<td>1A</td>
<td>L, N</td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole (Acelepyrin)</td>
<td>4 hours</td>
<td>28</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>indoxacarb (Provaunt)</td>
<td>12 hours</td>
<td>22</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>insecticidal soap (various brands)</td>
<td>follow label directions</td>
<td>---</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>Isaria fumosorosea (Preferal)</td>
<td>4 hours</td>
<td>UN</td>
<td>G, N</td>
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<tr>
<td></td>
<td>novaluron (Pedestal)</td>
<td>12 hours</td>
<td>15</td>
<td>G, N</td>
</tr>
<tr>
<td></td>
<td>permethrin (Astro, Perm-UP, Permethrin Pro)</td>
<td>12 hours</td>
<td>3</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>spinetoram + sulfoxaflor (XXpire)</td>
<td>12 hours</td>
<td>4C + 5</td>
<td>G, L, N</td>
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<tr>
<td></td>
<td>spinosad (Conserve SC)</td>
<td>4 hours</td>
<td>5</td>
<td>G, N</td>
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<tr>
<td></td>
<td>tebufenozide (Confirm)</td>
<td>4 hours</td>
<td>18A</td>
<td>G, L, N</td>
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<tr>
<td><strong>Carpenter Ant</strong></td>
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<tr>
<td></td>
<td>permethrin (Astro, Perm-UP, Permethrin Pro)</td>
<td>12 hours</td>
<td>3</td>
<td>follow label</td>
</tr>
<tr>
<td><strong>Cricket</strong></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>bifenthrin (Onyx, Talstar)</td>
<td>12 hours</td>
<td>3</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin (Decathlon)</td>
<td>follow label directions</td>
<td>3</td>
<td>G, N</td>
</tr>
</tbody>
</table>
## Insect Control for Ornamentals Grown in Nurseries or Landscapes

### Insect or Mite

<table>
<thead>
<tr>
<th>Insect or Mite</th>
<th>Pesticide Common Name (Trade Name)</th>
<th>Minimum Hours Between Application and Reentry</th>
<th>IRAC Mode of Action Group</th>
<th>Permitted Application Sites:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cricket</strong></td>
<td></td>
<td></td>
<td></td>
<td>G = greenhouse</td>
</tr>
<tr>
<td>(cont.)</td>
<td></td>
<td></td>
<td></td>
<td>L = landscape</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>N = nursery</td>
</tr>
<tr>
<td><strong>Eriophyid Mite</strong></td>
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<tr>
<td></td>
<td>abamectin (Avid)</td>
<td>12 hours</td>
<td>G, L, N</td>
<td></td>
</tr>
<tr>
<td></td>
<td>horticultural oil (various brands)</td>
<td>4 hours</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td></td>
<td>spiromesifen (Judo, Forbid)</td>
<td>12 hours</td>
<td>G, N</td>
<td></td>
</tr>
<tr>
<td><strong>False Spider Mite</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(such as privet mite)</td>
<td>acequinocyl (Shuttle)</td>
<td>12 hours</td>
<td>20B</td>
<td>G, N</td>
</tr>
<tr>
<td></td>
<td>bifenazate (Fioramite)</td>
<td>12 hours</td>
<td>un</td>
<td>G, L, N</td>
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<tr>
<td></td>
<td>etoxazole (TetraSan)</td>
<td>12 hours</td>
<td>10B</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>horticultural oil (various brands)</td>
<td>4 hours</td>
<td>---</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>insecticidal soaps</td>
<td>12 hours</td>
<td>---</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>spiromesifen (Judo, Forbid)</td>
<td>12 hours</td>
<td>23</td>
<td>follow label</td>
</tr>
<tr>
<td><strong>Fire Ant</strong> (Imported)</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Treatment is required to ship containerized or balled plants from quarantined to non-quarantined areas. Also, maintenance of Fire Ant free status of nurseries in federal imported fire ant quarantine areas requires certain actions. Consult Arkansas Plant Board to determine your nursery’s classification and consult USDA APHIS 81-25-001, “Imported Fire Ant: Quarantine Treatments for Nursery Stock, Grass Sod, and Related Materials,” updated January 2015, for all rules and regulations pertaining to the Federal Imported Fire Ant quarantine and treatment requirements. The following insecticides are authorized by USDA for the treatment of regulated articles under the Imported Fire Ant (IFA) quarantine: abamectin (Award II) Bait - Field grown bifenthrin (Talstar, Onyx Pro), etc. (many) G, F, EC - Container, B&amp;B, sod chlorpyrifos (Dursban, Chlorpyrifos) E, G - Container, B&amp;B, field grown, sod diazinon Section 24(c) only, contact State plant regulatory official fenoxycarb (Award) Bait - Field grown fipronil (Top Choice, Fipronil) G - Container, sod hydramethylnon (Amdro Pro) Bait - Field grown methoprene (Extinguish) Bait - Field grown pyriproxyfen (Distance) Bait - Field grown tefluthrin (no label currently available) G - Container</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Fungus Gnat Adults</strong></td>
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<td></td>
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<tr>
<td></td>
<td>bifenthrin (Talstar)</td>
<td>12 hours</td>
<td>3</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin (Decathlon)</td>
<td>12 hours</td>
<td>3A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>fluvalinate (Mavrik)</td>
<td>12 hours</td>
<td>3A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>insecticidal soaps</td>
<td>12 hours</td>
<td></td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>permethrin (Astro, Perm-UP, Permethrin Pro)</td>
<td>12 hours</td>
<td>3</td>
<td>follow label</td>
</tr>
<tr>
<td><strong>Fungus Gnat Larvae</strong></td>
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<tr>
<td></td>
<td>acetamiprid (TriStar)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>azadirachtin (Azatin XL)</td>
<td>12 hours</td>
<td>18B</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>Bacillus thuringiensis var. israelensis</td>
<td>4 hours</td>
<td>11A1</td>
<td>follow label</td>
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<td></td>
<td>chlorfenapyr (Pylon)</td>
<td>12 hours</td>
<td>13</td>
<td>G</td>
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<tr>
<td></td>
<td>cyromazine (Citation)</td>
<td>12 hours</td>
<td>17</td>
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<td>diflubenzuron (Adept)</td>
<td>12 hours</td>
<td>15</td>
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<td>kinoprene (Enstar II)</td>
<td>4 hours</td>
<td>7A</td>
<td>G</td>
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<tr>
<td></td>
<td>pyriproxyfen (Distance)</td>
<td>12 hours</td>
<td>7C</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>Steinernema feltiae (various; beneficial nematode)</td>
<td>0 hours</td>
<td>biological</td>
<td>G, L, N</td>
</tr>
</tbody>
</table>
# Insect Control for Ornamentals Grown in Nurseries or Landscapes

<table>
<thead>
<tr>
<th>Insect or Mite</th>
<th>Pesticide Common Name (Trade Name)</th>
<th>Minimum Hours Between Application and Reentry</th>
<th>IRAC Mode of Action Group</th>
<th>Permitted Application Sites:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Granulate Ambrosia Beetle</td>
<td>permethrin (Astro, Perm-UP, Permethrin Pro)</td>
<td>12</td>
<td>3</td>
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<tr>
<td>Grasshopper</td>
<td>bifenthrin (Onyx, Talstar)</td>
<td>12 hours</td>
<td>3</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>carbaryl (Sevin 5) bait</td>
<td>follow label directions</td>
<td>1A</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin (Decathlon)</td>
<td>follow label directions</td>
<td>3</td>
<td>G, N</td>
</tr>
<tr>
<td></td>
<td>insecticidal soap (various brands)</td>
<td>12 hours</td>
<td>---</td>
<td>G, L, N</td>
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<tr>
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<tr>
<td>Gypsy Moth</td>
<td>Contact the Arkansas State Plant Board, 1 Natural Resources Drive, P. O. Box 1069, Little Rock, AR 72203-1069, Phone 501-225-1598, Fax 501-219-1697.</td>
<td></td>
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</tr>
<tr>
<td>Japanese Beetle (adult) and other leaf-feeding scarab beetles</td>
<td>acephate (Orthene)</td>
<td>follow label directions</td>
<td>1A</td>
<td>G, L, N</td>
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<tr>
<td></td>
<td>acetamiprid (TriStar)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, L, N</td>
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<td>azadirachtin (Azatin XL)</td>
<td>4 hours</td>
<td>18B</td>
<td>G, L, N</td>
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<td>bifenthrin (Onyx, Talstar)</td>
<td>follow label directions</td>
<td>3</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>bifenthrin + clothianidin (Aloft)</td>
<td>12 hours</td>
<td>4 + 4A</td>
<td>L</td>
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<tr>
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<td>bifenthrin + imidacloprid (Allectus)</td>
<td>12 hours</td>
<td>3 + 4A</td>
<td>L</td>
</tr>
<tr>
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<td>carbaryl (Sevin)</td>
<td>follow label directions</td>
<td>3</td>
<td>L, N</td>
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<td>chlorantraniliprole (Acelepryn)</td>
<td>4 hours</td>
<td>28</td>
<td>L</td>
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<td>clothianidin (Arena)</td>
<td>12 hours</td>
<td>4A</td>
<td>L</td>
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<td></td>
<td>cyfluthrin (Decathlon) 20 WP</td>
<td>follow label directions</td>
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<td>G, N</td>
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<td>cyfluthrin + imidacloprid (Discus)</td>
<td>12 hours</td>
<td>3 + 4A</td>
<td>N</td>
</tr>
<tr>
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<td>dinotefuran (Safari)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Merit, Marathon II, others)</td>
<td>12 hours</td>
<td>4A</td>
<td>follow label</td>
</tr>
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<td>permethrin (Astro, Perm-UP, Permethrin Pro)</td>
<td>12 hours</td>
<td>3</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>spinetoram + sulfoxaflor (XXpire)</td>
<td>12 hours</td>
<td>4C + 5</td>
<td>G, L, N</td>
</tr>
<tr>
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<td>thiamefoxam (Flagship)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, N</td>
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<tr>
<td>June Beetle</td>
<td>carbaryl (Sevin)</td>
<td>follow label directions</td>
<td>1A</td>
<td>G, L, N</td>
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<td>cyfluthrin (Decathlon)</td>
<td>follow label directions</td>
<td>3</td>
<td>G, N</td>
</tr>
<tr>
<td>Lace Bug</td>
<td>acephate (Orthene)</td>
<td>follow label directions</td>
<td>1A</td>
<td>G, L, N</td>
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<td></td>
<td>acetamiprid (Tri-Star)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>Beauveria bassiana (BotaniGard)</td>
<td>4 hours</td>
<td>---</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Talstar, Onyx)</td>
<td>12 hours</td>
<td>3</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>bifenthrin + clothianidin (Aloft)</td>
<td>12 hours</td>
<td>4 + 4A</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>bifenthrin + imidacloprid (Allectus)</td>
<td>12 hours</td>
<td>3 + 4A</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>carbaryl (Sevin)</td>
<td>12 hours</td>
<td>1A</td>
<td>L, N</td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole (Acelepryn)</td>
<td>4 hours</td>
<td>28</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin + imidacloprid (Discus)</td>
<td>12 hours</td>
<td>3 + 4A</td>
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</tr>
<tr>
<td></td>
<td>dinotefuran (Safari)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Merit, Marathon, others)</td>
<td>12 hours</td>
<td>4A</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>permethrin (Astro, Perm-UP, Permethrin Pro)</td>
<td>12 hours</td>
<td>3</td>
<td>follow label</td>
</tr>
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</table>
## INSECT CONTROL FOR ORNAMENTALS GROWN IN NURSERIES OR LANDSCAPES

<table>
<thead>
<tr>
<th>Insect or Mite</th>
<th>Pesticide Common Name (Trade Name)</th>
<th>Minimum Hours Between Application and Reentry</th>
<th>IRAC Mode of Action Group</th>
<th>Permitted Application Sites:</th>
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<tbody>
<tr>
<td><strong>Lace Bug</strong></td>
<td>spinetoram + sulfoxaflor (XXpire)</td>
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<td>G, L, N</td>
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<tr>
<td>(cont.)</td>
<td>soap (Olympic Insecticidal)</td>
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<tr>
<td></td>
<td>thiamethoxam (Flagship)</td>
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<td>4A</td>
<td>G, N</td>
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<tr>
<td><strong>Leaf Beetles</strong></td>
<td>acephate (Orthene)</td>
<td>12 hours</td>
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<td>G, L, N</td>
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<tr>
<td></td>
<td>acetamiprid (TriStar)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Onyx, Talstar)</td>
<td>12 hours</td>
<td>3</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>bifenthrin + clothianidin (Aloft)</td>
<td>12 hours</td>
<td>4 + 4A</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>bifenthrin + imidacloprid (Allectus)</td>
<td>12 hours</td>
<td>3 + 4A</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>carbaryl (Sevin)</td>
<td>12 hours</td>
<td>3</td>
<td>L, N</td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole (Acelepryn)</td>
<td>4 hours</td>
<td>28</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin + imidacloprid (Discus)</td>
<td>12 hours</td>
<td>3 + 4A</td>
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<tr>
<td></td>
<td>dinotefuran (Safari)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, L, N</td>
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<td>imidacloprid (Merit, Marathon II, others)</td>
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<td>spinetoram + sulfoxaflor (XXpire)</td>
<td>12 hours</td>
<td>4C + 5</td>
<td>G, L, N</td>
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<tr>
<td></td>
<td>spinosad (Conserve SC)</td>
<td>4 hours</td>
<td>5</td>
<td>G, N</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam (Flagship)</td>
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<td>4A</td>
<td>G, N</td>
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<tr>
<td><strong>Leafhoppers</strong></td>
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<td>G, L, N</td>
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<tr>
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<td>bifenthrin (Onyx, Talstar)</td>
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<tr>
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<td>bifenthrin + clothianidin (Aloft)</td>
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<tr>
<td></td>
<td>carbaryl (Sevin)</td>
<td>follow label directions</td>
<td>1A</td>
<td>L, N</td>
</tr>
<tr>
<td></td>
<td>clothianidin (Arena)</td>
<td>12 hours</td>
<td>4A</td>
<td>L</td>
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<tr>
<td></td>
<td>cyfluthrin (Decathlon)</td>
<td>follow label directions</td>
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<td>G, N</td>
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<td>cyfluthrin + imidacloprid (Discus)</td>
<td>follow label directions</td>
<td>3 + 4A</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Safari)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>fluvalinate (Mavrik)</td>
<td>follow label directions</td>
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<td>G, L</td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Merit, Marathon II, others)</td>
<td>follow label directions</td>
<td>4A</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>insecticidal soap (various brands)</td>
<td>follow label directions</td>
<td>---</td>
<td>G, L, N</td>
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<tr>
<td></td>
<td>neem oil (Triact) 90 EC</td>
<td>4 hours</td>
<td>18B</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>permethrin (Astro, Perm-UP, Permethrin Pro)</td>
<td>12 hours</td>
<td>3</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>spirotetramat (Kontos)</td>
<td>24 hours foliar (see exception for drench application)</td>
<td>23</td>
<td>G, N</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam (Flagship)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, N</td>
</tr>
</tbody>
</table>
# INSECT CONTROL FOR ORNAMENTALS GROWN IN NURSERIES OR LANDSCAPES

## Insect or Mite

### Leafminers

(such as boxwood leafminer, holly leafminer, birch leafminer)

**Note:** This includes dipterous, lepidopterous, and coleopterous leafminers. Make sure leafminer to be treated is listed on label.

<table>
<thead>
<tr>
<th>Pesticide Common Name (Trade Name)</th>
<th>Minimum Hours Between Application and Reentry</th>
<th>IRAC Mode of Action Group</th>
<th>Permitted Application Sites:</th>
</tr>
</thead>
<tbody>
<tr>
<td>abamectin (Avid)</td>
<td>follow label directions</td>
<td>6</td>
<td>G, L, N</td>
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<tr>
<td>acephate (Orthene)</td>
<td>follow label directions</td>
<td>1A</td>
<td>G, L, N</td>
</tr>
<tr>
<td>acetamiprid (Star)</td>
<td>24 hours</td>
<td>4A</td>
<td>G, L, N</td>
</tr>
<tr>
<td>azadirachtin (Azatin XL)</td>
<td>12 hours</td>
<td>18B</td>
<td>G, L, N</td>
</tr>
<tr>
<td>bifenthrin (Onyx, Talstar)</td>
<td>follow label directions</td>
<td>3</td>
<td>follow label</td>
</tr>
<tr>
<td>chlorantraniliprole (Acelepyrn SC)</td>
<td>4 hours</td>
<td>2B</td>
<td>L</td>
</tr>
<tr>
<td>clothianidin (Arena)</td>
<td>12 hours</td>
<td>4A</td>
<td>L</td>
</tr>
<tr>
<td>cyfluthrin + imidacloprid (Discus)</td>
<td>12 hours</td>
<td>3 + 4A</td>
<td>N</td>
</tr>
<tr>
<td>dinotefuran (Safari)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, L, N</td>
</tr>
<tr>
<td>imidacloprid (Merit, Marathon, others)</td>
<td>12 hours</td>
<td>4A</td>
<td>follow label</td>
</tr>
<tr>
<td>Isaria fumosorosea (Preferal)</td>
<td>4 hours</td>
<td>UN</td>
<td>G, N</td>
</tr>
<tr>
<td>permethrin (Astro, Perm-UP, Permethrin Pro)</td>
<td>12 hours</td>
<td>3</td>
<td>follow label</td>
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<tr>
<td>pyriproxyfen (Distance)</td>
<td>12 hours</td>
<td>7C</td>
<td>G, L, N</td>
</tr>
<tr>
<td>spinosad (Conserve SC)</td>
<td>4 hours</td>
<td>5</td>
<td>G, N</td>
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</table>

### Mealybugs

<table>
<thead>
<tr>
<th>Pesticide Common Name (Trade Name)</th>
<th>Minimum Hours Between Application and Reentry</th>
<th>IRAC Mode of Action Group</th>
<th>Permitted Application Sites:</th>
</tr>
</thead>
<tbody>
<tr>
<td>acephate (Orthene)</td>
<td>12 hours</td>
<td>1A</td>
<td>G, L, N</td>
</tr>
<tr>
<td>acetamiprid (Star)</td>
<td>24 hours</td>
<td>4A</td>
<td>G, L, N</td>
</tr>
<tr>
<td>afidopyropen (Ventigra)</td>
<td>follow label directions</td>
<td>9D</td>
<td>G, L, N</td>
</tr>
<tr>
<td>Beauveria bassiana (BotaniGard)</td>
<td>4 hours</td>
<td>---</td>
<td>G, L, N</td>
</tr>
<tr>
<td>bifenthrin (Onyx, Talstar)</td>
<td>follow label directions</td>
<td>3</td>
<td>follow label</td>
</tr>
<tr>
<td>buprofezin (Talus)</td>
<td>12 hours</td>
<td>16</td>
<td>G, N</td>
</tr>
<tr>
<td>carbaryl (Sevin)</td>
<td>follow label directions</td>
<td>1A</td>
<td>L, N</td>
</tr>
<tr>
<td>clothianidin (Arena)</td>
<td>12 hours</td>
<td>4A</td>
<td>L</td>
</tr>
<tr>
<td>cyfluthrin (Decathlon) 20 WP</td>
<td>follow label directions</td>
<td>3</td>
<td>G, N</td>
</tr>
<tr>
<td>cyfluthrin + imidacloprid (Discus)</td>
<td>12 hours</td>
<td>3 + 4A</td>
<td>N</td>
</tr>
<tr>
<td>dinotefuran (Safari)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, L, N</td>
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<td>fluvinate (Mavrik) 22.3 F</td>
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<td>3</td>
<td>G, L</td>
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<tr>
<td>horticultural oil (various brands)</td>
<td>4 hours</td>
<td>---</td>
<td>G, L, N</td>
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<tr>
<td>imidacloprid (Merit, Marathon, others)</td>
<td>12 hours</td>
<td>4A</td>
<td>follow label</td>
</tr>
<tr>
<td>insecticidal soap (various brands)</td>
<td>12 hours follow label directions</td>
<td>---</td>
<td>G, L, N</td>
</tr>
<tr>
<td>Isaria fumosorosea (Preferal)</td>
<td>4 hours</td>
<td>UN</td>
<td>G, N</td>
</tr>
<tr>
<td>neem oil (Triact) 70</td>
<td>4 hours</td>
<td>18B</td>
<td>G, L, N</td>
</tr>
<tr>
<td>permethrin (Astro, Perm-UP, Permethrin Pro)</td>
<td>12 hours</td>
<td>3</td>
<td>follow label</td>
</tr>
<tr>
<td>spinetoram + sulfoxatol (XXpire)</td>
<td>12 hours</td>
<td>4C + 5</td>
<td>G, L, N</td>
</tr>
<tr>
<td>spirotetramat (Kontos)</td>
<td>24 hours foliar (see exception for drench application)</td>
<td>23</td>
<td>G, N</td>
</tr>
<tr>
<td>thiamethoxam (Flagship)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, N</td>
</tr>
</tbody>
</table>
| Insect or Mite | Pesticide Common Name (Trade Name) | Minimum Hours Between Application and Reentry | IRAC Mode of Action Group | Permitted Application Sites:  
G = greenhouse  
L = landscape  
N = nursery |
<table>
<thead>
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<th></th>
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<tbody>
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<td><strong>Pillbug</strong></td>
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<td>cyfluthrin (Decathlon) 20 WP</td>
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<td>3</td>
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<td><strong>Plant Bugs</strong></td>
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</tr>
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<td></td>
<td>cyfluthrin (Decathlon)</td>
<td>follow label directions</td>
<td>3</td>
<td>G, N</td>
</tr>
<tr>
<td></td>
<td>insecticidal soap (various brands)</td>
<td>12 hours</td>
<td>---</td>
<td>G, L, N</td>
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<tr>
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<td><em>Isaria fumosorosea</em> (Preferal)</td>
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<td>UN</td>
<td>G, N</td>
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<tr>
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<td>permethrin (Astro, others)</td>
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<td>spinetoram + sulfoxaflor (XXpire)</td>
<td>12 hours</td>
<td>4C + 5</td>
<td>G, L, N</td>
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<td></td>
<td>acetamiprid (TriStar)</td>
<td>24 hours</td>
<td>4A</td>
<td>G, L, N</td>
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<tr>
<td></td>
<td>azadirachtin (Azatin XL)</td>
<td>12 hours</td>
<td>18B</td>
<td>G, L, N</td>
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<tr>
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<td><em>Beauveria bassiana</em> (BotaniGard)</td>
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<td>G, L, N</td>
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<tr>
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<td>dinotefuran (Safari)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, L, N</td>
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<tr>
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<td>imidacloprid (Merit, Marathon, others)</td>
<td>12 hours</td>
<td>4A</td>
<td>follow label</td>
</tr>
<tr>
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<td>insecticidal soap (various brands)</td>
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<td>G, L, N</td>
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<td><em>Isaria fumosorosea</em> (Preferal)</td>
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<td>UN</td>
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<td>neem oil (Triact) 70</td>
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<tr>
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<td>spinosad (Conserve SC)</td>
<td>4 hours</td>
<td>5</td>
<td>G, N</td>
</tr>
<tr>
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<td>thiamethoxam (Flagship)</td>
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<td>4A</td>
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<tr>
<td><strong>Sawfly</strong></td>
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<td>G, L, N</td>
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<td>acetamiprid (TriStar)</td>
<td>24 hours</td>
<td>4A</td>
<td>G, L, N</td>
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<tr>
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<td>carbaryl (Sevin)</td>
<td>follow label directions</td>
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<td>L, N</td>
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<td>chlorantraniliprole (Acelepyn SC)</td>
<td>4 hours</td>
<td>2B</td>
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<td>cyfluthrin (Decathlon) 20 WP</td>
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<td>cyfluthrin + imidacloprid (Discus)</td>
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<td>3 + 4A</td>
<td>N</td>
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<td>imidacloprid (Merit, Marathon, others)</td>
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<td>4A</td>
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<td>indoxacarb (Provaunt)</td>
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<td>insecticidal soap (various brands)</td>
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<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>spinetoram + sulfoxaflor (XXpire)</td>
<td>12 hours</td>
<td>4C + 5</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>spinosad (Conserve SC)</td>
<td>4 hours</td>
<td>5</td>
<td>G, N</td>
</tr>
<tr>
<td><strong>Slug, Snail</strong></td>
<td>iron phosphate (bait)</td>
<td>follow label directions</td>
<td>un</td>
<td>follow label</td>
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<td>metaldehyde + carbaryl (Sevin) bait</td>
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<td>follow label</td>
<td>follow label</td>
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<tr>
<td></td>
<td>methiocarb (Mesurol)</td>
<td>24 hours</td>
<td>1A</td>
<td>follow label</td>
</tr>
</tbody>
</table>
### Insect Control for Ornamentals Grown in Nurseries or Landscapes

**Insect or Mite**  
(see as Fletcher scale, cottony cushion scale, wax scale, San Jose scale)  

<table>
<thead>
<tr>
<th>Insect or Mite</th>
<th>Pesticide Common Name (Trade Name)</th>
<th>Minimum Hours Between Application and Reentry</th>
<th>IRAC Mode of Action Group</th>
<th>Permitted Application Sites:</th>
</tr>
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<tbody>
<tr>
<td><strong>Soft Scale</strong></td>
<td>acetamiprid (TriStar)</td>
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<td>4A</td>
<td>G, L, N</td>
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<tr>
<td></td>
<td>alidopyropen (Ventigra)</td>
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<td>9D</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>buprofezin (Talus)</td>
<td>12 hours</td>
<td>16</td>
<td>G, N</td>
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<td>cyfluthrin + imidacloprid (Discus)</td>
<td>12 hours</td>
<td>3 + 4A</td>
<td>N</td>
</tr>
<tr>
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<td>dinotefuran (Safari)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>horticultural oil (various brands)</td>
<td>4 hours</td>
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<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Merit, Marathon, others)</td>
<td>follow label directions</td>
<td>4A</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>pyrpyroxifen (Distance)</td>
<td>12 hours</td>
<td>7C</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>spinetoram + sulfoxaflor (XXpere)</td>
<td>12 hours</td>
<td>4C + 5</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam (Flagship)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, N</td>
</tr>
<tr>
<td><strong>Sowbug</strong></td>
<td>cyfluthrin (Decathlon)</td>
<td>follow label directions</td>
<td>3</td>
<td>G, N</td>
</tr>
<tr>
<td><strong>Spider Mite</strong></td>
<td>abamectin (Avid)</td>
<td>12 hours</td>
<td>6</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>acequinocyl (Shuttle)</td>
<td>12 hours</td>
<td>20B</td>
<td>G, N</td>
</tr>
<tr>
<td></td>
<td>bifenzate (Floramite)</td>
<td>12 hours</td>
<td>un</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>cyflumetofen (Sultan)</td>
<td>12 hours</td>
<td>25</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>etoxazole (TetraSan)</td>
<td>12 hours</td>
<td>10B</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>fenazaquin (Magus)</td>
<td>12 hours</td>
<td>21A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>fenpyroximate (Akari)</td>
<td>12 hours</td>
<td>21A</td>
<td>G, N</td>
</tr>
<tr>
<td></td>
<td>hexythiazox (Hexygon)</td>
<td>12 hours</td>
<td>10B</td>
<td>G, L, N</td>
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<tr>
<td></td>
<td>horticultural oil (various brands)</td>
<td>4 hours</td>
<td>---</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>insecticidal soaps</td>
<td>12 hours</td>
<td>---</td>
<td>follow label</td>
</tr>
<tr>
<td><strong>Spittlebug</strong></td>
<td>Isaria fumosorosea (Preferal)</td>
<td>4 hours</td>
<td>UN</td>
<td>G, N</td>
</tr>
<tr>
<td><strong>Stink Bug</strong></td>
<td>pyrethrins (PyGanic, Pyrenone)</td>
<td>follow label directions</td>
<td>3</td>
<td>follow label</td>
</tr>
<tr>
<td><strong>Thrips</strong></td>
<td>abamectin (Avid)</td>
<td>12 hours</td>
<td>6</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>acephate (Orthene)</td>
<td>24 hours</td>
<td>1B</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>acetamiprid (TriStar)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>azadirachtin (Azatin)</td>
<td>4 hours</td>
<td>18B</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>Beauveria bassiana (BotaniGard)</td>
<td>4 hours</td>
<td>---</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Onyx, Talstar)</td>
<td>follow label directions</td>
<td>3</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin (Decathlon)</td>
<td>12 hours</td>
<td>3A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>flonicamid (Aria)</td>
<td>12 hours</td>
<td>9C</td>
<td>G, L, N</td>
</tr>
</tbody>
</table>
# Insect Control for Ornamentals Grown in Nurseries or Landscapes

<table>
<thead>
<tr>
<th>Insect or Mite</th>
<th>Pesticide Common Name (Trade Name)</th>
<th>Minimum Hours Between Application and Reentry</th>
<th>IRAC Mode of Action Group</th>
<th>Permitted Application Sites:</th>
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<tbody>
<tr>
<td>Thrips</td>
<td>fluvalinate (Mavrik)</td>
<td>12 hours</td>
<td>3A</td>
<td>G, L, N</td>
</tr>
<tr>
<td>(cont.)</td>
<td>horticultural oil (various brands)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td><em>Isaria fumosorosea</em> (Preferal)</td>
<td>4 hours</td>
<td>UN</td>
<td>G, N</td>
</tr>
<tr>
<td></td>
<td>novaluron (Pedestal)</td>
<td>12 hours</td>
<td>15</td>
<td>G, N</td>
</tr>
<tr>
<td></td>
<td>spinetoram + sulfoxaflor (XXpire)</td>
<td>12 hours</td>
<td>4C + 5</td>
<td>G, L, N</td>
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<tr>
<td></td>
<td>spinosad (Conserve SC)</td>
<td>4 hours</td>
<td>4</td>
<td>G, N</td>
</tr>
<tr>
<td>Twig Borer</td>
<td>bifenthrin (Onyx, Talstar)</td>
<td>12 hours</td>
<td>3</td>
<td>follow label</td>
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<tr>
<td>Whitefly</td>
<td>abamectin (Avid)</td>
<td>12 hours</td>
<td>6</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>acephate (Orthene)</td>
<td>12 hours</td>
<td>1A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>acetamiprid (TriStar)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>azadirachtin (Azatin)</td>
<td></td>
<td>18B</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Beauveria bassiana</em> (BotaniGard)</td>
<td>4 hours</td>
<td>---</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Onyx, Talstar)</td>
<td>12 hours</td>
<td>3</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin (Decathlon)</td>
<td></td>
<td>3</td>
<td>G, N</td>
</tr>
<tr>
<td></td>
<td>dicofol (Safari)</td>
<td></td>
<td>4A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>fenazaquin (Magus)</td>
<td>12 hours</td>
<td>21A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>flonicamid (Aria)</td>
<td>12 hours</td>
<td>9C</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>fluvalinate (Mavrik)</td>
<td></td>
<td>3</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>horticultural oil (various brands)</td>
<td>4 hours</td>
<td>---</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Merit, Marathon, others)</td>
<td>12 hours</td>
<td>4A</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>insecticidal soap (various brands)</td>
<td></td>
<td>12 hours follow label directions</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td><em>Isaria fumosorosea</em> (Preferal)</td>
<td>4 hours</td>
<td>UN</td>
<td>G, N</td>
</tr>
<tr>
<td></td>
<td>neem oil (Triact)</td>
<td>4 hours</td>
<td>18B</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>novaluron (Pedestal)</td>
<td>12 hours</td>
<td>15</td>
<td>G, N</td>
</tr>
<tr>
<td></td>
<td>permethrin (Astro, others)</td>
<td>12 hours</td>
<td>3</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>pyridaben (Sanmite)</td>
<td>12 hours</td>
<td>21A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>pyriproxyfen (Distance) 11.2 EC</td>
<td>12 hours</td>
<td>7C</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>spinetoram + sulfoxaflor (XXpire)</td>
<td>12 hours</td>
<td>4C + 5</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>spirotetramat (Kontos)</td>
<td></td>
<td>24 hours foliar (see exception for drench application)</td>
<td>G, N</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam (Flagship)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, N</td>
</tr>
<tr>
<td>White Grub</td>
<td><em>Beauveria bassiana</em> (BotaniGard)</td>
<td>4 hours</td>
<td>---</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole (Acelepryn)</td>
<td>4 hours</td>
<td>28</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>clothianidin (Arena)</td>
<td>12 hours</td>
<td>4A</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>dicofol (Safari)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, L, N</td>
</tr>
<tr>
<td></td>
<td><em>Isaria fumosorosea</em> (Preferal)</td>
<td>4 hours</td>
<td>UN</td>
<td>G, N</td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Merit, Marathon, others)</td>
<td>12 hours</td>
<td>4A</td>
<td>follow label</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam (Flagship)</td>
<td>12 hours</td>
<td>4A</td>
<td>G, N</td>
</tr>
</tbody>
</table>

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*For use in containers or landscapes not turf.*
## INSECT CONTROL FOR ORNAMENTALS GROWN IN COMMERCIAL GREENHOUSES

**Note:** The following list of pesticides is labeled for the uses listed. However, there are different formulations of particular compounds, and you must make sure the pesticide used is properly labeled. All pesticides must be handled and applied in strict accordance with the label on the pesticide container. The plant being damaged and the site where the plant is located (greenhouse) must be listed on the label. The pests that a compound is registered for are also listed on the label. The pesticides below are listed by common name and by a formulation name, which is used as an example of the formulations available. Many insecticides are now off patent, and there are new trade names available for these active ingredients. There are also mixtures of active ingredients plus synergists available that are not listed. For example, there are several formulations of pyrethrum combined with other active ingredients and synergists available in spray concentrates, aerosols and space-release canisters for the control of several pests. Some chemicals are labeled for use in low-volume spray equipment. Proper rates must be determined by applying the proper amount of active ingredient for the area treated. The rates given below are for high-volume spray equipment. Many insects are developing resistance to pesticides available on the market. Practice resistance management and rotate the insecticides used to manage a pest. With most pesticides, you should rotate the compounds used at least once during a generation time for that insect. In addition, it is desirable to rotate mode of action of compounds used. A guide to rotating modes of action is the Insecticide Resistance Action Committee (IRAC) classification of the different mode of action sites and a letter for subgroups. In resistance management rotations, these number/letter codes can be used to determine which compounds have different modes of action. These are listed in the table under the column heading “Mode of Action Number” (un = unknown).

Some of the insecticides listed are extremely toxic. Handle with caution and use protective equipment required by the label. A minimum interval between application and reentry has been established. Make sure the proper reentry period for the insecticide has been observed before allowing people without label-prescribed personal protective equipment to enter the treated area. These are listed in the table under the column heading “REI.”

Phytotoxicity (damage to the plant as a result of the application of a chemical) is an important consideration in controlling pests of ornamentals. Phytotoxicity is generally expressed as damage to the leaves, flowers, or stems and is observed as “burn” (browning of tissue), “chlorosis” (yellowing or bleaching of tissue), or modification of growth by deformation or stunting. There are many species and cultivars of ornamental plants with varying sensitivity to chemicals. Other environmental conditions, such as your particular growing conditions, will also affect phytotoxicity. You are encouraged to evaluate a pesticide for phytotoxicity on a few plants under your particular conditions before treating all plants.

### Insect or Mite | Insecticide and Formulation | Amount Per 100 Gallons of Water | REI | Mode of Action Number | Comments |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Aphids</td>
<td>abamectin</td>
<td>8 oz</td>
<td>12 hours</td>
<td>6</td>
<td>Apply as needed and repeat application at 7-day intervals or as necessary. DO NOT apply more than 16 fl oz per acre. Use in sufficient water to obtain uniform plant coverage. Phytotoxicity has been observed in certain species of ferns. <strong>Caution:</strong> Phytotoxicity has occurred on the following plants: Bletchum gibbum, Cissus antarctica, Fiscus triangularis, Fittonia verschaffeltii, Maranta leuconeura kerchoveana, Pachystachya lutea, Placetractus australis, Polypodium aureus, Polystichum, Pteris ensiformis, Tolmiea menziesii. Before treating large plantings, spray only a few plants and observe 2 weeks for varietal phytotoxicity.</td>
</tr>
<tr>
<td>Aphids</td>
<td>acephate</td>
<td>1/3-2/3 lb aerosol</td>
<td>24 hours</td>
<td>1B</td>
<td>Follow label directions</td>
</tr>
<tr>
<td>Aphids</td>
<td>acetamiprid</td>
<td>1 soluble bag 1 oz</td>
<td>24 hours</td>
<td>4A</td>
<td>Apply as a full-coverage foliar spray. The use of a nonionic spreader-sticker adjuvant may improve control.</td>
</tr>
<tr>
<td>Aphids</td>
<td>afidopyropen</td>
<td>follow label</td>
<td>12 hrs.</td>
<td>9D</td>
<td>Follow label directions</td>
</tr>
<tr>
<td>Aphids</td>
<td>azadirachtin</td>
<td>10-16 oz 8 oz</td>
<td>4 hours</td>
<td>18B</td>
<td>Must get full coverage for control but avoid excess runoff. Use fine spray; can also be applied as drench. Addition of 0.5%-1.0% nonphytotoxic oil will enhance efficacy.</td>
</tr>
<tr>
<td>Aphids</td>
<td>Beauveria bassiana</td>
<td>30-100 fl oz 0.5-3.0 qts</td>
<td>4 hours</td>
<td>4A</td>
<td>Wait 48 hours before applying fungicides.</td>
</tr>
<tr>
<td>Aphids</td>
<td>bifenthrin</td>
<td>6 fl oz 12 hours</td>
<td>un + 6</td>
<td>3A</td>
<td>Apply as a full-coverage foliar spray. For suppression of pest populations, young immatures must be contacted by the spray.</td>
</tr>
<tr>
<td>Aphids</td>
<td>bifenazate + abamectin</td>
<td>6-32 oz 25-50 fl oz 8-40 oz</td>
<td>12 hours</td>
<td>3A</td>
<td>Apply as a full-coverage foliar spray.</td>
</tr>
<tr>
<td>Insect or Mite</td>
<td>Insecticide and Formulation</td>
<td>Amount Per 100 Gallons of Water</td>
<td>REI</td>
<td>Mode of Action Number</td>
<td>Comments</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------------------</td>
<td>---------------------------------</td>
<td>-----</td>
<td>-----------------------</td>
<td>----------</td>
</tr>
<tr>
<td><strong>Aphids</strong> (cont.)</td>
<td>chlorpyrifos DuraGuard 20% ME</td>
<td>0.25-0.5 fl oz/gal</td>
<td>24 hours</td>
<td>1B</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>cyantraniliprole (Mainspring)</td>
<td></td>
<td>4 hours</td>
<td>2B</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin Decathlon 2E 20WP</td>
<td>1-2 oz</td>
<td>12 hours</td>
<td>3A</td>
<td>Good coverage is necessary to provide most effective control. Addition of a spreader-sticker may enhance control of insects on some plants.</td>
</tr>
<tr>
<td></td>
<td>dinotefuran Safari 20SG</td>
<td>1/4-1/2 lb for foliar 3/4-1 1/2 lb for drench</td>
<td>12 hours</td>
<td>4A</td>
<td>For drench, apply 4 fl oz finished solution per 6-inch pot. See label for ebb and flood rates.</td>
</tr>
<tr>
<td></td>
<td>fenpropatrin Tame 2.4EC</td>
<td>10 2/3 oz</td>
<td>24 hours</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>flonicamid 50 WDG Aria 0.7 oz package</td>
<td>1-3 packets 0.7-2.1 oz</td>
<td>12 hours</td>
<td>9C</td>
<td>Repeat application every 7-28 days as necessary.</td>
</tr>
<tr>
<td></td>
<td>fluvalinate Mavrik 2E</td>
<td>2-5 oz</td>
<td>12 hours</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>horticultural oils Sunspray ultrafine, Saf-T-Side, Triact</td>
<td>1-2 gal</td>
<td>4 hours</td>
<td></td>
<td>Care must be taken because some plants are sensitive to oils. Thorough coverage is necessary, but do not overapply and get excessive runoff. Use fine spray.</td>
</tr>
<tr>
<td></td>
<td>imidacloprid Marathon 1G, 60WP Marathon II</td>
<td>9-15 oz/1,000 sq ft 1.7 fl oz</td>
<td>12 hours</td>
<td>4A</td>
<td>Use 60WP as drench.</td>
</tr>
<tr>
<td></td>
<td>insecticidal soap 1%-2% M-Pede Olympic</td>
<td>1-2 gal 1-2 gal</td>
<td>12 hours</td>
<td></td>
<td>Repeat spray in 2 or 3 days. Thoroughly wet both surfaces of infested leaves. Use soft water when possible.</td>
</tr>
<tr>
<td></td>
<td>Isaria fumosorosea Preferal</td>
<td>14-28 oz</td>
<td></td>
<td>un</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin Scimitar GC</td>
<td>1.5-5.0 oz</td>
<td>24 hours</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>methiocarb Mesurol 75W</td>
<td>0.5-1.0 lb</td>
<td>24 hours</td>
<td>1A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>neem oil (various)</td>
<td>follow label</td>
<td>4 hours</td>
<td></td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>permethrin (Astro, others)</td>
<td>follow label</td>
<td>12 hours</td>
<td>3</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>pymetrozine Endeavor 50WG</td>
<td>12 hours</td>
<td></td>
<td>9B</td>
<td></td>
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<tr>
<td></td>
<td>pyrethrum X-Clude, Pyrenone, Natural Plus</td>
<td>2.5-5.0 oz</td>
<td>12 hours</td>
<td>3A</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>pyrifluquinazon (Rycar)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td></td>
<td>Follow label directions.</td>
</tr>
</tbody>
</table>
## INSECT CONTROL FOR ORNAMENTALS GROWN IN COMMERCIAL GREENHOUSES

<table>
<thead>
<tr>
<th>Insect or Mite</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 100 Gallons of Water</th>
<th>REI</th>
<th>Mode of Action Number</th>
<th>Comments</th>
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<tbody>
<tr>
<td><strong>Aphids</strong> (cont.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>s-kinoprene Enstar II 5EC</td>
<td>8-20 oz</td>
<td>4 hours</td>
<td>7A</td>
<td>Complete coverage of foliage is essential for control. Phytotoxicity has been observed under certain conditions.</td>
</tr>
<tr>
<td></td>
<td>spinetoram + sulfoxaflor (XXpire)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>4C + 5</td>
<td>Follow label directions.</td>
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<tr>
<td></td>
<td>spirotetratram Kontos 2F</td>
<td>1.7 fl oz</td>
<td>24 hours</td>
<td>23</td>
<td>See label for drench instructions.</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam Flagship 25WG</td>
<td>2-4 oz</td>
<td>12 hours</td>
<td>4A</td>
<td>Medium treatment may take 1-2 weeks for activity; do not leach for 7 days.</td>
</tr>
<tr>
<td></td>
<td>tolenpyrad (Hachi-Hachi)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>21A</td>
<td></td>
</tr>
<tr>
<td>Armyworm</td>
<td>acetamiprid TriStar 30SG</td>
<td>2.7-5.3 oz</td>
<td>12 hours</td>
<td>4A</td>
<td>Apply as a full-coverage foliar spray. Use of a nonionic spreader-sticker adjuvant may improve control.</td>
</tr>
<tr>
<td></td>
<td>azadirachtin Azatin 3.0% E</td>
<td>10-16 oz</td>
<td>4 hours</td>
<td>18B</td>
<td>Must get full coverage for control but avoid excess runoff. Use fine spray; can also be applied as drench. Spray when pests first appear.</td>
</tr>
<tr>
<td></td>
<td>Oranzin 3%</td>
<td>8 oz</td>
<td>12 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bacillus thuringiensis</td>
<td>1-4 qt</td>
<td>4 hours</td>
<td>11B2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dipel, Thuricide,MVP, Sok-Bt, Biobit</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Beauveria bassiana Naturalis-L</td>
<td>30-100 fl oz</td>
<td>4 hours</td>
<td></td>
<td>Wait 48 hours before applying a fungicide.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Talstar)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>3A</td>
<td>Apply as a full-coverage foliar spray.</td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos DuraGuard 20% ME</td>
<td>0.25-0.5 fl oz/gal</td>
<td>24 hours</td>
<td>1B</td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorfenapyr (Pylon)</td>
<td>2.6-6.4 fl oz</td>
<td>12 hours</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cyantraniliprole (Mainspring)</td>
<td>follow label directions</td>
<td>4 hours</td>
<td>28</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin (Decathlon)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>3A</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>diflubenzuron Adept 25W</td>
<td>1/2-1 lb</td>
<td>12 hours</td>
<td>15</td>
<td>Apply on chrysanthemums when larvae appear and repeat at weekly intervals as required.</td>
</tr>
<tr>
<td></td>
<td>fenpropahtrin Tame 2.4EC</td>
<td>10 oz</td>
<td>24 hours</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin Scimitar GC</td>
<td>1.5-5 oz</td>
<td>24 hours</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>novaluron Pedestal 10% SC</td>
<td>6-8 fl oz</td>
<td>12 hours</td>
<td>15</td>
<td>DO NOT apply more than once every 30 days or more than 2 applications per crop. DO NOT apply to poinsettias.</td>
</tr>
<tr>
<td></td>
<td>pyrethrum X-Clude, Pyrenone Natural Plus</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>3A</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>pyridalyl Overture 35WP</td>
<td>8 oz</td>
<td>12 hours</td>
<td>un</td>
<td>2 oz soluble packets; do not get wet.</td>
</tr>
</tbody>
</table>
## INSECT CONTROL FOR ORNAMENTALS GROWN IN COMMERCIAL GREENHOUSES

<table>
<thead>
<tr>
<th>Insect or Mite</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 100 Gallons of Water</th>
<th>REI</th>
<th>Mode of Action Number</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Armyworm</strong></td>
<td>spinetoram + sulfoxaflor (XXpire)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>4C + 5</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td><strong>Armyworm</strong></td>
<td>spinosad (Conserve)</td>
<td>follow label directions</td>
<td>4 hours</td>
<td>5</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td><strong>Armyworm</strong></td>
<td>tebufenozide Confirm T/O</td>
<td>4-8 fl oz</td>
<td>4 hours</td>
<td>18A</td>
<td>For best results, begin applications when larvae are first observed or at first sign of feeding.</td>
</tr>
<tr>
<td><strong>Armyworm</strong></td>
<td>tolenpyrad (Hachi-Hachi)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>21A</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td><strong>Broad Mite and Cyclamen Mite</strong></td>
<td>abamectin Avid 0.15EC</td>
<td>4 oz</td>
<td>12 hours</td>
<td>6</td>
<td>Apply as needed and repeat as necessary.</td>
</tr>
<tr>
<td><strong>Broad Mite and Cyclamen Mite</strong></td>
<td>bifenzate + abamectin Sirocco</td>
<td>3-4 fl oz</td>
<td>12 hours</td>
<td>un + 6</td>
<td>Begin applications as soon as mites appear. One additional application can be made after 7 days or as necessary to maintain control. DO NOT make more than two (2) applications per crop per year.</td>
</tr>
<tr>
<td><strong>Broad Mite and Cyclamen Mite</strong></td>
<td>chlorfenapyr (Pylon)</td>
<td>2.6-5.2 fl oz</td>
<td>12 hours</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td><strong>Broad Mite and Cyclamen Mite</strong></td>
<td>fenpyroximate (Akari)</td>
<td>24 fl oz</td>
<td>12 hours</td>
<td>21A</td>
<td></td>
</tr>
<tr>
<td><strong>Broad Mite and Cyclamen Mite</strong></td>
<td>pyridaben Sanmite 75WP</td>
<td>2-4 oz</td>
<td>12 hours</td>
<td>21A</td>
<td></td>
</tr>
<tr>
<td><strong>Broad Mite and Cyclamen Mite</strong></td>
<td>spiromesifen (Judo)</td>
<td>1-4 fl oz</td>
<td>12 hours</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td><strong>Broad Mite and Cyclamen Mite</strong></td>
<td>sulfur (elemental sulfur)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td></td>
<td>DO NOT tank mix with oils.</td>
</tr>
<tr>
<td><strong>Cabbage Looper</strong></td>
<td>acetamiprid TriStar 30SG</td>
<td>2.7-5.3 oz</td>
<td>12 hours</td>
<td>4A</td>
<td>Apply as a full-coverage foliar spray. Use of a non-ionic spreader-sticker adjuvant may improve control.</td>
</tr>
<tr>
<td><strong>Cabbage Looper</strong></td>
<td>azadirachtin Azatin Omazin 3%</td>
<td>10-16 oz</td>
<td>4 hours</td>
<td>18B Must get full coverage for control but avoid excess runoff. Use fine spray; can also be applied as drench. Spray when pests first appear.</td>
<td></td>
</tr>
<tr>
<td><strong>Cabbage Looper</strong></td>
<td>Bacillus thuringiensis Dipel, Thuricide, MVP, Sok-Bt, Biobit</td>
<td>1-4 qt</td>
<td>4 hours</td>
<td>11B2</td>
<td>Follow manufacturer’s suggestions.</td>
</tr>
<tr>
<td><strong>Cabbage Looper</strong></td>
<td>bifenthrin (Talstar)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>3A</td>
<td>Apply as a full-coverage foliar spray.</td>
</tr>
<tr>
<td><strong>Cabbage Looper</strong></td>
<td>chlorfenapyr (Pylon)</td>
<td>2.6-6.4 fl oz</td>
<td>12 hours</td>
<td>13</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td><strong>Cabbage Looper</strong></td>
<td>cyfluthrin (Decathlon)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>3A</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td><strong>Cabbage Looper</strong></td>
<td>diflubenzuron Adept 25W fluvalinate (Mavrik)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>3A Follow label directions.</td>
<td></td>
</tr>
<tr>
<td><strong>Cabbage Looper</strong></td>
<td>insecticidal soap (1%-2%) M-Pede Olympic</td>
<td>1-2 gal</td>
<td>12 hours</td>
<td>3A</td>
<td>Repeat spray weekly for 2 or 3 weeks. Thoroughly wet both surfaces of infested leaves. Use soft water when possible.</td>
</tr>
<tr>
<td><strong>Cabbage Looper</strong></td>
<td>novaluron (Pedestal)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>15</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td><strong>Cabbage Looper</strong></td>
<td>pyrethrum X-Clude Pyrenone</td>
<td>aerosol</td>
<td>12 hours</td>
<td>3A</td>
<td>Follow label directions.</td>
</tr>
</tbody>
</table>
### INSECT CONTROL FOR ORNAMENTALS GROWN IN COMMERCIAL GREENHOUSES

<table>
<thead>
<tr>
<th>Insect or Mite</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 100 Gallons of Water</th>
<th>REI</th>
<th>Mode of Action Number</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cabbage Looper</strong></td>
<td>pyridalyl Overture 35WP</td>
<td>8 oz</td>
<td>12 hours</td>
<td>un</td>
<td>2 oz soluble packets; do not get wet.</td>
</tr>
<tr>
<td>(cont.)</td>
<td>spinetoram + sulfoxaflor (XXpire)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>4C + 5</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>spinosad Conserve SC</td>
<td>6 fl oz</td>
<td>4 hours</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>tebufenozide Confirm T/O</td>
<td>4-8 fl oz</td>
<td>4 hours</td>
<td>18A</td>
<td>For best results, begin applications when larvae are first observed or at first sign of feeding.</td>
</tr>
<tr>
<td></td>
<td>tolfenpyrad (Hachi-Hachi)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>21A</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td><strong>Cutworm</strong></td>
<td>Bacillus thuringiensis Dipel, Thuricide, MVP, Sok-Bt, Biobit</td>
<td>1-4 qt</td>
<td>4 hours</td>
<td>11B2</td>
<td>Follow manufacturer’s suggestions.</td>
</tr>
<tr>
<td></td>
<td>carbaryl Sevin SL</td>
<td>1 qt</td>
<td>12 hours</td>
<td>1A</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin Decathlon</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>3A</td>
<td>Good coverage is necessary to provide most effective control. Addition of a spreader/sticker may enhance control of insects on some plants.</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin Scimitar GC</td>
<td>1.5-5.0 oz</td>
<td>24 hours</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>spinosad Conserve SC</td>
<td>6 fl oz</td>
<td>4 hours</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>spinetoram + sulfoxaflor (XXpire)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>4C + 5</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>tebufenozide Confirm T/O</td>
<td>4-8 fl oz</td>
<td>4 hours</td>
<td>18A</td>
<td>For best results, begin applications when larvae are first observed or at first sign of feeding.</td>
</tr>
<tr>
<td></td>
<td>tolfenpyrad (Hachi-Hachi)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>21A</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td><strong>Fungus Gnat</strong></td>
<td>acetamiprid TriStar 30SG</td>
<td>2.7-5.3 oz</td>
<td>12 hours</td>
<td>4A</td>
<td>Apply as a directed spray to thoroughly wet the upper 1/2 to 1 inch of soil medium.</td>
</tr>
<tr>
<td></td>
<td>azadirachtin Azatin 3.0% E</td>
<td>8 oz</td>
<td>4 hours</td>
<td>18B</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bacillus thuringiensis var. israelensis Gnatrol</td>
<td>follow label directions</td>
<td>4 hours</td>
<td>11B2</td>
<td>Apply as a soil drench or spray for larvae. Thoroughly wet the first 3 cm (1 3/16 inches) to 4 cm (1 34/67 inches) of soil. Under benches should also be treated.</td>
</tr>
<tr>
<td></td>
<td>chlorfenapyr (Pylon)</td>
<td>5.2-10 fl oz</td>
<td>12 hours</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorpurfos DuraGuard 20% ME</td>
<td>0.25-0.5 oz/gal</td>
<td>24 hours</td>
<td>1B</td>
<td>Shake concentrate well before diluting.</td>
</tr>
<tr>
<td></td>
<td>cyromazine Citation 75WP</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>17</td>
<td></td>
</tr>
</tbody>
</table>
## INSECT CONTROL FOR ORNAMENTALS GROWN IN COMMERCIAL GREENHOUSES

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<th>Insect or Mite</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 100 Gallons of Water</th>
<th>REI</th>
<th>Mode of Action</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fungus Gnat</td>
<td>diflubenzuron</td>
<td>Adept 25W</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>dinotefuran</td>
<td>Safari 20SG</td>
<td>3/4-1 1/2 lb</td>
<td>12 hours</td>
<td>4A</td>
</tr>
<tr>
<td></td>
<td>pyriproxyfen (Distance)</td>
<td></td>
<td>2-6 fl oz (see comments)</td>
<td>12 hours</td>
<td>7C</td>
</tr>
<tr>
<td></td>
<td>s-kinoprene</td>
<td>Enstar II</td>
<td>1 oz/5 gal</td>
<td>4 hours</td>
<td>7A</td>
</tr>
<tr>
<td></td>
<td>Steinernema feltiae</td>
<td>Entonem, NemaShield, Nemasys, ScanMask</td>
<td>follow label directions</td>
<td>4 hours</td>
<td></td>
</tr>
<tr>
<td></td>
<td>thiamethoxam</td>
<td>Flagship 25WG</td>
<td>4-8.5 oz</td>
<td>12 hours</td>
<td>4A</td>
</tr>
<tr>
<td>Leafminer</td>
<td>abamectin</td>
<td>Avid 0.15EC</td>
<td>8 oz</td>
<td>12 hours</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>acephate (Orthene)</td>
<td></td>
<td>follow label directions</td>
<td>24 hours</td>
<td>1B</td>
</tr>
<tr>
<td></td>
<td>acetamiprid</td>
<td>TriStar 30SG</td>
<td>6.7-8.0 oz</td>
<td>12 hours</td>
<td>4A</td>
</tr>
<tr>
<td></td>
<td>azadirachtin</td>
<td>Azatin 3.0% E, Ornamin 3%</td>
<td>10-16 oz, 10 oz</td>
<td>4 hours</td>
<td>18B</td>
</tr>
<tr>
<td></td>
<td>bifenazate + abamectin</td>
<td>Sirocco</td>
<td>6 fl oz</td>
<td>12 hours</td>
<td>un + 6</td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos</td>
<td>DuraGuard 20% ME</td>
<td>0.25-0.5 fl oz/gal</td>
<td>24 hours</td>
<td>1B</td>
</tr>
<tr>
<td></td>
<td>cyromazine</td>
<td>Citation 75WP</td>
<td>2.66 oz/acre</td>
<td>12 hours</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>dinotefuran</td>
<td>Safari 20SG</td>
<td>1/4-1/2 lb for foliar, 3/4-1 1/2 lb for drench</td>
<td>12 hours</td>
<td>4A</td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Marathon II, others)</td>
<td></td>
<td>follow label directions</td>
<td>12 hours</td>
<td>4A</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin</td>
<td>Scimitar GC</td>
<td>1.5-5.0 oz</td>
<td>24 hours</td>
<td>3A</td>
</tr>
</tbody>
</table>
## Insect Control for Ornamentals Grown in Commercial Greenhouses

<table>
<thead>
<tr>
<th>Insect or Mite</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 100 Gallons of Water</th>
<th>REI</th>
<th>Mode of Action Number</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leafminer</strong> (cont.)</td>
<td>novaluron Pedestal 10% SC</td>
<td>6-8 fl oz</td>
<td>12 hours</td>
<td>15</td>
<td>DO NOT apply more than once every 30 days or more than 2 applications per crop. DO NOT apply to poinsettias.</td>
</tr>
<tr>
<td></td>
<td>permethrin Pounce 3.2EC</td>
<td>20 fl oz</td>
<td>24 hours</td>
<td>3A</td>
<td>Registered for use on chrysanthemums.</td>
</tr>
<tr>
<td></td>
<td>spinosad Conserve SC</td>
<td>22 fl oz</td>
<td>4 hours</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>thiamethoxam Flagship 24WG</td>
<td>4-8.5 oz</td>
<td>12 hours</td>
<td>4A</td>
<td>Reapply as needed but no sooner than every 7 days. DO NOT exceed 17 oz/acre per crop or year.</td>
</tr>
<tr>
<td><strong>Leafroller</strong></td>
<td>acephate Orthene TT&amp;O 75SP TT&amp;O 97</td>
<td>2/3 lb</td>
<td>24 hours</td>
<td>1B</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cyantraniliprole (Mainspring) follow label directions</td>
<td></td>
<td>4 hours</td>
<td>2B</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin Decathlon 2EC 20WP</td>
<td>1-2 oz</td>
<td>12 hours</td>
<td>3A</td>
<td>Good coverage is necessary to provide most effective control. Addition of a spreader/sticker may enhance control of insects on some plants.</td>
</tr>
<tr>
<td></td>
<td>pyrethrum X-Clude Pyreneone Natural Plus aerosol</td>
<td>2-12 oz/acre</td>
<td>12 hours</td>
<td>3A</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>spinetoram + sulfoxaflor (XXpire) follow label directions</td>
<td></td>
<td>12 hours</td>
<td>4C + 5</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td><strong>Mealybug</strong></td>
<td>acephate Orthene TT&amp;O 75SP TT&amp;O 97</td>
<td>2/3 lb</td>
<td>24 hours</td>
<td>1B</td>
<td>See Aphid.</td>
</tr>
<tr>
<td></td>
<td>acetamiprid TriStar 70WSP TriStar 30SG</td>
<td>2-4 soluble bags</td>
<td>24 hours</td>
<td>4A</td>
<td>Tank mix with surfactant or pyrethroid may improve control of adults. Apply as a full-coverage foliar spray. Use of a nonionic spreader-sticker adjuvant may improve control.</td>
</tr>
<tr>
<td></td>
<td>atidopyropen Ventigra</td>
<td>2.7 oz</td>
<td>12 hours</td>
<td>9D</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>azadirachtin Azatin 3% Ornizin 3%</td>
<td>10-16 oz</td>
<td>4 hours</td>
<td>18B</td>
<td>Must get full coverage for control, but avoid excess runoff. Use fine spray; can also be applied as drench. Addition of 0.5%-1.0% nonphytotoxic oil will enhance efficacy.</td>
</tr>
<tr>
<td></td>
<td>Beauveria bassiana Naturalis-L</td>
<td>8 oz</td>
<td>12 hours</td>
<td></td>
<td>Wait 48 hours before applying fungicides.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin Talstar T&amp;O, Attain T&amp;O, Attain 10 WP 7.9% 0.67 F Attain aerosol</td>
<td>8-40 oz</td>
<td>12 hours</td>
<td>3A</td>
<td>Apply as a full-coverage foliar spray.</td>
</tr>
<tr>
<td></td>
<td>buprofezin (Talus) follow label directions</td>
<td></td>
<td>12 hours</td>
<td>16</td>
<td>Apply no more than 2 applications per growing cycle.</td>
</tr>
</tbody>
</table>
## Insect Control for Ornamentals Grown in Commercial Greenhouses

**Mealybug (cont.)**

<table>
<thead>
<tr>
<th>Insect or Mite</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 100 Gallons of Water</th>
<th>REI</th>
<th>Mode of Action Number</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>chlorpyrifos</td>
<td>DuraGuard 20% ME</td>
<td>0.25-0.5 fl oz/gal</td>
<td>24 hours</td>
<td>1B</td>
<td>Good coverage is necessary to provide most effective control. Addition of a spreader/sticker may enhance control of insects on some plants.</td>
</tr>
<tr>
<td>cyfluthrin</td>
<td>Decathlon 2EC</td>
<td>1-2 oz</td>
<td>12 hours</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td>dinotefuran</td>
<td>Safari 20SG</td>
<td>1/4-1/2 lb for foliar</td>
<td>12 hours</td>
<td>4A</td>
<td>For drench, apply 4 fl oz finished solution per 6-inch pot. See label for ebb and flood rates.</td>
</tr>
<tr>
<td>fenpropathrin</td>
<td>Tame 2.4EC</td>
<td>10 oz</td>
<td>24 hours</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td>flonicamid 50 WDG</td>
<td>Aria 0.7 oz package</td>
<td>3-6 packets (2.1-4.3 oz)</td>
<td>12 hours</td>
<td>9C</td>
<td>Repeat application every 7-28 days as necessary.</td>
</tr>
<tr>
<td>fluvalinate</td>
<td>Mavrik 2EC</td>
<td>2-5 oz</td>
<td>12 hours</td>
<td>3A</td>
<td>Care must be taken because some plants are sensitive to oils. Thorough coverage is necessary, but do not overapply and get excessive runoff. Use fine spray.</td>
</tr>
<tr>
<td>horticultural oils 1%-2%</td>
<td>Sunspray ultrafine</td>
<td>1-2 gal</td>
<td>4 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>imidacloprid</td>
<td>Marathon 1G</td>
<td>9-15 oz/1,000 sq ft</td>
<td>12 hours</td>
<td>4A</td>
<td></td>
</tr>
<tr>
<td>insecticidal soap 1%-2%</td>
<td>M-Pede</td>
<td>1-2 gal</td>
<td>12 hours</td>
<td></td>
<td>Repeat spray after 2 or 3 days. Thoroughly wet both surfaces of infested leaves. Use soft water whenever possible.</td>
</tr>
<tr>
<td>Isaria fumosorosea</td>
<td>Preferal</td>
<td>14-28 oz</td>
<td>un</td>
<td></td>
<td></td>
</tr>
<tr>
<td>methiocarb</td>
<td>Mesurol 75 WP</td>
<td>0.5-1 lb</td>
<td>24 hours</td>
<td>1A</td>
<td></td>
</tr>
<tr>
<td>neem oil (various)</td>
<td>follow label directions</td>
<td>follow label directions</td>
<td>4 hours</td>
<td>un</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td>pyrifluquinazon (Rycar)</td>
<td>follow label directions</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>un</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td>s-kinoprene</td>
<td>Enstar II 5EC</td>
<td>6-20 oz</td>
<td>4 hours</td>
<td>7A</td>
<td>See <strong>Aphid</strong>, Registered for root mealybug.</td>
</tr>
<tr>
<td>spinetoram + sulfoxaflor (XXpire)</td>
<td>follow label directions</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>4C + 5</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td>spirotetramat</td>
<td>Kontos 2F</td>
<td>1.7 fl oz</td>
<td>24 hours</td>
<td>23</td>
<td>See label for drench instructions.</td>
</tr>
<tr>
<td>thiamethoxam</td>
<td>Flagship 25WG</td>
<td>4-8.5 oz</td>
<td>12 hours</td>
<td>4A</td>
<td>Medium treatment may take 1-2 weeks for activity; do not leach for 7 days.</td>
</tr>
</tbody>
</table>
## Insect Control for Ornamentals Grown in Commercial Greenhouses

<table>
<thead>
<tr>
<th>Insect or Mite</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 100 Gallons of Water</th>
<th>Mode of Action Number</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scale (Armored)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>acephate (Orthene)</td>
<td>follow label directions</td>
<td>24 hours</td>
<td>1B</td>
</tr>
<tr>
<td></td>
<td>acetamiprid (TriStar)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>4A</td>
</tr>
<tr>
<td></td>
<td>alidopyropen (Ventigra)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>9D</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Talstar)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>buprofezin (Talus)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Safari)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>4A</td>
</tr>
<tr>
<td></td>
<td>horticultural oil (various)</td>
<td>follow label directions</td>
<td>4 hours</td>
<td>7A</td>
</tr>
<tr>
<td></td>
<td>kinoprene (Enstar II)</td>
<td>follow label directions</td>
<td>4 hours</td>
<td>12 hours + 4A</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam (Flagship)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>4A</td>
</tr>
<tr>
<td><strong>Scale (Soft)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>acephate (Orthene)</td>
<td>follow label directions</td>
<td>24 hours</td>
<td>1B</td>
</tr>
<tr>
<td></td>
<td>acetamiprid (TriStar)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>4A</td>
</tr>
<tr>
<td></td>
<td>alidopyropen (Ventigra)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>9D</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Talstar)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>buprofezin (Talus)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>cyantraniliprole (Mainspring)</td>
<td>follow label directions</td>
<td>4 hours</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Safari)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>4A</td>
</tr>
<tr>
<td></td>
<td>horticultural oil (various)</td>
<td>follow label directions</td>
<td>4 hours</td>
<td>7A</td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Marathon II, others)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>4A</td>
</tr>
<tr>
<td></td>
<td>kinoprene (Enstar II)</td>
<td>follow label directions</td>
<td>4 hours</td>
<td>12 hours + 4A</td>
</tr>
<tr>
<td></td>
<td>neem oil (various)</td>
<td>follow label directions</td>
<td>4 hours</td>
<td>un</td>
</tr>
<tr>
<td></td>
<td>pyriproxyfen (Distance)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>7C</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam (Flagship)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>4A</td>
</tr>
<tr>
<td><strong>Slugs and Snails</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>metaldehyde Deadline B 15D</td>
<td>follow label directions</td>
<td>24 hours</td>
<td>1A</td>
</tr>
<tr>
<td></td>
<td>methiocarb Mesurol 75 WP</td>
<td>1/2-1 lb</td>
<td>24 hours</td>
<td>1A</td>
</tr>
<tr>
<td><strong>Spider Mite</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>abamectin Avid 0.15EC</td>
<td>4 oz</td>
<td>12 hours</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>acequinocyl Shuttle 15 SC</td>
<td>6.4-12.8 fl oz</td>
<td>12 hours</td>
<td>20B</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Floramite)</td>
<td>2-4 oz</td>
<td>12 hours</td>
<td>un</td>
</tr>
<tr>
<td></td>
<td>bifenthrin + abamectin Sirocco</td>
<td>3-4 fl oz</td>
<td>12 hours</td>
<td>un + 6</td>
</tr>
</tbody>
</table>
# Insect Control for Ornamentals Grown in Commercial Greenhouses

<table>
<thead>
<tr>
<th>Insect or Mite</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 100 Gallons of Water</th>
<th>REI</th>
<th>Mode of Action Number</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spider Mite (cont.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin</td>
<td></td>
<td>12 hours</td>
<td>3A</td>
<td>Apply as a full-coverage foliar spray.</td>
</tr>
<tr>
<td></td>
<td>Talstar T&amp;O or Attain 10WP</td>
<td>6-32 oz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>7.9%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Attain</td>
<td>25-50 fl oz aerosol</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorfenapyr (Pylon)</td>
<td>2.6-5.2 fl oz</td>
<td>12 hours</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos</td>
<td>0.25-0.5 fl oz/gal</td>
<td>24 hours</td>
<td>1B</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DuraGuard 20% ME</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>clofentezine (Ovation)</td>
<td>2 oz</td>
<td>12 hours</td>
<td>10A</td>
<td>Limited number of plants (see label).</td>
</tr>
<tr>
<td></td>
<td>cyflumetofen (Sultan)</td>
<td>13.7 fl oz</td>
<td>12 hours</td>
<td>25</td>
<td>DO NOT exceed the maximum seasonal use rate of 27.4 fl oz of Sultan per crop growing cycle. DO NOT make more than 2 applications of Sultan per crop growing cycle.</td>
</tr>
<tr>
<td></td>
<td>etoxazole</td>
<td>8-16 oz</td>
<td>12 hours</td>
<td>10B</td>
<td>Limit to 2 applications per crop cycle.</td>
</tr>
<tr>
<td></td>
<td>TetraSan 5WDG</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>fenazaquin (Magus)</td>
<td>12-24 oz</td>
<td>12 hours</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td></td>
<td>fenbutatin-oxide</td>
<td>8-16 oz</td>
<td>48 hours</td>
<td>12B</td>
<td>DO NOT add oil to spray solution.</td>
</tr>
<tr>
<td></td>
<td>Vendex 50WP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>fenpropathrin</td>
<td>8-16 oz</td>
<td>24 hours</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tame 2.4EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>fenpyroximate</td>
<td>16-24 fl oz</td>
<td>12 hours</td>
<td>21A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Akari 5 SC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>fluvalinate</td>
<td>2-5 oz</td>
<td>12 hours</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mavrik 2E</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>hexythiazox</td>
<td>1-2 oz</td>
<td>12 hours</td>
<td>10A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hexygon DF</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>horticultural oil</td>
<td></td>
<td>4 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sunspray ultrafine</td>
<td>1-2 gal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Saf-T-Side</td>
<td>1-2 gal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Triact</td>
<td>1-2 gal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>insecticidal soap (1%-2%)</td>
<td></td>
<td>12 hours</td>
<td></td>
<td>Repeat spray weekly for 2 or 3 weeks. Thoroughly wet both surfaces of infested leaves. Use soft water when possible.</td>
</tr>
<tr>
<td></td>
<td>M-Pede</td>
<td>1-2 gal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Olympic</td>
<td>1-2 gal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin</td>
<td></td>
<td>24 hours</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scimitar GC</td>
<td>1.5-5 oz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>methiocarb</td>
<td></td>
<td>24 hours</td>
<td>1A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mesurol 75W</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>pyridaben</td>
<td></td>
<td>12 hours</td>
<td>21A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sanmite 75WP</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>spinosad</td>
<td></td>
<td>4 hours</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Conserve SC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insect or Mite</td>
<td>Insecticide and Formulation</td>
<td>Amount Per 100 Gallons of Water</td>
<td>REI</td>
<td>Mode of Action Number</td>
<td>Comments</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------------------</td>
<td>--------------------------------</td>
<td>-----</td>
<td>-----------------------</td>
<td>----------</td>
</tr>
<tr>
<td><strong>Spider Mite</strong> (cont.)</td>
<td>spiromesifen Judo 4 F</td>
<td>1-4 oz</td>
<td>12 hours</td>
<td>23</td>
<td>Effective on nymphal and egg stages.</td>
</tr>
<tr>
<td></td>
<td>spirotetramat Kontos 2F</td>
<td>1.7 fl oz</td>
<td>24 hours</td>
<td>23</td>
<td>See label for drench instructions.</td>
</tr>
<tr>
<td><strong>Thrips</strong></td>
<td>abamectin Avid 0.15 EC</td>
<td>8 oz</td>
<td>12 hours</td>
<td>6</td>
<td>Apply as needed and repeat application at 7-day intervals or as necessary. DO NOT apply more than 16 fl oz or less than 8 fl oz per acre. Use in sufficient water to obtain uniform plant coverage. Phytotoxicity has been observed in certain species of ferns.</td>
</tr>
<tr>
<td></td>
<td>acephate Orthene TT&amp;O 75SP TT&amp;O 97</td>
<td>2/3 lbs. 8 oz.</td>
<td>24 hours</td>
<td>1B</td>
<td>Aerosol may also be used as for aphid control.</td>
</tr>
<tr>
<td></td>
<td>acetamiprid TriStar 30SG</td>
<td>4-8 oz</td>
<td>12 hours</td>
<td>4A</td>
<td>Apply as a full coverage foliar spray the use of a non-ionic spreader-sticker adjuvant may improve control.</td>
</tr>
<tr>
<td></td>
<td>azadirachtin Azatin 3% E Ornazin 3%</td>
<td>12-16 oz 8 oz</td>
<td>4 hours</td>
<td>18B</td>
<td>Must get full coverage for control, but avoid excess runoff. Use fine spray; can also be applied as drench. Addition of 0.5% to 1.0% nonphytotoxic oil will enhance efficacy.</td>
</tr>
<tr>
<td></td>
<td>Beauveria bassiana Naturalis-L BotaniGard ES</td>
<td>30-100 fl oz 0.5-3.0 fl oz</td>
<td>4 hours</td>
<td>4 hours</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Talstar)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td></td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>chlorfenapyr (Pylon)</td>
<td>10-20 fl oz</td>
<td>12 hours</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos DuraGuard 20% ME</td>
<td>0.25-0.5 fl oz/gal</td>
<td>24 hours</td>
<td>1B</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cyrantraniliprole (Mainspring)</td>
<td>follow label directions</td>
<td>4 hours</td>
<td>28</td>
<td>For greenhouse application.</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin Decathlon 2EC 20WP</td>
<td>1-2 oz 1.9 oz</td>
<td>12 hours</td>
<td>3A</td>
<td>Good coverage is necessary to provide most effective control. Addition of a spreader/sticker may enhance control of insects on some plants.</td>
</tr>
<tr>
<td></td>
<td>dinotefuran Safari 20SG</td>
<td>4-8 oz for foliar 12-24 oz for drench</td>
<td>12 hours</td>
<td>4A</td>
<td>Suppression only. For drench, apply 4 fl oz finished solution per 6-inch pot. See label for ebb and flood rates.</td>
</tr>
<tr>
<td></td>
<td>flonicamid 50 WDG Aria 0.7 oz package</td>
<td>3-4 packets (2.1-2.9 oz)</td>
<td>12 hours</td>
<td>9C</td>
<td>Repeat application every 7-28 days as necessary.</td>
</tr>
<tr>
<td></td>
<td>fluvalinate Mavrik 2E</td>
<td>2-5 oz</td>
<td>12 hours</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td>Insect or Mite</td>
<td>Insecticide and Formulation</td>
<td>Amount Per 100 Gallons of Water</td>
<td>REI</td>
<td>Mode of Action Number</td>
<td>Comments</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------------------</td>
<td>---------------------------------</td>
<td>-----</td>
<td>----------------------</td>
<td>----------</td>
</tr>
<tr>
<td><strong>Thrips</strong></td>
<td>horticultural oil (various)</td>
<td>follow label directions</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>imidacloprid</td>
<td>9-15 oz/1,000 sq ft</td>
<td>12</td>
<td>4A</td>
<td>Use 60WP as drench.</td>
</tr>
<tr>
<td></td>
<td>Marathon 1G 60WP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>insecticidal soap 1%-2%</td>
<td>1-2 gal</td>
<td>12</td>
<td></td>
<td>Repeat spray weekly for 2 or 3 weeks. Thoroughly wet both surfaces of infested leaves. Use soft water whenever possible.</td>
</tr>
<tr>
<td></td>
<td>M-Pede Olympic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin Scimitar GC</td>
<td>1.5-5 oz</td>
<td>24</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>novaluron Pedestal 10% SC</td>
<td>6-8 fl oz</td>
<td>12</td>
<td>15</td>
<td>DO NOT apply more than once every 30 days or more than 2 applications per crop. DO NOT apply to poinsettias.</td>
</tr>
<tr>
<td></td>
<td>pyrethrum X-Clude, Natural Plus Pyrenone</td>
<td>aerosol 2-12 oz/acre</td>
<td>12</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pyridalyl Overture 35WP</td>
<td>8 oz</td>
<td>12</td>
<td>UN</td>
<td>2 oz soluble packets; DO NOT get wet.</td>
</tr>
<tr>
<td></td>
<td>s-kinoprene (Enstar II)</td>
<td>follow label directions</td>
<td>4</td>
<td>7A</td>
<td>For greenhouse application.</td>
</tr>
<tr>
<td></td>
<td>spinetoram + sulfoxaflor (XXpire)</td>
<td>follow label directions</td>
<td>12</td>
<td>4C + 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>spinosad Conserve SC</td>
<td>6 fl oz</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>thiamethoxam Flagship 25WG</td>
<td>4-8.5 oz</td>
<td>12</td>
<td>4A</td>
<td>For leaf-feeding thrips.</td>
</tr>
<tr>
<td></td>
<td>tolfenpyrad (Hachi-Hachi)</td>
<td>follow label directions</td>
<td>12</td>
<td>21A</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td><strong>Whitefly</strong></td>
<td>abamectin Avid 0.15EC</td>
<td>8 fl oz</td>
<td>12</td>
<td>6</td>
<td>For suppression of pests, young must be contacted by spray.</td>
</tr>
<tr>
<td></td>
<td>acephate Orthene TT&amp;O 75SP</td>
<td>2/3 lb aerosol 8 oz</td>
<td>24</td>
<td>1B</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PT 1300 TT&amp;O 97</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>acetamiprid TriStar 70WSP</td>
<td>2-4 soluble bags 2.7-5.3 oz</td>
<td>24</td>
<td>4A</td>
<td>Tank mix with surfactant or pyrethroid may improve control of adults. Apply as a full-coverage foliar spray. Use of a nonionic spreader-sticker adjuvant may improve control.</td>
</tr>
<tr>
<td></td>
<td>TriStar 30SG</td>
<td>12 hours</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>alfidopyropen Ventigra</td>
<td>follow label directions</td>
<td>12</td>
<td>9D</td>
<td>Follow label directions</td>
</tr>
<tr>
<td></td>
<td>azadirachtin Azatin 3.0% E</td>
<td>10-16 oz 10 oz</td>
<td>4</td>
<td></td>
<td>18B</td>
</tr>
<tr>
<td></td>
<td>Ormazin 3%</td>
<td>12 hours</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Beauveria bassiana Naturalis-L</td>
<td>30-100 fl oz 0.5-3.0 qts</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BotaniGard ES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Insect Control for Ornamentals Grown in Commercial Greenhouses

<table>
<thead>
<tr>
<th>Insect or Mite</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 100 Gallons of Water</th>
<th>REI</th>
<th>Mode of Action Number</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Whitefly</strong> (cont.)</td>
<td>bifenazate + abamectin Sirocco</td>
<td>6 fl oz</td>
<td>12 hours</td>
<td>un + 6</td>
<td>For suppression of pest populations, young immatures must be contacted by the spray.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin Talstar T&amp;O or Attain 10WP</td>
<td>6-32 oz</td>
<td>12 hours</td>
<td>3A</td>
<td>Apply as a full-coverage foliar spray.</td>
</tr>
<tr>
<td></td>
<td>7.9% Attain</td>
<td>25-50 fl oz aerosol</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>buprofezin (Talus)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>16</td>
<td>Apply no more than 2 applications per growing cycle.</td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos DuraGuard 20% ME</td>
<td>0.25-0.5 fl oz/gal</td>
<td>24 hours</td>
<td>1B</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cyantraniliprole (Mainspring)</td>
<td>follow label directions</td>
<td>4 hours</td>
<td>28</td>
<td>For greenhouse application.</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin Decathlon 2E</td>
<td>1-2 oz</td>
<td>12 hours</td>
<td>3A</td>
<td>Good coverage is necessary to provide most effective control. Addition of a spreader/sticker may enhance control of insects on some plants.</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin + imidacloprid Discus</td>
<td>25 fl oz</td>
<td>12 hours</td>
<td>3 + 4A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>diflubenzuron Adept</td>
<td>4-8 fl oz</td>
<td>12 hours</td>
<td>15</td>
<td>For optimum suppression whiteflies, spray applications should thoroughly wet the leaf undersides. Begin applications at first sign insects and repeat applications at 7-day intervals as needed to provide suppression on new foliage growth.</td>
</tr>
<tr>
<td></td>
<td>dinotefuran Safari 20SG</td>
<td>1/4-1/2 lb for foliar</td>
<td>12 hours</td>
<td>4A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>fenazaquin (Magus)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>21A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>fenpropathrin Tame 2.4EC</td>
<td>5 1/3-10 2/3 oz</td>
<td>24 hours</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>flonicamid 50 WDG Aria 0.7 oz package</td>
<td>4-6 packets (2.9-4.3 oz)</td>
<td>12 hours</td>
<td>9C</td>
<td>Repeat application every 7-28 days as necessary.</td>
</tr>
<tr>
<td></td>
<td>fluvinate Mavrik 2E</td>
<td>2-5 oz</td>
<td>12 hours</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>horticultural oils 1%-2%</td>
<td>1-2 gal</td>
<td>4 hours</td>
<td></td>
<td>Care must be taken because some plants are sensitive to oils. Thorough coverage is necessary, but do not overapply and get excessive runoff. Use fine spray.</td>
</tr>
<tr>
<td></td>
<td>Sunspray ultrafine Saf-T-Side Triact 70</td>
<td>1-2 gal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>imidacloprid Marathon 1G 60WP Marathon II</td>
<td>9-15 oz/1,000 sq ft 1.7 fl oz</td>
<td>12 hours</td>
<td>4A</td>
<td>Use 60WP as drench.</td>
</tr>
</tbody>
</table>
## INSECT CONTROL FOR ORNAMENTALS GROWN IN COMMERCIAL GREENHOUSES

<table>
<thead>
<tr>
<th>Insect or Mite</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 100 Gallons of Water</th>
<th>REI</th>
<th>Mode of Action Number</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whitefly</td>
<td><strong>insecticidal soap 1%-2%</strong></td>
<td></td>
<td></td>
<td></td>
<td>Thoroughly wet both surfaces of infested leaves. Use soft water whenever possible.</td>
</tr>
<tr>
<td></td>
<td>M-Pede</td>
<td>1-2 gal</td>
<td>12 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Olympic</td>
<td>1-2 gal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Isaria fumosorosea</em></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Preferal</td>
<td>14-28 oz</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin</td>
<td>1.5-5 oz</td>
<td>24 hours</td>
<td>3A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scimitar GC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>novaluron</td>
<td>6-8 fl oz</td>
<td>12 hours</td>
<td>15</td>
<td>DO NOT apply more than once every 30 days or more than 2 applications per crop. DO NOT apply to poinsettias.</td>
</tr>
<tr>
<td></td>
<td>Pedestal 10% SC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>pymetrozine</td>
<td>2.5-5 oz</td>
<td>12 hours</td>
<td>9B</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Endeavor 50WG</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>pyridaben</td>
<td>2-4 oz</td>
<td>12 hours</td>
<td>21A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sanmite 75WP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>pymefluidrazon (Rycar)</td>
<td>Follow label directions</td>
<td>12 hours</td>
<td>un</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>pymefluidrazon (Distance)</td>
<td>6-8 fl oz</td>
<td>12 hours</td>
<td>7C</td>
<td>Target crawlers. Apply no more than 2 times per crop cycle. DO NOT apply to poinsettias.</td>
</tr>
<tr>
<td></td>
<td>pyrethrum X-Clude, Natural Plus Pyrenone</td>
<td>aerosol 2-12 oz/acre</td>
<td>12 hours</td>
<td>3A</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>s-kinoprene</td>
<td>6-20 oz</td>
<td>4 hours</td>
<td>7A</td>
<td>See Aphid.</td>
</tr>
<tr>
<td></td>
<td>Enstar 5EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>spinetoram + sulfoxaflor (XXpire)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>4C + 5</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>spiromesfen (Judo 4 F)</td>
<td>1-4 oz</td>
<td>12 hours</td>
<td>23</td>
<td>Effective on nymphal and egg stages.</td>
</tr>
<tr>
<td></td>
<td>spirotetramat (Kontos 2F)</td>
<td>1.7 fl oz</td>
<td>24 hours</td>
<td>23</td>
<td>See label for drench instructions.</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam Flagship 25WG</td>
<td>4-8.5 oz</td>
<td>12 hours</td>
<td>4A</td>
<td>Medium treatment may take 1-2 weeks for activity; do not leach for 7 days.</td>
</tr>
<tr>
<td></td>
<td>Flagship 0.22G</td>
<td>follow label directions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>tolfenpyrad (Hachi-Hachi)</td>
<td>follow label directions</td>
<td>12 hours</td>
<td>21A</td>
<td>Follow label directions.</td>
</tr>
</tbody>
</table>
## INSECT CONTROL FOR ORNAMENTALS GROWN IN INTERIOR PLANTSCAPES

**Note:** People without proper application protective clothing must not enter treated area until plants are dry or as stipulated on the label. If possible, remove infested plants from living and eating areas prior to spray application. Place plants outdoors or in an area not likely to come in contact with people, pets, or food while spraying and while plants are wet. In most situations, plants can be returned to original location when they are dry. If plants cannot be removed, follow label precautions.

Phytotoxicity (damage to the plant as a result of the application of a chemical) is an important consideration in controlling pests of ornamentals. Phytotoxicity is generally expressed as damage to the leaves, flowers, or stems and is observed as “burn” (browning of tissue), “chlorosis” (yellowing or bleaching of tissue), or modification of growth by deformation or stunting. There are many species and cultivars of ornamental plants with varying sensitivity to chemicals. Other environmental conditions, such as your particular growing conditions, will also affect phytotoxicity. You are encouraged to evaluate a pesticide for phytotoxicity on a few plants under your particular conditions before treating all plants.

<table>
<thead>
<tr>
<th>Insect or Mite</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 100 Gallons of Water</th>
<th>Amount Per Gallon</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aphid</td>
<td><em>afidopyropen</em> Ventigra</td>
<td>follow label directions</td>
<td>follow label directions</td>
<td>Follow label directions. 12 hr. REI.</td>
</tr>
<tr>
<td></td>
<td><em>Beauveria bassiana</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BotaniGard ES Naturalis-L</td>
<td>0.5-3.0 qts</td>
<td>0.33-1.0 fl oz</td>
<td>Soil treatment only. Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole Acelepryn</td>
<td>30-100 fl oz</td>
<td>0.30-1.0 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>clothianidin</td>
<td>0.63-1.26 oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Arena 50 WDG</td>
<td>1.3-1.9 oz</td>
<td>1/4 tsp</td>
<td>Repeat application every 7-28 days as necessary. 12 hours restricted entry interval.</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin (Decathlon)</td>
<td>1.6-3.2 oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>flonicamid 50 WDG Aria 0.7 oz package</td>
<td>1-6 packets (0.7-4.3 oz)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>fluvalinate (Mavrik)</td>
<td>4-10 oz</td>
<td>1/2-1 tsp</td>
<td>Thorough coverage is necessary. Spray must contact pest to be effective.</td>
</tr>
<tr>
<td></td>
<td>horticultural oil Sunspray Ultrafine Saf-T-Side Triact 90EC</td>
<td>1%-2%</td>
<td>1%-2%</td>
<td>Per label directions.</td>
</tr>
<tr>
<td></td>
<td>imidacloprid Merit 75WP Merit 75WPS Marathon II</td>
<td>14-28 oz</td>
<td>0.14-0.28 oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>insecticidal soap (M-Pede)</td>
<td>1%-2%</td>
<td>1%-2%</td>
<td>Thorough coverage is necessary. Spray must contact pests to be effective. Repeat spray 3 times at 5- to 7-day interval. Soap could make floor slippery.</td>
</tr>
<tr>
<td></td>
<td><em>isaria fumosorosea</em> Preferal</td>
<td>14-28 oz</td>
<td>0.14-0.28 oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pymetrozine (Endeavor)</td>
<td>2-5 oz</td>
<td>1/4-1/2 tsp</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>pyriproxyfen (Distance)</td>
<td>6-8 fl oz</td>
<td>0.02 oz (0.6 mL)</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>s-kinoprene Enstar 5E</td>
<td>6-10 oz</td>
<td>1/2 tsp</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>spirotetramat Kontos 2F</td>
<td>1.7 fl oz</td>
<td></td>
<td>See label for drench instructions. 24-hour restricted entry interval.</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam Flagship 25WG</td>
<td>4-8.5 oz</td>
<td>0.04-0.085 oz</td>
<td>Reapply as needed but no sooner than every 7 days. DO NOT exceed 17 oz/acre per crop or year.</td>
</tr>
<tr>
<td>Caterpillars</td>
<td><em>chlorantraniliprole (Acelepryn)</em></td>
<td>1.0-16.0 fl oz</td>
<td></td>
<td>Foliar application only. Follow label directions.</td>
</tr>
<tr>
<td>(leaf feeding)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Insect Control for Ornamentals Grown in Interior Plantscapes

<table>
<thead>
<tr>
<th>Insect or Mite</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 100 Gallons of Water</th>
<th>Amount Per Gallon</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearwing Borers</td>
<td>chlorantraniliprole (Acelepryn)</td>
<td>4.0-32 fl oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fungus Gnats</strong></td>
<td><strong>Bacillus thuringiensis subsp. israelensis</strong></td>
<td>3.2-6.4 oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gnatrol WDG</td>
<td>13-26 oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Beauveria bassiana Naturalis-L</td>
<td>30-100 fl. oz.</td>
<td>0.30-1.0 fl. oz.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cyromazine</td>
<td>2.66 oz</td>
<td>1/2 tsp</td>
<td></td>
</tr>
<tr>
<td></td>
<td>diflubenzuron</td>
<td>16-24 oz</td>
<td>0.04-0.08 (1-2 grams)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pyriproxyfen (Distance)</td>
<td>3-6 fl oz</td>
<td>0.02 (0.6 mL)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>s-kinoprene</td>
<td>6-10 oz</td>
<td>1/2 tsp</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Steinemema feltiae</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Entonem, NemaShield, Nemasys, Scan Mask</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>thiamethoxam</td>
<td>4-8.5 oz</td>
<td>0.04-0.085 oz</td>
<td>Reapply as needed, but no sooner than every 7 days. DO NOT exceed 17 oz/acre per crop or year.</td>
</tr>
<tr>
<td><strong>Lace Bug</strong></td>
<td>Beauveria bassiana BotaniGard ES</td>
<td>0.5-3.0 qts</td>
<td>0.33-1.0 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole (Acelepryn)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>thiamethoxam</td>
<td>4-8.5 oz</td>
<td>0.04-0.085 oz</td>
<td>Soil treatment only. Follow label directions. Reapply as needed, but no sooner than every 7 days. DO NOT exceed 17 oz/acre per crop or year.</td>
</tr>
<tr>
<td><strong>Leafminer</strong></td>
<td>chlorantraniliprole (Acelepryn)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>thiamethoxam</td>
<td>4-8.5 oz</td>
<td>0.04-0.085 oz</td>
<td>Soil treatment only. Follow label directions. Reapply as needed, but no sooner than every 7 days. DO NOT exceed 17 oz/acre per crop or year.</td>
</tr>
<tr>
<td><strong>Mealybug</strong></td>
<td>alfdopyropen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ventigra</td>
<td>follow label directions</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Beauveria bassiana BotaniGard ES</td>
<td>0.5-3.0 qts</td>
<td>0.33-1.0 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Naturalis-L</td>
<td>30-100 fl. oz.</td>
<td>0.30-1.0 fl. oz.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>clothianidin</td>
<td>0.9-1.26 oz</td>
<td>1/4 tsp</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cyfluthrin (Decathlon)</td>
<td>1.3-1.9 oz</td>
<td>1/2 tsp</td>
<td></td>
</tr>
<tr>
<td></td>
<td>dinotefuran</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Safari 20 SG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>flonicamid 50 WDG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aria 0.7 oz package</td>
<td>1-6 packets (0.7-4.3 oz)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>horticultural oils</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sunspray ultrafine</td>
<td>1%-2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Saf-T-Side</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Triact 90EC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>imidacloprid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Merit 7WP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Merit 75 WSP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Marathon II</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*INSECT CONTROL FOR ORNAMENTALS GROWN IN INTERIOR PLANTSCAPES*
## Insect Control for Ornamentals Grown in Interior Plantscapes

<table>
<thead>
<tr>
<th>Insect or Mite</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 100 Gallons of Water</th>
<th>Amount Per Gallon</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mealybug</strong></td>
<td>insecticidal soap (M-Pede)</td>
<td>1%-2%</td>
<td>1%-2%</td>
<td>Thorough coverage is necessary. Spray must contact pests to be effective. Repeat spray 3 times at 10- to 14-day intervals. Soap could make floor slippery.</td>
</tr>
<tr>
<td>(cont.)</td>
<td><em>isaria fumosorosea</em> (Preferal)</td>
<td>14-28 oz</td>
<td>0.14-0.28 oz</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>pyrethrum PT 1600A Pyrenone</td>
<td>aerosol</td>
<td></td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>pyriproxyfen (Distance)</td>
<td>8-12 fl oz</td>
<td>0.02 (0.6 mL)</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>s-kinoprene Enstar II 5E</td>
<td>6-10 oz</td>
<td>1/2 tsp</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>spirotetramat Kontos 2F</td>
<td>1.7 fl oz</td>
<td></td>
<td>See label for drench instructions. 24-hour restricted entry interval.</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam Flagship 25WG</td>
<td>4-8.5 oz</td>
<td>0.04-0.085 oz</td>
<td>Reapply as needed, but no sooner than every 7 days. DO NOT exceed 17 oz/acre per crop or year.</td>
</tr>
</tbody>
</table>

| **Mites**      | *Beauveria bassiana* BotaniGard ES | 0.5-3.0 qts                     | 0.33-1.0 fl oz    | Follow label directions. |
|                | Naturalis-L                   | 30-100 fl oz                    | 0.30-1.0 fl oz    | Follow label directions. |
|                | bifenazate (Floramite)       | 2-4 oz                          | 1/4-1/2 tsp       | 12 hours restricted entry interval. IRAC Group 25. DO NOT exceed the maximum seasonal use rate of 27.4 fl oz of Sultan per crop growing cycle. DO NOT make more than 2 applications of Sultan per crop growing cycle. Sultan has selective activity on the Tetranychid family of mites but is not active on other species such as broad mite, cyclamen mite, flat mite or rust mite. |
|                | cyflumetofen (Sultan)        | 13.7 fl oz                      |                   | Follow label directions. |
|                | fenazaquin (Magus)           | 12-24 oz                        | 0.12-0.24 oz      | Follow label directions. |
|                | fenproximate Akari 5SC       | 16-24 oz                        | 0.16-0.24 oz      | Follow label directions. |
|                | fluvalinate (Mavrik)         | 4-10 oz                         | (4.527 mL)        | Follow label directions. |
|                | insecticidal soap (M-Pede)  | 1%-2%                           | 1%-2%             | Thorough coverage is necessary. Spray must contact pest to be effective. Repeat spray 3 times at 5- to 7-day intervals. Soap could make floor slippery. |
|                | pyrethrum PT 1600A Pyrenone  | aerosol                         |                   | Follow label directions. |

<p>| <strong>Scale</strong>      | afidopyropene Ventigra      | follow label directions         | follow label directions | Follow label directions. 12 hr. REI. Controls nymphs and crawlers only. |
|                | cyfluthrin (Decathlon)      | 1.3-1.9 oz                      | 1/4 tsp             | Follow label directions. |
|                | dinotefuran Safari 20 SG   | 1-2 oz                          | 1/2-1 tsp           | Also effective on armored scale. |
|                | horticultural oil Sunspray ultrafine Saf-T-Side Triact 95EC | 1%-2%                          | 1%-2%              | Care must be taken because some plants are sensitive to oils. Thorough coverage is necessary, but do not overapply. Use fine spray. |
|                | imidacloprid (Marathon, others) | follow label directions         | follow label directions | Follow label directions. Many names and formulations are available. |</p>
<table>
<thead>
<tr>
<th>Insect or Mite</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 100 Gallons of Water</th>
<th>Amount Per Gallon</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scale</strong></td>
<td>&lt;br&gt;insecticidal soap (M-Pede) &lt;br&gt;pyrethrum PT 1600A Pyrenone &lt;br&gt;pyrifluquinazon (Rycar) &lt;br&gt;pyriproxyfen (Distance) &lt;br&gt;spirotetramat Kontos 2F &lt;br&gt;thiamethoxam Flagship 25WG</td>
<td>1%-2% &lt;br&gt;1600A &lt;br&gt;6.4 oz &lt;br&gt;8-12 fl oz &lt;br&gt;1.7 fl oz &lt;br&gt;4-8.5 oz</td>
<td>1%-2% &lt;br&gt;1%-2% &lt;br&gt;0.064 oz &lt;br&gt;0.02 oz (0.6 mL) &lt;br&gt;0.02 oz (0.6 mL) &lt;br&gt;0.04-0.085 oz</td>
<td>&lt;br&gt;Thorough coverage is necessary. Spray must contact pests to be effective. Soap could make floor slippery. &lt;br&gt;Follow label directions. &lt;br&gt;Follow label directions. IRAC Group: un &lt;br&gt;Follow label directions. &lt;br&gt;See label for drench instructions. 24-hour restricted entry interval. &lt;br&gt;Soft scale only. Reapply as needed, but no sooner than every 7 days. DO NOT exceed 17 oz/acre per crop or year.</td>
</tr>
<tr>
<td><strong>Thrips</strong></td>
<td>azadirachtin (Azatin) &lt;br&gt;Beauveria bassiana BotaniGard ES Naturalis-L &lt;br&gt;cyfluthrin (Decathlon) &lt;br&gt;fipronil 50 WDG Ara 0.7 oz package &lt;br&gt;fluvinate (Mavrik) &lt;br&gt;insecticidal soap (M-Pede) &lt;br&gt;thiamethoxam Flagship 25WG</td>
<td>0.5-3.0 qts &lt;br&gt;0.33-1.0 fl oz &lt;br&gt;1.3-1.9 oz &lt;br&gt;1/4 tsp &lt;br&gt;1-6 packets (0.7-4.3 oz) &lt;br&gt;4-10 oz &lt;br&gt;1%-2% &lt;br&gt;4-8.5 oz</td>
<td>0.30-1.0 fl oz &lt;br&gt;0.33-1.0 fl oz &lt;br&gt;0.33-1.0 fl oz &lt;br&gt;1/2-1 tsp &lt;br&gt;1%-2% &lt;br&gt;0.04-0.085 oz</td>
<td>&lt;br&gt;Follow label directions. &lt;br&gt;Follow label directions. &lt;br&gt;Repeat application every 7-28 days as necessary. 12-hour restricted entry interval. &lt;br&gt;Thorough coverage is necessary. Spray must contact pest to be effective. Repeat spray 3 times at 5- to 7-day intervals. Soap could make floor slippery. &lt;br&gt;For leaf-feeding thrips. Reapply as needed, but no sooner than every 7 days. DO NOT exceed 17 oz/acre per crop or year.</td>
</tr>
<tr>
<td><strong>White Grub</strong></td>
<td>chlorantraniliprole (Acelepryn) &lt;br&gt;clothianidin Arena 50 WDG &lt;br&gt;thiamethoxam Flagship 25WG</td>
<td>0.184-0.367 fl oz per 1,000 sq ft &lt;br&gt;see label &lt;br&gt;6-8.5 oz</td>
<td>0.06-0.085 oz</td>
<td>Soil treatment only. Follow label directions. &lt;br&gt;Apply as a drench. See label for drench rates. 12 hours restricted entry interval. &lt;br&gt;Reapply as needed, but no sooner than every 7 days. DO NOT exceed 17 oz/acre per crop or year.</td>
</tr>
<tr>
<td><strong>Whitefly</strong></td>
<td>afidopyropen Ventigra &lt;br&gt;azadirachtin (Azatin) &lt;br&gt;Beauveria bassiana BotaniGard ES Naturalis-L &lt;br&gt;clothianidin Arena 50 WDG</td>
<td>follow label directions &lt;br&gt;0.5-3.0 qts &lt;br&gt;0.9-1.26 oz.</td>
<td>follow label directions &lt;br&gt;0.33-1.0 fl oz</td>
<td>Follow label directions. 12 hr. REI. &lt;br&gt;Follow label directions. &lt;br&gt;Follow label directions. &lt;br&gt;Apply as a full coverage foliar spray or a drench. See label for drench rates. 12 hours restricted entry interval.</td>
</tr>
<tr>
<td>Insect or Mite</td>
<td>Insecticide and Formulation</td>
<td>Amount Per 100 Gallons of Water</td>
<td>Amount Per Gallon</td>
<td>Comments</td>
</tr>
<tr>
<td>---------------</td>
<td>----------------------------</td>
<td>---------------------------------</td>
<td>------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Whitefly (cont.)</td>
<td>diflubenzuron Adept 25WSB</td>
<td>16-24 oz</td>
<td>0.04-0.08 oz (1-2 grams)</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>dinotefuran Safari 20 SG</td>
<td>1/2-1 tsp</td>
<td></td>
<td>Also effective on armored scale.</td>
</tr>
<tr>
<td></td>
<td>flocamid 50 WDG Aria 0.7 oz package</td>
<td>1-6 packets (0.7-4.3 oz)</td>
<td></td>
<td>Repeat application every 7-28 days as necessary. 12-hour restricted entry interval.</td>
</tr>
<tr>
<td></td>
<td>horticultural oils Sunspray ultrafine Saf-T-Side Triact 90EC</td>
<td>1%-2%</td>
<td>1%-2%</td>
<td>Care must be taken because some plants are sensitive to oils. Thorough coverage is necessary, but do not overapply. Use fine spray.</td>
</tr>
<tr>
<td></td>
<td>imidacloprid Merit 75WP Merit 75WPS Marathon II</td>
<td></td>
<td></td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>insecticidal soap (M-Pede)</td>
<td>1%-2%</td>
<td>1%-2%</td>
<td>Thorough coverage is necessary. Spray must contact pest to be effective. Repeat spray 3 times at 5- to 7-day intervals. Soap could make floor slippery.</td>
</tr>
<tr>
<td></td>
<td>isaria fumosorosea (Preferal)</td>
<td>14-28 oz</td>
<td>0.14-0.28 oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pymetrozine (Endeavor)</td>
<td>2-5 oz</td>
<td>1/4-1/2 tsp</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>pyrethrum PT 1600A Pyrenone aerosol</td>
<td></td>
<td></td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>pyriproxyfen (Distance)</td>
<td>6-8 fl oz</td>
<td>0.02 oz (0.6 mL)</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>s-kinoprene Enstar 5E</td>
<td>6-10 oz</td>
<td>1/2 tsp</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>spirotetramat Kontos 2F</td>
<td>1.7 fl oz</td>
<td></td>
<td>See label for drench instructions. 24-hour restricted entry interval.</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam Flagship 25WG</td>
<td>4-8.5 oz</td>
<td>0.04-0.085 oz</td>
<td>Reapply as needed, but no sooner than every 7 days. DO NOT exceed 17 oz/acre per crop or year.</td>
</tr>
<tr>
<td>Pest</td>
<td>Insecticide and Formulation*</td>
<td>Amount Formulation Per Gallon Spray</td>
<td>Remarks and Precautions</td>
<td></td>
</tr>
<tr>
<td>--------------------</td>
<td>-------------------------------------------------------------------</td>
<td>------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Aphid</td>
<td>acephate</td>
<td>Per label directions.</td>
<td>Follow label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>acetamiprid</td>
<td></td>
<td>Follow label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin 0.0015% + imidacloprid 0.012%</td>
<td>ready to use</td>
<td>Follow label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Bayer Advanced Dual Action Rose &amp; Flower Insect Killer Ready-To-Use)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin</td>
<td></td>
<td>Follow label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cyfluthrin</td>
<td></td>
<td>Follow label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Ortho Tree &amp; Shrub Insect Control Plus</td>
<td>1%-2%</td>
<td>Per label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Miracle-Gro Plant Food Concentrate 0.43%,</td>
<td></td>
<td>Thorough coverage is necessary. Spray must contact pests to be effective.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ortho Tree &amp; Shrub Insect Control Granules 2.0%)</td>
<td></td>
<td>Repeat spray three times at 5- to 7-day intervals.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>horticultural oils 1%-2%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Bayer Advanced)</td>
<td>1%-2%</td>
<td>Follow label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>insecticidal soap 1%-2%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>malathion (various)</td>
<td></td>
<td>Follow label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pyrethrin/pyrethrum</td>
<td></td>
<td>Follow label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pyrethroids (various)</td>
<td>ready to use and concentrate</td>
<td>Follow label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Azalea Leaf Miner</td>
<td>acephate (Orthene TTO)</td>
<td>1 tsp</td>
<td>Per label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin 0.0015% + imidacloprid 0.012%</td>
<td>ready to use</td>
<td>Follow label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Bayer Advanced Dual Action Rose &amp; Flower Insect Killer Ready-To-Use)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Ortho Tree &amp; Shrub Insect Control Plus</td>
<td>Per label directions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Miracle-Gro Plant Food Concentrate 0.43%,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ortho Tree &amp; Shrub Insect Control Granules 2.0%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Bayer Advanced)</td>
<td>Per label directions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bagworm</td>
<td>Bacillus thuringiensis (Biotrol WP, Thuricide, Sok-Bt)</td>
<td>2 tsp</td>
<td>Per label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin 0.0015% + imidacloprid 0.012%</td>
<td>ready to use</td>
<td>Follow label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Bayer Advanced Dual Action Rose &amp; Flower Insect Killer Ready-To-Use)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>malathion (various)</td>
<td>Per label directions.</td>
<td>In winter, hand-pick and burn if only a few bagworms are present.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pyrethroids (various)</td>
<td>Per label directions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beetles</td>
<td>acetamiprid</td>
<td>Follow label directions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(foliage feeding such as elm leaf beetle)</td>
<td>beta-cyfluthrin 0.0015% + imidacloprid 0.012%</td>
<td>ready to use</td>
<td>Follow label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Bayer Advanced Dual Action Rose &amp; Flower Insect Killer Ready-To-Use)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## ORNAMENTAL INSECT CONTROL FOR HOMEOWNERS
### OUTDOOR ORNAMENTAL INSECT CONTROL

<table>
<thead>
<tr>
<th>Pest</th>
<th>Insecticide and Formulation*</th>
<th>Amount Formulation Per Gallon Spray</th>
<th>Remarks and Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beetles</strong> (cont.) (foliage feeding such as elm leaf beetle)</td>
<td>cararyl</td>
<td><strong>Apply to foliage when injury first noted.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Ortho Tree &amp; Shrub Insect Control Plus Miracle-Gro Plant Food Concentrate 0.43%, Ortho Tree &amp; Shrub Insect Control Granules 2.0%)</td>
<td><strong>Per label directions.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Bayer Advanced)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Borers</strong> (various kinds)</td>
<td>dinotefuran (Ortho Tree &amp; Shrub Insect Control Plus Miracle-Gro Plant Food Concentrate 0.43%, Ortho Tree &amp; Shrub Insect Control Granules 2.0%)</td>
<td><strong>Dinotefuran is effective against flat-headed borers and some clear-winged moths only.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Bayer Advanced)</td>
<td><strong>Dinotefuran is effective against flat-headed borers and some clear-winged moths only.</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin</td>
<td><strong>Apply to trunk and lower limbs in spring as per label directions.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Boxwood Leaf Miner</strong></td>
<td>acephate (Orthene, etc.) 75S</td>
<td>2 tsp</td>
<td><strong>Per label directions.</strong></td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin 0.0015% + imidacloprid 0.012% (Bayer Advanced Dual Action Rose &amp; Flower Insect Killer Ready-To-Use)</td>
<td>ready to use</td>
<td><strong>Follow label directions.</strong></td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Ortho Tree &amp; Shrub Insect Control Plus Miracle-Gro Plant Food Concentrate 0.43%, Ortho Tree &amp; Shrub Insect Control Granules 2.0%)</td>
<td>Per label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Bayer Advanced)</td>
<td>Per label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>malathion (various)</td>
<td>Per label directions.</td>
<td></td>
</tr>
<tr>
<td><strong>Caterpillars</strong> (such as armyworm, cutworm and looper)</td>
<td>acephate</td>
<td>Follow label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>acetamiprid</td>
<td>Not for cutworm control. Follow label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bacillus thuringiensis (Dipel, Thuricide)</td>
<td>Follow manufacturer’s suggestions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin 0.0015% + imidacloprid 0.012% (Bayer Advanced Dual Action Rose &amp; Flower Insect Killer Ready-To-Use)</td>
<td>ready to use</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin</td>
<td>Follow label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>carbaryl</td>
<td>Follow label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cyfluthrin</td>
<td>Follow label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pyrethroids (various)</td>
<td>Follow label directions.</td>
<td></td>
</tr>
<tr>
<td><strong>Fungus gnats</strong></td>
<td>dinotefuran (Ortho Tree &amp; Shrub Insect Control Granules 2.0%)</td>
<td>Per label directions</td>
<td></td>
</tr>
<tr>
<td><strong>Holly Leaf Miner</strong></td>
<td>dinotefuran (Ortho Tree &amp; Shrub Insect Control Plus Miracle-Gro Plant Food Concentrate 0.43%, Ortho Tree &amp; Shrub Insect Control Granules 2.0%)</td>
<td>Per label directions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin 0.0015% + imidacloprid 0.012% (Bayer Advanced Dual Action Rose &amp; Flower Insect Killer Ready-To-Use)</td>
<td>ready to use</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spray in late spring to kill larvae in mines. Per label directions.</td>
<td></td>
</tr>
</tbody>
</table>
## Japanese Beetle

<table>
<thead>
<tr>
<th>Insecticide and Formulation*</th>
<th>Amount Formulation Per Gallon Spray</th>
<th>Remarks and Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>beta-cyfluthrin 0.0015% + imidacloprid 0.012% (Bayer Advanced Dual Action Rose &amp; Flower Insect Killer Ready-To-Use)</td>
<td>ready to use</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td>dinotefuran (Ortho Tree &amp; Shrub Insect Control Plus Miracle-Gro Plant Food Concentrate 0.43%)</td>
<td>Per label directions</td>
<td></td>
</tr>
<tr>
<td>carbaryl (Sevin) 50WP</td>
<td>2 Tbsp</td>
<td>Treat as needed. Repeat applications as necessary.</td>
</tr>
<tr>
<td>imidacloprid (Bayer Advanced)</td>
<td>Per label directions</td>
<td></td>
</tr>
<tr>
<td>malathion (various)</td>
<td>Per label directions</td>
<td></td>
</tr>
</tbody>
</table>

## Lace Bug

<table>
<thead>
<tr>
<th>Insecticide and Formulation*</th>
<th>Amount Formulation Per Gallon Spray</th>
<th>Remarks and Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>acephate (Orthene, etc.)</td>
<td>1 tsp</td>
<td>Apply in early spring when nymphs of first generation are present.</td>
</tr>
<tr>
<td>beta-cyfluthrin 0.0015% + imidacloprid 0.012% (Bayer Advanced Dual Action Rose &amp; Flower Insect Killer Ready-To-Use)</td>
<td>ready to use</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td>dinotefuran (Ortho Tree &amp; Shrub Insect Control Plus Miracle-Gro Plant Food Concentrate 0.43%, Ortho Tree &amp; Shrub Insect Control Granules 2.0%)</td>
<td>Per label directions</td>
<td>Per label directions.</td>
</tr>
<tr>
<td>imidacloprid (Bayer Advanced)</td>
<td>Per label directions</td>
<td>Per label directions.</td>
</tr>
<tr>
<td>malathion (various)</td>
<td>Per label directions</td>
<td></td>
</tr>
</tbody>
</table>

## Mealybug

<table>
<thead>
<tr>
<th>Insecticide and Formulation*</th>
<th>Amount Formulation Per Gallon Spray</th>
<th>Remarks and Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>acephate</td>
<td></td>
<td>Follow label directions.</td>
</tr>
<tr>
<td>acetamiprid</td>
<td></td>
<td>Follow label directions.</td>
</tr>
<tr>
<td>beta-cyfluthrin 0.0015% + imidacloprid 0.012% (Bayer Advanced Dual Action Rose &amp; Flower Insect Killer Ready-To-Use)</td>
<td>ready to use</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td>bifenthrin</td>
<td>ready to use</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td>cyfluthrin</td>
<td></td>
<td>Follow label directions.</td>
</tr>
<tr>
<td>dinotefuran (Ortho Tree &amp; Shrub Insect Control Plus Miracle-Gro Plant Food Concentrate 0.43%, Ortho Tree &amp; Shrub Insect Control Granules 2.0%)</td>
<td>Per label directions</td>
<td>Per label directions.</td>
</tr>
<tr>
<td>horticultural oil</td>
<td>1%-2%</td>
<td>Coverage is important. Spray must contact pests.</td>
</tr>
<tr>
<td>imidacloprid (Bayer Advanced)</td>
<td></td>
<td>Follow label directions.</td>
</tr>
<tr>
<td>insecticidal soap</td>
<td>1%-2%</td>
<td>Thorough coverage is necessary. Spray must contact pests to be effective. Repeat spray three times at 5- to 7-day intervals.</td>
</tr>
<tr>
<td>malathion (various)</td>
<td></td>
<td>Follow label directions.</td>
</tr>
<tr>
<td>pyrethroids (various)</td>
<td>ready to use and concentrate</td>
<td>Follow label directions.</td>
</tr>
</tbody>
</table>

## Plant Bugs

### Leafhopper

<table>
<thead>
<tr>
<th>Insecticide and Formulation*</th>
<th>Amount Formulation Per Gallon Spray</th>
<th>Remarks and Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>acephate</td>
<td></td>
<td>Follow label directions.</td>
</tr>
<tr>
<td>acetamiprid</td>
<td></td>
<td>Follow label directions.</td>
</tr>
<tr>
<td>beta-cyfluthrin 0.0015% + imidacloprid 0.012% (Bayer Advanced Dual Action Rose &amp; Flower Insect Killer Ready-To-Use)</td>
<td>ready to use</td>
<td>Follow label directions.</td>
</tr>
</tbody>
</table>
## Pest Insecticide and Formulation

### Plant Bugs

<table>
<thead>
<tr>
<th>Plant Bugs</th>
<th>Insecticide and Formulation*</th>
<th>Amount Formulation Per Gallon Spray</th>
<th>Remarks and Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leafhopper</strong> (cont.)</td>
<td>carbaryl</td>
<td></td>
<td>Apply to foliage as needed.</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin</td>
<td></td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Ortho Tree &amp; Shrub Insect Control Plus Miracle-Gro Plant Food Concentrate 0.43%, Ortho Tree &amp; Shrub Insect Control Granules 2.0%)</td>
<td></td>
<td>Per label directions.</td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Bayer Advanced)</td>
<td></td>
<td>Leafhoppers ONLY.</td>
</tr>
<tr>
<td></td>
<td>insecticidal soap</td>
<td>1%-2%</td>
<td>Thorough coverage is necessary. Spray must contact pests to be effective. Repeat spray three times at 5- to 7-day intervals.</td>
</tr>
<tr>
<td></td>
<td>malathion (various)</td>
<td></td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>pyrethroids (various)</td>
<td>ready to use and concentrate</td>
<td>Follow label directions.</td>
</tr>
</tbody>
</table>

### Rose Midge

<table>
<thead>
<tr>
<th>Rose Midge</th>
<th>Insecticide and Formulation*</th>
<th>Amount Formulation Per Gallon Spray</th>
<th>Remarks and Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>beta-cyfluthrin 0.0015% + imidacloprid 0.012% (Bayer Advanced Dual Action Rose &amp; Flower Insect Killer Ready-To-Use)</td>
<td>ready to use</td>
<td>Follow label directions.</td>
</tr>
</tbody>
</table>

### Rose Slugs

<table>
<thead>
<tr>
<th>Rose Slugs</th>
<th>Insecticide and Formulation*</th>
<th>Amount Formulation Per Gallon Spray</th>
<th>Remarks and Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>beta-cyfluthrin 0.0015% + imidacloprid 0.012% (Bayer Advanced Dual Action Rose &amp; Flower Insect Killer Ready-To-Use)</td>
<td>ready to use</td>
<td>Follow label directions.</td>
</tr>
</tbody>
</table>

### Scale Insects

<table>
<thead>
<tr>
<th>Scale Insects</th>
<th>Insecticide and Formulation*</th>
<th>Amount Formulation Per Gallon Spray</th>
<th>Remarks and Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>acephate</td>
<td></td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>acetamiprid</td>
<td></td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin 0.0015% + imidacloprid 0.012% (Bayer Advanced Dual Action Rose &amp; Flower Insect Killer Ready-To-Use)</td>
<td>ready to use</td>
<td>Effective against crawler stages.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin</td>
<td></td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>carbaryl</td>
<td></td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin</td>
<td></td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Ortho Tree &amp; Shrub Insect Control Plus Miracle-Gro Plant Food Concentrate 0.43%, Ortho Tree &amp; Shrub Insect Control Granules 2.0%)</td>
<td>1%-2%</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>horticultural oils</td>
<td>1%-2%</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Bayer Advanced)</td>
<td></td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>insecticidal soap</td>
<td>1%-2%</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>malathion (various)</td>
<td></td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>pyrethroids (various)</td>
<td>ready to use and concentrate</td>
<td>Follow label directions.</td>
</tr>
</tbody>
</table>

### Slug and Snail

<table>
<thead>
<tr>
<th>Slug and Snail</th>
<th>Insecticide and Formulation*</th>
<th>Amount Formulation Per Gallon Spray</th>
<th>Remarks and Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>iron phosphate (Slug-Go)</td>
<td></td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>methaldehyde</td>
<td></td>
<td>Attention should be given to moist areas or water leaks. DO NOT use in home gardens.</td>
</tr>
<tr>
<td></td>
<td>Mesurol 2B</td>
<td>1 lb/100 sq ft</td>
<td>Follow label directions.</td>
</tr>
</tbody>
</table>
## ORNAMENTAL INSECT CONTROL FOR HOMEOWNERS
### OUTDOOR ORNAMENTAL INSECT CONTROL

<table>
<thead>
<tr>
<th>Pest</th>
<th>Insecticide and Formulation*</th>
<th>Amount Formulation Per Gallon Spray</th>
<th>Remarks and Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sowbug and Pillbug</strong></td>
<td>beta-cyfluthrin 0.0015% + imidacloprid 0.012% (Bayer Advanced Dual Action Rose &amp; Flower Insect Killer Ready-To-Use)</td>
<td>ready to use</td>
<td>Follow label directions. Effective against crawler stages.</td>
</tr>
<tr>
<td></td>
<td>carbaryl</td>
<td>follow label directions</td>
<td>Clean up breeding and hiding places; i.e., treat any mulched area of ornamental shrubbery.</td>
</tr>
<tr>
<td></td>
<td>malathion (various)</td>
<td></td>
<td>Follow label directions.</td>
</tr>
<tr>
<td><strong>Spider Mite</strong></td>
<td>bifenthrin 0.012%</td>
<td>ready to use</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>horticultural oil</td>
<td>1%-2%</td>
<td>Coverage is important. Spray must contact pests to be effective.</td>
</tr>
<tr>
<td></td>
<td>insecticidal soap</td>
<td>1%-2%</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>malathion (various)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Stalk Borer</strong></td>
<td>carbaryl</td>
<td>follow label directions</td>
<td>Treat as often as needed beginning when first damage is noted. DO NOT allow ragweed to grow near flower beds.</td>
</tr>
<tr>
<td></td>
<td>acephate</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>acetamiprid</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin 0.0015% + imidacloprid 0.012% (Bayer Advanced Dual Action Rose &amp; Flower Insect Killer Ready-To-Use)</td>
<td>ready to use</td>
<td>Follow label directions. Effective against crawler stages.</td>
</tr>
<tr>
<td></td>
<td>carbaryl</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>cyfluthrin</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Ortho Tree &amp; Shrub Insect Control Plus Miracle-Gro Plant Food Concentrate 0.43%, Ortho Tree &amp; Shrub Insect Control Granules 2.0%)</td>
<td>Per label directions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>insecticidal soap</td>
<td>1%-2%</td>
<td>Follow label directions. Thorough coverage is necessary. Spray must contact pests to be effective. Repeat spray three times at 5- to 7-day intervals.</td>
</tr>
<tr>
<td></td>
<td>malathion (various)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>pyrethroids (various)</td>
<td>ready to use and concentrate</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td><strong>Whitefly</strong></td>
<td>acephate</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>acetamiprid</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin 0.0015% + imidacloprid 0.012% (Bayer Advanced Dual Action Rose &amp; Flower Insect Killer Ready-To-Use)</td>
<td>ready to use</td>
<td>Follow label directions. Effective against crawler stages.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin</td>
<td>ready to use</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Ortho Tree &amp; Shrub Insect Control Plus Miracle-Gro Plant Food Concentrate 0.43%, Ortho Tree &amp; Shrub Insect Control Granules 2.0%)</td>
<td>Per label directions.</td>
<td></td>
</tr>
</tbody>
</table>
### ORNAMENTAL INSECT CONTROL FOR HOMEOWNERS

#### OUTDOOR ORNAMENTAL INSECT CONTROL

<table>
<thead>
<tr>
<th>Pest</th>
<th>Insecticide and Formulation*</th>
<th>Amount Formulation Per Gallon Spray</th>
<th>Remarks and Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whitefly (cont.)</td>
<td>horticultural oils</td>
<td>1%-2%</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Bayer Advanced)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>insecticidal soap</td>
<td>1%-2%</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>malathion (various)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>pyrethrins/pyrethrum</td>
<td></td>
<td>Follow label directions.</td>
</tr>
<tr>
<td></td>
<td>pyrethroids (various)</td>
<td>ready to use and concentrate</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td>White grubs</td>
<td>dinotefuran (Ortho Tree &amp; Shrub Insect Control Granules 2.0%)</td>
<td>Per label directions</td>
<td>Per label directions</td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Bayer Advanced Season Long Grub Control)</td>
<td>Per label directions</td>
<td>Per label directions</td>
</tr>
</tbody>
</table>

*Numerous products containing insecticide are available to homeowners. Products containing the same insecticide may vary in the concentration of the active ingredient. Always consult the product label for information on rate of application. Insecticides that may be available to homeowners are listed in the [HOMEOWNER INSECTICIDE PRODUCT LIST](#) section beginning on page 324.

#### INDOOR ORNAMENTAL INSECT CONTROL

**Note:** Many formulations of insecticides for use in the home are combinations of active ingredients. The following list of insecticides is given as a guide to determine which pests an active ingredient is effective in controlling. Many pyrethroids and other compounds are now off label, and there may be several brand names for different chemicals. Only the active ingredient of insecticides is listed. Other compounds, especially oils, contain a mixture of oils, and these are listed under the general category of oils. The trade names below are only examples of several different formulations available and are not given as recommendations. Check the label on the insecticide container to determine what plants can be treated and the active ingredients present in the product. When possible, place plants outdoors or in an area not likely to come in contact with people, pets or food while making insecticide application. If plants cannot be moved outside for treatment, follow label precautions for indoor treatment.

<table>
<thead>
<tr>
<th>Insecticide and Formulation*</th>
<th>Rate</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>bifenthrin</td>
<td></td>
<td>mealybugs, mites, whiteflies, aphids</td>
</tr>
<tr>
<td>Ortho Houseplant and Garden Insect Killer, other Ortho products</td>
<td>as directed</td>
<td></td>
</tr>
<tr>
<td>cyfluthrin</td>
<td></td>
<td>gnats, centipedes, earwigs, scorpions</td>
</tr>
<tr>
<td>Bayer Advanced Home Pest Control</td>
<td>as directed</td>
<td>Follow label directions.</td>
</tr>
<tr>
<td>horticultural oil</td>
<td>1%-2%</td>
<td>scale, whiteflies, mites</td>
</tr>
<tr>
<td>SunSpray Ultrafine, Saf-T-Side, Superior Oil, Golden Natural Spray Oil, Volck Oil; found in Green Light products and others</td>
<td>Coverage is important; spray must contact pests to be effective.</td>
<td></td>
</tr>
<tr>
<td>imidacloprid + fertilizer</td>
<td></td>
<td>aphids, mealybugs, whiteflies</td>
</tr>
<tr>
<td>Bayer Advanced Garden 2-in-1 Plant Spikes</td>
<td>as directed</td>
<td></td>
</tr>
<tr>
<td>insecticidal soap</td>
<td>1%-2%</td>
<td>aphids, mealybugs, scale, thrips, mites, whiteflies</td>
</tr>
<tr>
<td>M-Pede and Safer Soap</td>
<td>Coverage is important; spray must contact pests to be effective.</td>
<td></td>
</tr>
<tr>
<td>pyrethrins, pyrethrum</td>
<td></td>
<td>aphids, mealybugs, thrips, whiteflies</td>
</tr>
<tr>
<td>Pyrethrum (aerosol); found in several Safer products, Garden Safe</td>
<td>as directed</td>
<td></td>
</tr>
</tbody>
</table>

*Numerous products containing insecticide are available to homeowners. Products containing the same insecticide may vary in the concentration of the active ingredient. Always consult the product label for information on rate of application. Insecticides that may be available to homeowners are listed in the [HOMEOWNER INSECTICIDE PRODUCT LIST](#) section beginning on page 324.
## HOME LAWN INSECT CONTROL

The following table provides home lawn insect control recommendations with pesticides for use by the homeowner and with pesticides for use by licensed professionals only. All chemical information provided below is given with the understanding that no endorsement of named products is intended nor is criticism implied of similar products that are not mentioned. Individuals who use pesticides are responsible for ensuring that the intended use complies with current regulations and conforms to the product label. Before purchasing or using any pesticide, always read and carefully follow the label directions.

Insecticides listed below are identified by common chemical name. A trade name in parentheses may also be listed as a convenience for the reader. Additional trade names that may be available locally are listed in the **HOMEOWNER INSECTICIDE PRODUCT LIST** beginning on page 324.

*Several trade names available. Check label for active ingredient. Always follow label instructions.*

<table>
<thead>
<tr>
<th>Pest, Red Imported Fire</th>
<th>Insecticide and Formulation</th>
<th>Amount per 1,000 square feet</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ant (also see Red Imported Fire Ant)</td>
<td>bifenthrin 0.3% (Ortho)</td>
<td>see label</td>
<td>Product must be watered in immediately after application to lawns. DO NOT apply more than 4 times per year to lawns. The minimum reapplication interval to lawns is 7 days. Will only kill pests present at the time of application. Pest must be directly contacted to be effective.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin 0.058% + carbaryl 2.3% (Duocide)</td>
<td>4-8 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>carbaryl (GardenTech Sevin)</td>
<td>see label</td>
<td>Treat mounds and surrounding area or apply broadcast.</td>
</tr>
<tr>
<td></td>
<td>clothianidin + bifenthrin (Aloft) SC G</td>
<td>0.27-0.54 fl oz  1.8-3.6 lb</td>
<td>Toxic to fish and aquatic invertebrates. DO NOT apply near or allow runoff into surface waters or intertidal areas.</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>hydramethylnon* (Maxforce G)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin 0.5% (Bonide)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>other pyrethroids* (DeltaGard, Scimitar, Talstar, Tempo)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin 10% (Hi-Yield)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin + imidacloprid (Triple Crown T&amp;O, Triple Crown Golf)</td>
<td>0.46-0.80 fl oz</td>
<td>Triple Crown Golf is a <strong>Restricted Use Pesticide.</strong></td>
</tr>
<tr>
<td>Ant, Red Imported Fire</td>
<td>abamectin B1* (Ascend, Award II) 0.011% bait</td>
<td>5-7 Tbsp/mound  1 lb/acre</td>
<td>Mound-to-mound treatment rate  Broadcast rate</td>
</tr>
<tr>
<td></td>
<td>acephate* (Ortho T, T&amp;O) 75 S</td>
<td>1-2 tsp/mound  1 Tbsp/mound</td>
<td>Distribute uniformly over mound. For best results, apply early in the morning or late afternoon.</td>
</tr>
<tr>
<td></td>
<td>(Ortho Orthene Fire Ant Killer 1) 50 S</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin 0.058% + carbaryl 2.3% (Duocide)</td>
<td>4-8 lb</td>
<td>Product must be watered in immediately after application to lawns. DO NOT apply more than 4 times per year to lawns. The minimum reapplication interval to lawns is 7 days. Will only kill pests present at the time of application. Pest must be directly contacted to be effective.</td>
</tr>
<tr>
<td></td>
<td>carbaryl (GardenTech Sevin)</td>
<td>see label</td>
<td>Use as a mound drench.</td>
</tr>
<tr>
<td></td>
<td>clothianidin + bifenthrin (Aloft LC SC)</td>
<td>2.3-3.6 lb</td>
<td>Toxic to fish and aquatic invertebrates. DO NOT apply near or allow runoff into surface waters or intertidal areas.</td>
</tr>
<tr>
<td></td>
<td>d-limonene (Orange Guard)</td>
<td>see label</td>
<td>Mound treatment (acceptable to organic growers).</td>
</tr>
</tbody>
</table>
**HOME LAWN INSECT CONTROL**

<table>
<thead>
<tr>
<th>Pest</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 1,000 Square Feet</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ant, Red Imported Fire</strong></td>
<td>Apply all bait products when ants are active and soil temperature is above 60 degrees F. DO NOT treat if rain is anticipated within 6 hours.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>fipronil 0.0143% granular insecticide (Quali-Pro Fipronil, Top Choice)</td>
<td>2 lb OR 87 lb/acre</td>
<td>Broadcast only</td>
</tr>
<tr>
<td></td>
<td>fipronil (Maxforce FC) bait</td>
<td>see label</td>
<td>Apply as a mound treatment or broadcast bait.</td>
</tr>
<tr>
<td></td>
<td>fipronil + bifenthrin + lambda-cyhalothrin (Taurus Trio G)</td>
<td>2 lb</td>
<td>Apply as a broadcast. Irrigate prior to treatment.</td>
</tr>
<tr>
<td></td>
<td>hydramethylnon (Amdro, Amdro Pro, Maxforce Fire Ant Granular Bait)</td>
<td>2-5 Tbsp/mound 1.0-1.5 lb/acre</td>
<td>Mound-to-mound treatment rate</td>
</tr>
<tr>
<td></td>
<td>indoxacarb (Advion)</td>
<td>see label</td>
<td>Broadcast rate</td>
</tr>
<tr>
<td></td>
<td>metalflumizone (Siesta Fire Ant Bait) 0.063%</td>
<td>1.0-1.5 lb/acre 2-4 Tbsp/mound</td>
<td>Mound-to-mound treatment rate</td>
</tr>
<tr>
<td></td>
<td>pyrethroids (various brands)</td>
<td>see label</td>
<td>DO NOT exceed 6.0 lb/acre total or 4 applications in a one-year period.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Ortho MAX Fire Ant Killer Broadcast Granules, Over ‘n Out, Talstar)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>cyfluthrin (Bayer Advanced Lawn Fire Ant Killer, Tempo)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>deltamethrin (DeltaGard G, D-Fense SC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (Spectracide Fire Ant Killer Granules)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>pyriproxyfen (Distance)</td>
<td>1-4 Tbsp/mound 1.0-1.5 lb/acre</td>
<td>Mound-to-mound treatment rate</td>
</tr>
<tr>
<td></td>
<td>S-methoprene (Extinguish)</td>
<td>3-5 Tbsp/mound 1.0-1.5 lb/acre</td>
<td>Broadcast rate. This is an insect growth regulator (IGR).</td>
</tr>
<tr>
<td></td>
<td>S-methoprene + hydramethylnon (Amdro Firestrike, Extinguish Plus)</td>
<td>see label</td>
<td>Mound-to-mound and broadcast treatments. This is an IGR plus a toxicant.</td>
</tr>
<tr>
<td></td>
<td>spinosad (Ferti-lome Come and Get It Fire Ant Killer)</td>
<td>see label</td>
<td>Acceptable to organic growers. Follow label directions precisely. Repeat treatments usually required. Use fresh bait.</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam 11.6% + lambda-cyhalothrin 3.5% (Tandem)</td>
<td>see label</td>
<td>Apply a single application of 28 fl oz per acre. OR Apply two applications of 14 fl oz per acre on a 3- to 5-week interval.</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin + imidacloprid (Triple Crown T&amp;O, Triple Crown Golf)</td>
<td>0.46-0.80 fl oz</td>
<td>Triple Crown Golf is a Restricted Use Pesticide.</td>
</tr>
<tr>
<td><strong>Armyworm, Fall Armyworm, Cutworm</strong></td>
<td>azadirachtin* (Azatrol, Neemix, Turplex, etc.)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bacillus thuringiensis/B.t. (various brands)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin 0.3% (Ortho)</td>
<td>see label</td>
<td>Small armyworms only.</td>
</tr>
</tbody>
</table>

*Azadirachtin is an insect growth regulator (IGR).*
# HOME LAWN INSECT CONTROL

<table>
<thead>
<tr>
<th>Pest</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 1,000 Square Feet</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armyworm, Fall Armyworm, Cutworm</td>
<td>bifenthrin 0.058% + carbaryl 2.3% (Duocide)</td>
<td>2 lb</td>
<td>Product must be watered in immediately after application to lawns. DO NOT apply more than 4 times per year to lawns. The minimum reappplication interval to lawns is 7 days. Will only kill pests present at the time of application. Pest must be directly contacted to be effective.</td>
</tr>
<tr>
<td></td>
<td>carbaryl (GardenTech Sevin)</td>
<td>see label</td>
<td>Apply as a coarse spray in sufficient water for good coverage. Treat when first injury noted. Repeat as needed. DO NOT water into soil. DO NOT cut grass for 1 to 3 days after treatment.</td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole (Acelpryn) SC</td>
<td>0.046-0.092 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.15-2.3 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole (GrubEx1)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>halofenozide (Natural Guard Grub Control)</td>
<td>1.72 lb</td>
<td>DO NOT apply more than 3.4 lb (2 lb active ingredient) per 1,000 square feet per year regardless of pests controlled.</td>
</tr>
<tr>
<td></td>
<td>indoxacarb (Provaunt) WDG</td>
<td>0.046-0.092 oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin 0.5% (Bonide)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>other pyrethroids* (DeltaGard, Scimitar, Talstar, Tempo)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin 10% (Hi-Yield)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>spinosad A and D (Conserve SC)</td>
<td>0.25-1.25 fl oz</td>
<td>Rate varies with size and species.</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam 11.6% + lambda-cyhalothrin 3.5% (Tandem)</td>
<td>see label</td>
<td>Apply a single application of 28 fl oz per acre. OR Apply two applications of 14 fl oz per acre on a 3- to 5-week interval.</td>
</tr>
<tr>
<td></td>
<td>trichlorfon* (Bayer Advanced)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>various entomogenous nematode and B.t. products</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td>Bee and Wasp</td>
<td>bifenthrin 0.3% (Ortho)</td>
<td>see label</td>
<td>Most of these are parasitic on soil pests, especially grubs; therefore, they are beneficial. Sometimes there are so many bees and wasps burrowing in the soil that chemical treatments are necessary to prevent damage or reduce danger from stings. Spot spray ground nest openings. Bee, wasp and hornet sprays in pressurized cans are also effective.</td>
</tr>
<tr>
<td></td>
<td>carbaryl (GardenTech Sevin)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>other pyrethroids* (DeltaGard, Scimitar, Talstar, Tempo)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td>Chinch Bug</td>
<td>Beauveria bassiana* (Naturalis-T)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin 0.3% (Ortho)</td>
<td>see label</td>
<td></td>
</tr>
</tbody>
</table>

*Several trade names available. Check label for active ingredient. Always follow label instructions.
<table>
<thead>
<tr>
<th>Pest</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 1,000 Square Feet</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinch Bug (cont.)</td>
<td>bifenthrin 0.058% + carbaryl 2.3% (Duocide)</td>
<td>2-4 lb</td>
<td>Product must be watered in immediately after application to lawns. DO NOT apply more than 4 times per year to lawns. The minimum reapplication interval to lawns is 7 days. Will only kill pests present at the time of application. Pest must be directly contacted to be effective.</td>
</tr>
<tr>
<td></td>
<td>carbaryl (GardenTech Sevin)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorotraniliprole (Acephryn)</td>
<td>see label</td>
<td>Suppression ONLY. Toxic to aquatic invertebrates.</td>
</tr>
<tr>
<td></td>
<td>clothianidin + bifenthrin (Aloft)</td>
<td>see label</td>
<td>Toxic to fish and aquatic invertebrates. DO NOT apply near or allow runoff into surface waters or intertidal areas.</td>
</tr>
<tr>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>see label</td>
<td>For suppression, make application prior to hatching of first instar nymphs.</td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Zylam 20 SG)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin 0.5% (Bonide)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>other pyrethroids* (DeltaGard, Scimitar, Talstar, Tempo)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin 10% (Hi-Yield)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>thiamethoxam 11.6% + lambda-cyhalothrin 3.5% (Tandem)</td>
<td>see label</td>
<td>Apply when insects are first observed. Repeat applications may be necessary. Highly toxic to fish and aquatic invertebrates.</td>
</tr>
<tr>
<td>Eriophyid Mites (zoysia grass mite and bermudagrass stunt mite)</td>
<td>azadirachtin (Azatrol)</td>
<td>see label</td>
<td>Registered for use on eriophyid mites in turfgrass.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Allectus GSC SC, Bifenthrin 2EC, Quali-Pro Bifenthrin, Talstar F)</td>
<td>see label</td>
<td>Registered for use on eriophyid mites in turfgrass.</td>
</tr>
<tr>
<td></td>
<td>deltamethrin (D-Fense SC)</td>
<td>see label</td>
<td>Suppression ONLY.</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (Quali-Pro Lambda GC-O, Scimitar)</td>
<td>see label</td>
<td>Registered for use on eriophyid mites in turfgrass.</td>
</tr>
<tr>
<td>European Crane Fly</td>
<td>bifenthrin (Ortho Bug-B-Gon MAX Insect Killer for Lawns)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin 0.058% + carbaryl 2.3% (Duocide)</td>
<td>4-8 lb</td>
<td>Product must be watered in immediately after application to lawns. DO NOT apply more than 4 times per year to lawns. The minimum reapplication interval to lawns is 7 days. Will only kill pests present at the time of application. Pest must be directly contacted to be effective.</td>
</tr>
<tr>
<td></td>
<td>carbaryl (GardenTech Sevin)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole (GrubEx1)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td>Pest</td>
<td>Insecticide and Formulation</td>
<td>Amount Per 1,000 Square Feet</td>
<td>Precautions and Remarks</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
<td>------------------------------</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>European Crane Fly</td>
<td>gamma-cyhalothrin (Spectracide)</td>
<td>see label</td>
<td>Triple Crown Golf is a <strong>Restricted Use Pesticide</strong>.</td>
</tr>
<tr>
<td>(cont.)</td>
<td>imidacloprid (Merit) (Advanced Season Long Grub Control)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (Bonide)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin + imidacloprid (Triple Crown T&amp;O, Triple Crown Golf)</td>
<td>20-35 fl oz/acre</td>
<td></td>
</tr>
<tr>
<td>Grasshopper</td>
<td>bifenthrin 0.3% (Ortho)</td>
<td>see label</td>
<td>Product must be watered in immediately after application to lawns. DO NOT apply more than 4 times per year to lawns. The minimum reapplication interval to lawns is 7 days. Will only kill pests present at the time of application. Pest must be directly contacted to be effective.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin 0.058% + carbaryl 2.3% (Duocide)</td>
<td>2-4 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>carbaryl (GardenTech Sevin)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin 0.5% (Bonide)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>other pyrethroids* (DeltaGard, Scimitar, Talstar, Tempo)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin 10% (Hi-Yield)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>thiamethoxam 11.6% + lambda-cyhalothrin 3.5% (Tandem)</td>
<td>see label</td>
<td>Apply 10.5 fl oz per acre on a 3- to 5-week interval.</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin + imidacloprid (Triple Crown T&amp;O, Triple Crown Golf)</td>
<td>10-20 fl oz/acre</td>
<td>Triple Crown Golf is a <strong>Restricted Use Pesticide</strong>.</td>
</tr>
<tr>
<td>Ground Pearls</td>
<td>Maintain a vigorous lawn through proper fertilization, watering, mowing, etc. Good cultural practices will help the lawn outgrow damage. No practical, effective pesticide treatments are currently available.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grub, Green June Beetle</td>
<td>bifenthrin 0.058% + carbaryl 2.3% (Duocide)</td>
<td>4-8 lb</td>
<td>Product must be watered in immediately after application to lawns. DO NOT apply more than 4 times per year to lawns. The minimum reapplication interval to lawns is 7 days. Will only kill pests present at the time of application. Pest must be directly contacted to be effective.</td>
</tr>
<tr>
<td>(only)</td>
<td>carbaryl (GardenTech Sevin)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>halofenozide (Natural Guard Grub Control)</td>
<td>3.4 lb</td>
<td>DO NOT apply more than 3.4 lb (2 lb active ingredient) per 1,000 square feet per year regardless of pests controlled.</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam 11.6% + lambda-cyhalothrin 3.5% (Tandem)</td>
<td>see label</td>
<td>Begin applications up to 45 days before the historical peak of adult flight to second instar grub of the species being targeted. For optimum control, treat from peak flight to peak egg hatch. Irrigate to move Tandem into the root zone. Full-season control of white grubs will be obtained with either a single 28 fl oz application or two 14 fl oz applications.</td>
</tr>
<tr>
<td>Grub, White (Japanese</td>
<td>bifenthrin 0.058% + carbaryl 2.3% (Duocide)</td>
<td>4-8 lb</td>
<td>Product must be watered in immediately after application to lawns. DO NOT apply more than 4 times per year to lawns. The minimum reapplication interval to lawns is 7 days. Will only kill pests present at the time of application. Pest must be directly contacted to be effective.</td>
</tr>
<tr>
<td>beetle, southern chafer,</td>
<td>carbaryl (GardenTech Sevin)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td>European chafer, billbug,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>green June beetle)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Several trade names available. Check label for active ingredient. Always follow label instructions.
## Pest Insecticide and Formulation

<table>
<thead>
<tr>
<th>Pest</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 1,000 Square Feet</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grub, White</strong> (cont.)</td>
<td>chlorantraniliprole (Acelepryn) G</td>
<td>1.15-2.3 lb</td>
<td>Toxic to fish and aquatic invertebrates. DO NOT apply near or allow runoff into surface waters or intertidal areas.</td>
</tr>
<tr>
<td>(Japanese beetle, southern chafer, European chafer, billbug, green June beetle)</td>
<td>chlorantraniliprole (GrubEx1)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>clothianidin (Arena) G WDG</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>clothianidin + bifenthrin (Aloft) SC G</td>
<td>0.27-0.54 fl oz 1.8-3.6 lb</td>
<td>Toxic to fish and aquatic invertebrates. DO NOT apply near or allow runoff into surface waters or intertidal areas.</td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Zylam 20 SG)</td>
<td>1.0 fl oz</td>
<td>Make application prior to or during peak egg hatch.</td>
</tr>
<tr>
<td></td>
<td>halofenozide (Natural Guard Grub Control)</td>
<td>3.4 lb</td>
<td>DO NOT apply more than 3.4 lb (2 lb active ingredient) per 1,000 square feet per year regardless of pests controlled.</td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Merit) (Advanced Lawn Grub Control)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>thiamethoxam (Meridian)</td>
<td>see label</td>
<td>Highly toxic to aquatic invertebrates.</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam 11.6% + lambda-cyhalothrin 3.5% (Tandem)</td>
<td>see label</td>
<td>Begin applications up to 45 days before the historical peak of adult flight to second instar grub of the species being targeted. For optimum control, treat from peak flight to peak egg hatch. Irrigate to move Tandem into the root zone. Full-season control of white grubs will be obtained with either a single 28 fl oz application or two 14 fl oz applications.</td>
</tr>
<tr>
<td></td>
<td>trichlorfon* (Bayer Advanced)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>various entomogenous nematode products</td>
<td>see label</td>
<td>Must be <em>Heterorhabditid</em> species to be effective.</td>
</tr>
<tr>
<td><strong>Millipede</strong></td>
<td>bifenthrin 0.3% (Ortho)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin 0.058% + carbaryl 2.3% (Duocide)</td>
<td>4-8 lb</td>
<td>Product must be watered in immediately after application to lawns. DO NOT apply more than 4 times per year to lawns. The minimum reapplication interval to lawns is 7 days. Will only kill pests present at the time of application. Pest must be directly contacted to be effective.</td>
</tr>
<tr>
<td></td>
<td>carbaryl (GardenTech Sevin)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (Spectracide)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (Bonide)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>other pyrethroids* (DeltaGard, Scimitar, Talstar, Tempo)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin 10% (Hi-Yield)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td><strong>Mole Cricket</strong></td>
<td>bifenthrin 0.3% (Ortho)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin 0.058% + carbaryl 2.3% (Duoxide)</td>
<td>4-8 lb</td>
<td>Product must be watered in immediately after application to lawns. DO NOT apply more than 4 times per year to lawns. The minimum reapplication interval to lawns is 7 days. Will only kill pests present at the time of application. Pest must be directly contacted to be effective.</td>
</tr>
<tr>
<td></td>
<td>carbaryl (various commercial bait formulations)</td>
<td>see label</td>
<td></td>
</tr>
</tbody>
</table>
**HOME LAWN INSECT CONTROL**

<table>
<thead>
<tr>
<th>Pest</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 1,000 Square Feet</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mole Cricket</strong> (cont.)</td>
<td>clothianidin + bifenthrin (Aloft)</td>
<td>1.8-3.6 lb</td>
<td>Toxic to fish and aquatic invertebrates. DO NOT apply near or allow runoff into surface waters or intertidal areas.</td>
</tr>
<tr>
<td></td>
<td>SC</td>
<td>0.27-0.54 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Zylam 20 SG)</td>
<td>1 fl oz</td>
<td>Make application prior to or during peak egg hatch.</td>
</tr>
<tr>
<td></td>
<td>fipronil (several products)</td>
<td>2 lb</td>
<td>Apply as a broadcast.</td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Advanced Lawn Grub Control, Merit)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>indoxacarb (Advion Mole Cricket Bait)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Provaunt) SC</td>
<td>0.275 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin 0.5% (Bonide)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>other pyrethroids* (DeltaGard, Menace, Scimitar, Talstar, Tempo)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin 10% (Hi-Yield)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>thiamethoxam 11.6% + lambda-cyhalothrin 3.5% (Tandem)</td>
<td>see label</td>
<td>Apply from first egg hatch to peak egg hatch. Highly toxic to fish and aquatic invertebrates.</td>
</tr>
<tr>
<td></td>
<td>various entomogenous nematode products</td>
<td>see label</td>
<td>Requires irrigation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Slug, Snail</strong></td>
<td>iron phosphate (Natria) bait</td>
<td>see label</td>
<td>Apply in late afternoon.</td>
</tr>
<tr>
<td></td>
<td>Mesurol 2% B</td>
<td>1 lb</td>
<td>Apply in late afternoon.</td>
</tr>
<tr>
<td></td>
<td>metaldehyde</td>
<td>see label</td>
<td>Apply in late afternoon.</td>
</tr>
<tr>
<td><strong>Sod Webworm</strong> (also Burrowing Sod Webworm)</td>
<td><em>Bacillus thuringiensis/B.t. (various brands)</em></td>
<td>see label</td>
<td>Product must be watered in immediately after application to lawns. DO NOT apply more than 4 times per year to lawns. The minimum reapplication interval to lawns is 7 days. Will only kill pests present at the time of application. Pest must be directly contacted to be effective.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin 0.3% (Ortho)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin 0.058% + carbaryl 2.3% (Duocide)</td>
<td>2 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>carbaryl (GardenTech Sevin)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole (GrubEx1)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Zylam 20 SG)</td>
<td>1 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin 0.08% (Spectracide)</td>
<td>see label</td>
<td></td>
</tr>
</tbody>
</table>

*Several trade names available. Check label for active ingredient. Always follow label instructions.*
## HOME LAWN INSECT CONTROL

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<thead>
<tr>
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<th>Amount Per 1,000 Square Feet</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sod Webworm (also Burrowing Sod Webworm)</strong> (cont.)</td>
<td>halofenozide (Natural Guard Grub Control)</td>
<td>1.72 lb</td>
<td>DO NOT apply more than 3.4 lb (2 lb active ingredient) per 1,000 square feet per year regardless of pests controlled.</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin 0.5% (Bonide)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>other pyrethroids* (DeltaGard, Scimitar, Talstar, Tempo)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin 10% (Hi-Yield)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>spinosad A and D (Conserve) SC</td>
<td>0.25-1.25 fl oz</td>
<td>Rate varies with size and species.</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam 11.6% + lambda-cyhalothrin 3.5% (Tandem)</td>
<td>see label</td>
<td>Highly toxic to fish and aquatic invertebrates.</td>
</tr>
<tr>
<td></td>
<td>trichlorfon* (Bayer Advanced)</td>
<td>see label</td>
<td>Use sufficient water for good coverage.</td>
</tr>
<tr>
<td></td>
<td>various entomogenous nematode and B.t. products</td>
<td>see label</td>
<td></td>
</tr>
</tbody>
</table>

**Spittlebug and Leafhopper**

<table>
<thead>
<tr>
<th>Insecticide and Formulation</th>
<th>Amount Per 1,000 Square Feet</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>acephate* (Orthene T, T&amp;O) 75 S</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td>bifenthrin 0.3% (Ortho)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td>bifenthrin 0.058% + carbaryl 2.3% (Duocide)</td>
<td>2-4 lb</td>
<td>Cut grass to its recommended height and remove clippings prior to application. Various pyrethroid materials are available in a variety of homeowner formulations for use as broad-spectrum contact insecticides. Common active ingredients include bifenthrin, cyfluthrin, cypermethrin, deltamethrin, lambda-cyhalothrin and permethrin. For Duocide, the product must be watered in immediately after application to lawns. DO NOT apply more than 4 times per year to lawns. The minimum reapplication interval to lawns is seven days. Will only kill pests present at the time of application. Pest must be directly contacted to be effective.</td>
</tr>
<tr>
<td>carbaryl (GardenTech Sevin)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td>deltamethrin (D-Fense SC)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td>gamma-cyhalothrin (Spectracide)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td>lambda-cyhalothrin (Bonide)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td>other pyrethroids* (DeltaGard, Scimitar, Talstar, Tempo)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td>permethrin 10% (Hi-Yield)</td>
<td>see label</td>
<td></td>
</tr>
</tbody>
</table>

**Ticks and Chiggers**

<table>
<thead>
<tr>
<th>Insecticide and Formulation</th>
<th>Amount Per 1,000 Square Feet</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>bifenthrin (Hi-Yield, Ortho)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td>bifenthrin 0.058% + carbaryl 2.3% (Duicide)</td>
<td>2-4 lb (chiggers ONLY)</td>
<td>The maximum application rate to kill ticks is 1.15 lb product per 1,000 square feet. Duocide must be watered in immediately after application to lawns. DO NOT apply more than 4 times per year to lawns. The minimum reapplication interval to lawns is 7 days. Will only kill pests present at the time of application. Pest must be directly contacted to be effective.</td>
</tr>
<tr>
<td>carbaryl (GardenTech Sevin)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td>cyfluthrin 0.75% (Bayer Advanced)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td>deltamethrin (D-Fense SC, DeltaGard G)</td>
<td>see label</td>
<td>DeltaGard G registered for ticks only.</td>
</tr>
<tr>
<td>imidacloprid 0.72% beta-cyfluthrin 0.36% (Bayer Advanced)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td>gamma-cyhalothrin (Spectracide)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td>lambda-cyhalothrin (Bonide, Martin's)</td>
<td>see label</td>
<td></td>
</tr>
</tbody>
</table>

*Several trade names available. Check label for active ingredient. Always follow label instructions.*
# COMMERCIAL TURF AND GOLF COURSE INSECT CONTROL

The following table provides commercial turf and golf course insect control recommendations with pesticides for use by professional applicators.

All chemical information provided below is given with the understanding that no endorsement of named products is intended nor is criticism implied of similar products that are not mentioned. Individuals who use pesticides are responsible for ensuring that the intended use complies with current regulations and conforms to the product label. Before purchasing or using any pesticide, always read and carefully follow the label directions.

Insecticides listed below are identified by common chemical name. A trade name in parentheses may also be listed as a convenience for the reader.

<table>
<thead>
<tr>
<th>Pest</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 1,000 Square Feet</th>
<th>Comments/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ant</td>
<td>bifenthrin* (Menace, Talstar, others) F, GC and G formulations also available</td>
<td>0.5-1 fl oz</td>
<td>Use GC formulation for golf courses.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin 0.058% + carbaryl 2.3% (Duocide)</td>
<td>4-8 lb</td>
<td><strong>Not for use on golf courses and sod farms.</strong> Product must be watered in immediately after application. DO NOT apply more than 4 times per year to lawns. The minimum reapplication interval to lawns is 7 days. Will only kill pests present at the time of application. Pest must be directly contacted to be effective.</td>
</tr>
<tr>
<td></td>
<td>carbaryl* (Sevin 80 WSP)</td>
<td>see label</td>
<td>See label. For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. <strong>Restricted Use Pesticide.</strong></td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos* (Nufarm Chlorpyrifos)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>clothianidin + bifenthrin (Aloft) GC SC</td>
<td>0.27-0.44 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>clothianidin + bifenthrin (Aloft) LC SC</td>
<td>0.27-0.54 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>clothianidin + bifenthrin (Aloft) GC G</td>
<td>1.8-3.6 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>clothianidin + bifenthrin (Aloft) LC G</td>
<td>1.8-3.6 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cyfluthrin (Tempo 2)</td>
<td>0.143 fl oz</td>
<td>Home lawns only.</td>
</tr>
<tr>
<td></td>
<td>cypermethrin* (Demon) TC</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>deltamethrin (DeltaGard) G</td>
<td>2-3 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>fipronil 0.0143 G (Top Choice)</td>
<td>2 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>fipronil 0.0143% + bifenthrin 0.23% + lambda-cyhalothrin 0.059% (Taurus Trio G)</td>
<td>2 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>hydramethylnon* (Maxforce G, Amdro)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin* (Scimitar, Cyonara)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin + imidacloprid (Triple Crown T&amp;O, Triple Crown Golf)</td>
<td>0.46-0.80 fl oz</td>
<td>Triple Crown Golf is a <strong>Restricted Use Pesticide.</strong></td>
</tr>
</tbody>
</table>

## Ant, Red Imported Fire

Treatment is required to ship grass sod from quarantined to non-quarantined areas. Consult the Arkansas State Plant Board and USDA APHIS 81-25-001, “Imported Fire Ant: Quarantine Treatments for Nursery Stock, Grass Sod, and Related Materials,” updated January 2015, for all rules and regulations pertaining to the Federal Imported Fire Ant quarantine and treatment requirements. **The following insecticides are authorized by USDA for the treatment of regulated grass sod under the Imported Fire Ant (IFA) quarantine:** bifenthrin (liquid), chlorpyrifos (liquid), fipronil (granular).  

**Apply all bait products when ants are active and soil temperature is above 60 degrees F. DO NOT treat if rain is anticipated within 6 hours.**

abamectin* (Award II) 1 lb/acre broadcast; no more than 4 lb/acre per year or 5-7 Tbsp per mound; no more than 12 mounds/acre Changes in product labels and new products for insect control include acquisition of DuPont turf insecticides by Syngenta, including Acellepyn, Provaunt, Advion Fire Ant Bait, and Advion Insect Granules. Syngenta has a new fire ant active ingredient with the new product Award II Fire Ant Bait containing abamectin as the active ingredient. It is NOT labeled for use on horse farms as was the older Award product. Advion Insect Granules are still useful for insect control, including mole crickets, but this is a bait and should NOT be watered in after application. BASF released a new fire ant bait called Siesta with a new active ingredient metaflumizone.

*Several trade names available. Check label for active ingredient. Always follow label instructions.
**Ant, Red Imported Fire (cont.)**

Treatment is required to ship grass sod from quarantined to non-quarantined areas. Consult the Arkansas State Plant Board and USDA APHIS 81-25-001, “Imported Fire Ant: Quarantine Treatments for Nursery Stock, Grass Sod, and Related Materials,” updated January 2015, for all rules and regulations pertaining to the Federal Imported Fire Ant quarantine and treatment requirements. **The following insecticides are authorized by USDA for the treatment of regulated grass sod under the Imported Fire Ant (IFA) quarantine: bifenthrin (liquid), chlorpyrifos (liquid), fipronil (granular).**

Apply all bait products when ants are active and soil temperature is above 60 degrees F. **DO NOT treat if rain is anticipated within 6 hours.**

### Insecticides and Formulations

<table>
<thead>
<tr>
<th>Insecticide and Formulation</th>
<th>Amount Per 1,000 Square Feet</th>
<th>Comments/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>acephate* (Lesco-Fate)</td>
<td>1-2 tsp/mound</td>
<td>Distribute uniformly over mound. For best results, apply early in morning or late afternoon.</td>
</tr>
<tr>
<td>(Orthene T, T&amp;O) 75 S</td>
<td>1 Tbsp/mound</td>
<td>Distribute uniformly 5 to 7 level tablespoons of bait 3 to 4 feet around base of each mound. <strong>Not for use on golf courses and sod farms.</strong> Product must be watered in immediately after application to lawns. <strong>DO NOT</strong> apply more than 4 times per year to lawns. The minimum reapplication interval to lawns is seven days. Will only kill pests present at the time of application. Pest must be directly contacted to be effective.</td>
</tr>
<tr>
<td>(Ortho Orthene Fire Ant Killer1) 50 S</td>
<td>see label</td>
<td>Single mound treatment ONLY.</td>
</tr>
<tr>
<td>bifenthrin 0.058% + carbaryl 2.3% (Duocide)</td>
<td>4-8 lb</td>
<td>See label. For use on golf course turf, turf and ornamentals around industrial buildings; turf and ornamentals in road medians. <strong>Restricted Use Pesticide.</strong></td>
</tr>
<tr>
<td>chlorpyrifos* (Nufarm Chlorpyrifos)</td>
<td>see label</td>
<td>Apply as a broadcast. May treat up to 4 times per year.</td>
</tr>
<tr>
<td>chlorpyrifos (Dursban Pro)</td>
<td>see label</td>
<td>Broadcast only</td>
</tr>
<tr>
<td>clothianidin + bifenthrin (Aloft)</td>
<td>see label</td>
<td>Broadcast only</td>
</tr>
<tr>
<td>GC SC</td>
<td>0.27-0.44 fl oz</td>
<td>The fipronil products have the same active ingredient but are different formulations; read and follow the label.</td>
</tr>
<tr>
<td>LC SC</td>
<td>0.27-0.54 fl oz</td>
<td></td>
</tr>
<tr>
<td>GC G</td>
<td>1.8-3.6 lb</td>
<td></td>
</tr>
<tr>
<td>LC G</td>
<td>1.8-3.6 lb</td>
<td></td>
</tr>
<tr>
<td>fipronil (Top Choice) 0.0143% granular insecticide</td>
<td>87 lb/acre</td>
<td>Single mound treatment rate</td>
</tr>
<tr>
<td>(Maxforce FC) 0.00045%</td>
<td>see label</td>
<td>Broadcast rate</td>
</tr>
<tr>
<td>(Chipco Choice) 0.1% granular contact insecticide</td>
<td>12.5 lb/acre</td>
<td></td>
</tr>
<tr>
<td>hydramethylnon (Amdro, Amdro Pro, Maxforce Fire Ant Granular Bait)</td>
<td>2-5 Tbsp/mound</td>
<td>Single mound treatment rate</td>
</tr>
<tr>
<td>fipronil 0.0143% + bifenthrin 0.23% + lambda-cyhalothrin 0.059% (Taurus Trio G)</td>
<td>87lbs/acre</td>
<td>Broadcast rate</td>
</tr>
<tr>
<td>imidacloprid + bifenthrin (Allectus)</td>
<td>see label</td>
<td>Rate varies with pest. Different formulations for different sites.</td>
</tr>
<tr>
<td>indoxacarb (Advion) fire ant bait 0.045%</td>
<td>4 Tbsp/mound</td>
<td>DO NOT apply to top of mound. Distribute uniformly 3 to 4 feet around mound.</td>
</tr>
<tr>
<td>metaflumizone (Siesta Fire Ant Bait) 0.063%</td>
<td>1.0-1.5 lb/acre</td>
<td>Broadcast rate</td>
</tr>
<tr>
<td>pyrethroids (various brands)</td>
<td>see label</td>
<td>Single mound treatment rate</td>
</tr>
<tr>
<td>bifenthrin (Menace, Talstar, others) F and G formulations also available</td>
<td>see label</td>
<td><strong>DO NOT</strong> exceed 6.0 lb/acre total or 4 applications in a one-year period.</td>
</tr>
<tr>
<td>cyfluthrin (Tempo)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>deltamethrin (DeltaGard) G</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lambda-cyhalothrin (Scimitar, Cyonara)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## COMMERCIAL TURF AND GOLF COURSE INSECT CONTROL

<table>
<thead>
<tr>
<th>Pest</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 1,000 Square Feet</th>
<th>Comments/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ant, Red Imported Fire (cont.)</strong></td>
<td>pyriproxyfen (Distance)</td>
<td>1-4 Tbsp/mound, 1.0-1.5 lb/acre</td>
<td>Single mound treatment rate, Broadcast rate, This is an IGR.</td>
</tr>
<tr>
<td></td>
<td>S-methoprene (Extinguish)</td>
<td>3-5 Tbsp/mound, 1.0-1.5 lb/acre</td>
<td>Single mound treatment rate, Broadcast rate, This is an IGR.</td>
</tr>
<tr>
<td></td>
<td>S-methoprene + hydramethylnon (Extinguish Plus)</td>
<td>3-5 Tbsp/mound, 1.0-1.5 lb/acre</td>
<td>Single mound treatment rate, Broadcast rate, This is an IGR.</td>
</tr>
<tr>
<td></td>
<td>spinosad 0.015% (Conserv Fire Ant Bait)</td>
<td>2.5-5.0 lb/acre</td>
<td>Dilute 0.1 fluid ounce in 1 gallon water, Use 1-2 gallons per mound.</td>
</tr>
<tr>
<td></td>
<td>spinosad (Conserve SC)</td>
<td>0.1 fl oz/gal/mound</td>
<td></td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin + imidacloprid (Triple Crown T&amp;O, Triple Crown Golf)</td>
<td>0.46-0.80 fl oz</td>
<td>Triple Crown Golf is a Restricted Use Pesticide.</td>
</tr>
<tr>
<td><strong>Bee and Wasp (burrowing)</strong></td>
<td>carbaryl* (Sevin 80 WSP)</td>
<td>see label</td>
<td>See label, For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. Restricted Use Pesticide.</td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos* (Nufarm Chlorpyrifos)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pyrethroids (Advanced Garden, DeltaGard, Menace, Scimitar, Talstar, Tempo)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td><strong>Billbug</strong></td>
<td>bifenthrin* (Menace, Talstar, others)</td>
<td>0.25-0.5 fl oz</td>
<td>Use GC formulation for golf courses.</td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole (Acelepryn)</td>
<td>0.184-0.46 fl oz</td>
<td>Suppression.</td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos* (Nufarm Chlorpyrifos)</td>
<td>see label</td>
<td>See label, For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. Restricted Use Pesticide.</td>
</tr>
<tr>
<td></td>
<td>clothianidin (Arena)</td>
<td>0.5 G: 14-22 oz, 50 WDG: 0.15-0.22 oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>clothianidin + bifenthrin (Aloft)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Zylam) 20 SG</td>
<td>2-3 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>imidacloprid* (Merit) 75 WSP</td>
<td>3-4 level tsp</td>
<td>Make application prior to egg hatch.</td>
</tr>
<tr>
<td></td>
<td>imidacloprid + bifenthrin (Alluctus)</td>
<td>see label</td>
<td>Rate varies with pest, Different formulations for different sites.</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin* (Scimitar, Cyonara)</td>
<td>see label</td>
<td>Observe restrictions near water.</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam (Meridian)</td>
<td>0.33 G: 60-80 lb/acre, 25 WG: 12.7-17 oz/acre</td>
<td>Optimum control when applied from peak flight of adults to peak of egg hatch, Also suppresses mole crickets and chinch bugs.</td>
</tr>
</tbody>
</table>

*Several trade names available. Check label for active ingredient. Always follow label instructions.*
### COMMERCIAL TURF AND GOLF COURSE INSECT CONTROL

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<th>Amount Per 1,000 Square Feet</th>
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<tbody>
<tr>
<td>Chinch Bug</td>
<td>acephate* (Orthene T, T&amp;O) 75 S</td>
<td>1.2-2.4 oz</td>
<td>Use GC formulation for golf courses.</td>
</tr>
<tr>
<td></td>
<td><em>Beauveria bassiana</em> (Botanigard, Naturalis-T)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin* (Menace, Talstar, others)</td>
<td>0.25-0.5 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>F, GC and G formulations also available</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin 0.058% + carbaryl 2.3% (Duocide)</td>
<td>2-4 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>carbaryl* (Sevin 80 WSP)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole (Acelepryn)</td>
<td>0.184-0.46 fl oz</td>
<td>Suppression.</td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos* (Nufarm Chlorpyrifos)</td>
<td>see label</td>
<td>See label.</td>
</tr>
<tr>
<td></td>
<td>clothianidin (Arena) 0.25 G, 50 WDG</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>clothianidin + bifenthrin (Aloft)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GC SC</td>
<td>0.27-0.44 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LC SC</td>
<td>0.27-0.54 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GC G</td>
<td>1.8-3.6 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LC G</td>
<td>1.8-3.6 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cypermethrin (Demon) TC</td>
<td>0.33 to 0.65 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>deltamethrin (DeltaGard) G</td>
<td>2-3 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Zylam) 20 SG</td>
<td>1 oz</td>
<td>For suppression of chinch bugs, make application prior to hatching of the first instar nymphs.</td>
</tr>
<tr>
<td></td>
<td>imidacloprid + bifenthrin (Allecut)</td>
<td>see label</td>
<td>Rate varies with pest. Different formulations for different sites.</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin* (Scimitar, Cyonara)</td>
<td>see label</td>
<td>DO NOT make applications within 20 ft of any body of water. No reentry until spray has dried.</td>
</tr>
<tr>
<td></td>
<td>permethrin* (Astro)</td>
<td>0.4-0.8 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin + imidacloprid (Triple Crown T&amp;O, Triple Crown Golf)</td>
<td>20-35 fl oz/acre</td>
<td>Triple Crown Golf is a <strong>Restricted Use Pesticide.</strong></td>
</tr>
<tr>
<td>Cutworm, Armyworm</td>
<td>acephate* (Orthene T, T&amp;O)</td>
<td>1.2-2.4 oz</td>
<td>Commercial and residential turf only.</td>
</tr>
<tr>
<td></td>
<td>azadirachtin* (Neemix, Turplex)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin* (Menace, Talstar, others)</td>
<td>0.18-0.25 fl oz</td>
<td>Use GC formulation for golf courses.</td>
</tr>
<tr>
<td></td>
<td>F, GC and G formulations also available</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin 0.058% + carbaryl 2.3% (Duocide)</td>
<td>2 lb</td>
<td><strong>Not for use on golf courses and sod farms.</strong> Product must be watered in immediately after application to lawns. DO NOT apply more than 4 times per year to lawns. The minimum reapplication interval to lawns is 7 days. Will only kill pests present at the time of application. Pest must be directly contacted to be effective.</td>
</tr>
<tr>
<td></td>
<td>*B.t. products (various labels)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>carbaryl* baits</td>
<td>0.75-1.5 oz</td>
<td>Treat in late afternoon. Apply in adequate water for good coverage but do not flood or water in. DO NOT cut grass for 1 to 3 days after treatment.</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Pest</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 1,000 Square Feet</th>
<th>Comments/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cutworm, Armyworm (cont.)</td>
<td>carbaryl* (Sevin) 80 WSP</td>
<td>see label</td>
<td>See label. For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. <strong>Restricted Use Pesticide.</strong></td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole (Acelepryn)</td>
<td>0.046-0.092 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos* (Nufarm Chlorpyrifos)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>clothianidin (Arena)</td>
<td>0.5 G</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.4-1.8 oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>50 WDG</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.2-0.3 oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>clothianidin + bifenthrin (Aloft)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cyfluthrin* (Tempo 2)</td>
<td>0.143 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>deltamethrin (DeltaGard) G</td>
<td>2-3 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Zylam) 20 SG</td>
<td>1 oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>entomogenous nematodes*</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>imidacloprid + bifenthrin (Allectus)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>indoxacarb (Provaunt) WDG</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin* (Scimitar, Cyonara)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>spinosad (Conserve SC)</td>
<td>0.25-1.2 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>trichlorfon (Dylox 80 SP)</td>
<td>1.5-3.0 oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin + imidacloprid</td>
<td>10-15 fl oz/acre</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Triple Crown Golf is a <strong>Restricted Use Pesticide.</strong> To ensure optimal control of eriophyid mites, apply in combination with the labeled application rate of a surfactant. A second application, five to seven days after the first, may be necessary to achieve acceptable control.</td>
</tr>
<tr>
<td>Earthworm</td>
<td>azadirachtin (Azatrol)</td>
<td>see label</td>
<td>Registered for use on eriophyid mites in turfgrass.</td>
</tr>
<tr>
<td>(zoysiagrass mite and ber-</td>
<td>bifenthrin (Allectus GC SC, Bifenthrin 2EC, Quali-Pro Bifenthrin, Talstar F)</td>
<td>see label</td>
<td>Registered for use on eriophyid mites in turfgrass.</td>
</tr>
<tr>
<td>mudgrass stunt mite)</td>
<td>chlorpyrifos* (Nufarm Chlorpyrifos)</td>
<td>see label</td>
<td>See label. For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. <strong>Restricted Use Pesticide.</strong></td>
</tr>
<tr>
<td></td>
<td>deltamethrin (DeltaGard T&amp;O 5SC)</td>
<td>see label</td>
<td>Registered for use on eriophyid mites in turfgrass.</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin* (Quali-Pro Lambda GC-O, Scimitar)</td>
<td>see label</td>
<td>Registered for use on eriophyid mites in turfgrass.</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin + imidacloprid</td>
<td>10-20 fl oz/acre</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Triple Crown Golf is a <strong>Restricted Use Pesticide.</strong> To ensure optimal control of eriophyid mites, apply in combination with the labeled application rate of a surfactant. A second application, five to seven days after the first, may be necessary to achieve acceptable control.</td>
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*Several trade names available. Check label for active ingredient. Always follow label instructions.
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<tbody>
<tr>
<td><strong>Fall Armyworm</strong></td>
<td>acephate* (Orthene T, T&amp;O)</td>
<td>0.5-1.2 oz</td>
<td>Water into soil immediately after application.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin 0.058% + carbaryl 2.3% (Duocide)</td>
<td>2 lb</td>
<td><strong>Not for use on golf courses and sod farms.</strong> Product must be watered in immediately after application. DO NOT apply more than 4 times per year to lawns. The minimum reaplication interval to lawns is 7 days. Will only kill pests present at the time of application. Pest must be directly contacted to be effective.</td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole (Acelepryn)</td>
<td>0.046-0.092 fl oz</td>
<td>See label. For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. <strong>Restricted Use Pesticide.</strong></td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos* (Nufarm Chlorpyrifos)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>indoxacarb (Provaunt WDG)</td>
<td>see label</td>
<td>Not labeled for use on sod farms.</td>
</tr>
<tr>
<td></td>
<td>pyrethroids* (Advanced Garden, DeltaGard, Menace, Scimitar, Talstar, Tempo, Cyonara)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>spinosad (Conserve) SC</td>
<td>0.25 to 1.2 fl oz</td>
<td>Rate varies with size and species.</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin + imidacloprid (Triple Crown T&amp;O, Triple Crown Golf)</td>
<td>10-15 fl oz/acre</td>
<td>Triple Crown Golf is a <strong>Restricted Use Pesticide.</strong></td>
</tr>
<tr>
<td><strong>Grasshopper</strong></td>
<td>acephate* (Orthene T, T&amp;O)</td>
<td>0.5 oz</td>
<td>DO NOT mow turfgrass for at least 24 hours after application.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin 0.058% + carbaryl 2.3% (Duocide)</td>
<td>2-4 lb</td>
<td><strong>Not for use on golf courses and sod farms.</strong> Product must be watered in immediately after application. DO NOT apply more than 4 times per year to lawns. The minimum reaplication interval to lawns is 7 days. Will only kill pests present at the time of application. Pest must be directly contacted to be effective.</td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos* (Nufarm Chlorpyrifos)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>deltamethrin (DeltaGard) G</td>
<td>2-3 lb</td>
<td>See label. For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. <strong>Restricted Use Pesticide.</strong></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin* (Scimitar, Cyonara)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin + imidacloprid (Triple Crown T&amp;O, Triple Crown Golf)</td>
<td>10-20 fl oz/acre</td>
<td>Triple Crown Golf is a <strong>Restricted Use Pesticide.</strong></td>
</tr>
<tr>
<td><strong>Ground Pearl</strong></td>
<td></td>
<td></td>
<td><strong>No effective control; practice good management.</strong></td>
</tr>
<tr>
<td><strong>Grub</strong> (white, May beetle, chafer, green June beetle, others)</td>
<td>bifenthrin 0.058% + carbaryl 2.3% (Duocide)</td>
<td>4-8 lb</td>
<td><strong>Not for use on golf courses and sod farms.</strong> Product must be watered in immediately after application. DO NOT apply more than 4 times per year to lawns. The minimum reaplication interval to lawns is 7 days. Will only kill pests present at the time of application. Pest must be directly contacted to be effective.</td>
</tr>
<tr>
<td></td>
<td>carbaryl* (Sevin 80 WSP)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole (Acelepryn)</td>
<td>0.184-0.367 fl oz</td>
<td>Optimal control when applied at egg hatch. Use higher rates later in summer.</td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos* (Nufarm Chlorpyrifos)</td>
<td>see label</td>
<td>See label. For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. <strong>Restricted Use Pesticide.</strong></td>
</tr>
<tr>
<td></td>
<td>clothianidin (Arena)</td>
<td>0.5 G</td>
<td>Mole cricket suppression</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14-22 oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>clothianidin + bifenthrin (Aloft)</td>
<td>0.15-0.22 oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>see label</td>
<td></td>
</tr>
</tbody>
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### Pest Insecticide and Formulation

<table>
<thead>
<tr>
<th>Pest (cont.)</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 1,000 Square Feet</th>
<th>Comments/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grub (white, May beetle, chafer, green June beetle and others)</td>
<td>dinotefuran (Zylam) 20 SG</td>
<td>1 oz</td>
<td>Apply at egg hatch.</td>
</tr>
<tr>
<td></td>
<td>imidacloprid* (Merit) 75 WP</td>
<td>3-4 level tsp</td>
<td>Make application prior to egg hatch. (Offers some suppression of caterpillars.)</td>
</tr>
<tr>
<td></td>
<td>imidacloprid + bifenthin (Allectus)</td>
<td>see label</td>
<td>Rate varies with pest. Different formulations for different sites.</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam (Meridian) 0.33 G 25 WG</td>
<td>60-80 lb/acre 12.7-17 oz/acre</td>
<td>Optimum control when applied from peak flight of adults to peak of egg hatch. Also suppresses mole crickets and chinch bugs.</td>
</tr>
<tr>
<td></td>
<td>trichlorfon (Dylox 80 SP)</td>
<td>3.75 oz</td>
<td>Can be used with some success as a rescue treatment in August and September.</td>
</tr>
<tr>
<td>Grub, Green June Beetle (only)</td>
<td>bifenthrin 0.058% + carbaryl 2.3% (Duocide)</td>
<td>4-8 lb</td>
<td>Not for use on golf courses and sod farms. Product must be watered in immediately after application to lawns. DO NOT apply more than 4 times per year to lawns. The minimum reapplication interval to lawns is 7 days. Will only kill pests present at the time of application. Pest must be directly contacted to be effective.</td>
</tr>
<tr>
<td></td>
<td>carbaryl* (Sevin 80 WSP)</td>
<td>see label</td>
<td>Optimal control when applied at egg hatch. Use higher rates later in summer.</td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole (Acelepryn)</td>
<td>0.184-0.367 fl oz</td>
<td>See label. For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. Restricted Use Pesticide.</td>
</tr>
<tr>
<td></td>
<td>clothianidin (Arena) 0.5 G 50 WDG</td>
<td>14-22 oz 0.15-0.22 oz</td>
<td>Mole cricket suppression</td>
</tr>
<tr>
<td></td>
<td>clothianidin + bifenthin (Aloft)</td>
<td>see label</td>
<td>Apply at egg hatch.</td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Zylam) 20 SG</td>
<td>1 oz</td>
<td>Make application prior to egg hatch. DO NOT use on sod farms. (Offers some suppression of caterpillars.)</td>
</tr>
<tr>
<td></td>
<td>imidacloprid* (Merit) 75 WP</td>
<td>3-4 level tsp</td>
<td>Rate varies with pest. Different formulations for different sites.</td>
</tr>
<tr>
<td></td>
<td>imidacloprid + bifenthin (Allectus)</td>
<td>see label</td>
<td>Optimum control when applied from peak flight of adults to peak of egg hatch. Also suppresses mole crickets and chinch bugs.</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam (Meridian) 0.33 G 25 WG</td>
<td>60-80 lb/acre 12.7-17 oz/acre</td>
<td></td>
</tr>
</tbody>
</table>

*Several trade names available. Check label for active ingredient. Always follow label instructions.*
<table>
<thead>
<tr>
<th>Pest</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 1,000 Square Feet</th>
<th>Comments/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grub (cont.)</strong> (Japanese beetle)</td>
<td>clothianidin (Arena)</td>
<td>0.5 G 14-22 oz</td>
<td>Mole cricket suppression</td>
</tr>
<tr>
<td></td>
<td>clothianidin + bifenthrin (Aloft)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Zylam) 20 SG</td>
<td>1 oz 1 oz</td>
<td>Apply at hatch.</td>
</tr>
<tr>
<td></td>
<td>imidacloprid* (Merit) 75 WP</td>
<td>3-4 level tsp</td>
<td>Make egg hatch.</td>
</tr>
<tr>
<td></td>
<td>imidacloprid + bifenthrin (Allectus)</td>
<td>see label</td>
<td>(Offers some suppression of caterpillars.)</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam (Meridian)</td>
<td>0.33 G 60-80 lb/acre</td>
<td>Optimum control when applied from peak flight of adults to peak of egg hatch.</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam</td>
<td>25 WG 12.7-17 oz/acre</td>
<td>Also suppresses mole crickets and chinch bugs.</td>
</tr>
<tr>
<td></td>
<td>clothianidin + bifenthrin (Aloft)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Zylam) 20 SG</td>
<td>1 oz 1 oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>imidacloprid* (Merit) 75 WP</td>
<td>3-4 level tsp</td>
<td></td>
</tr>
<tr>
<td></td>
<td>imidacloprid + bifenthrin (Allectus)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>thiamethoxam (Meridian)</td>
<td>0.33 G 60-80 lb/acre</td>
<td></td>
</tr>
<tr>
<td></td>
<td>thiamethoxam</td>
<td>25 WG 12.7-17 oz/acre</td>
<td></td>
</tr>
<tr>
<td></td>
<td>trichlorfon* (Dylox 80 SP)</td>
<td>3.75 oz</td>
<td>Can be used with some success as a rescue treatment in August and September.</td>
</tr>
<tr>
<td><strong>Leafhopper, Spittlebug</strong></td>
<td>acephate* (Orthene T, T&amp;O) 75 S</td>
<td>1 oz</td>
<td>Use GC formulation for golf courses.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin* (Menace, Talstar, others)</td>
<td>0.25-0.5 fl oz</td>
<td>Use GC formulation for golf courses.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin 0.058% + carbaryl 2.3% (Duocide)</td>
<td>2-4 lb</td>
<td><strong>Not for use on golf courses and sod farms.</strong> Product must be watered in immediately after application.</td>
</tr>
<tr>
<td></td>
<td>carbaryl* (Sevin 80 WSP)</td>
<td>see label</td>
<td>Use GC formulation for golf courses.</td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos* (Nufarm Chlorpyrifos)</td>
<td>see label</td>
<td>Use GC formulation for golf courses.</td>
</tr>
<tr>
<td></td>
<td>deltamethrin (DeltaGard) G</td>
<td>2-3 lb</td>
<td>Use GC formulation for golf courses.</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin + imidacloprid</td>
<td>10-20 fl oz/acre</td>
<td>Triple Crown Golf is a <strong>Restricted Use Pesticide.</strong></td>
</tr>
<tr>
<td></td>
<td>(Triple Crown T&amp;O, Triple Crown Golf)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Millipede</strong></td>
<td>bifenthrin* (Menace, Talstar, others)</td>
<td>0.25-0.5 fl oz</td>
<td>Use GC formulation for golf courses.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin 0.058% + carbaryl 2.3% (Duocide)</td>
<td>4-8 lb</td>
<td><strong>Not for use on golf courses and sod farms.</strong> Product must be watered in immediately after application.</td>
</tr>
<tr>
<td></td>
<td>carbaryl* (Sevin 80 WSP)</td>
<td>see label</td>
<td>Use GC formulation for golf courses.</td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos* (Nufarm Chlorpyrifos)</td>
<td>see label</td>
<td>Use GC formulation for golf courses.</td>
</tr>
<tr>
<td></td>
<td>cypermethrin (Demon) TC</td>
<td>see label</td>
<td>Use GC formulation for golf courses.</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin* (Scimitar, Cynara)</td>
<td>see label</td>
<td>For use on golf courses. See new label.</td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin + imidacloprid</td>
<td>10-20 fl oz/acre</td>
<td>Triple Crown Golf is a <strong>Restricted Use Pesticide.</strong></td>
</tr>
<tr>
<td></td>
<td>(Triple Crown T&amp;O, Triple Crown Golf)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## COMMERCIAL TURF AND GOLF COURSE INSECT CONTROL

<table>
<thead>
<tr>
<th>Pest</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 1,000 Square Feet</th>
<th>Comments/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mole Cricket</td>
<td>acephate* (Orthene T, T&amp;O, Lesco-Fate)</td>
<td>1.0-1.9 oz</td>
<td>Water soil before application. DO NOT water into soil.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin* (Menace, Talstar, others)</td>
<td>0.5-1.0 fl oz</td>
<td>Use GC formulation for golf course.</td>
</tr>
<tr>
<td></td>
<td>F, GC and G forms also available</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin 0.058% + carbaryl 2.3% (Duocide)</td>
<td>4-8 lb</td>
<td><strong>Not for use on golf courses and sod farms.</strong> Product must be watered in immediately after application to lawns. DO NOT apply more than 4 times per year to lawns. The minimum reapplication interval to lawns is 7 days. Will only kill pests present at the time of application. Pest must be directly contacted to be effective.</td>
</tr>
<tr>
<td></td>
<td>carbaryl* baits</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos* (Nufarm Chlorpyrifos)</td>
<td>see label</td>
<td>See label. For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. <strong>Restricted Use Pesticide.</strong></td>
</tr>
<tr>
<td></td>
<td>cyfluthrin* (Tempo 2, Tempo Ultra)</td>
<td>0.2 fl oz</td>
<td>Home lawn use only.</td>
</tr>
<tr>
<td></td>
<td>deltamethrin (DeltaGard) G</td>
<td>2-3 lb</td>
<td>Apply at egg hatch.</td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Zylam) 20 SG</td>
<td>1 oz</td>
<td>Various formulations now available. Adequate soil moisture critical for good control.</td>
</tr>
<tr>
<td></td>
<td>entomogenous nematodes*</td>
<td>see label</td>
<td>Use slit placement equipment.</td>
</tr>
<tr>
<td></td>
<td>fipronil (Chipco Choice) 0.1 G</td>
<td>12.5-25 lb/acre</td>
<td>Apply as a broadcast.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Top Choice) 0.0143</td>
<td>Apply while crickets are less than 1/2 inch long (June, early July).</td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Merit) 75 WP</td>
<td>4 level tsp</td>
<td>Rate varies with pest. Different formulations for different sites.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.8 lb</td>
<td>Not for use on sod farms.</td>
</tr>
<tr>
<td></td>
<td>imidacloprid + bifenthrin (Allactus)</td>
<td>see label</td>
<td>Must be in possession of a supplemental label for this use at the time of application.</td>
</tr>
<tr>
<td></td>
<td>indoxacarbazoyl (Advion) mole cricket bait 0.22%</td>
<td>1.15-4.6 lb/acre</td>
<td>DO NOT make applications within 20 ft of any body of water. No reentry until spray has dried.</td>
</tr>
<tr>
<td></td>
<td>indoxacarbazoyl (Provaunt)</td>
<td>0.275 oz</td>
<td>Triple Crown Golf is a <strong>Restricted Use Pesticide.</strong></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin* (Scimitar, Cyonara)</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin + imidacloprid</td>
<td>20-35 fl oz/acre</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Triple Crown T&amp;O, Triple Crown Golf)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slug, Snail</td>
<td>Mesurol 2 B</td>
<td>1 lb</td>
<td>Apply late in afternoon.</td>
</tr>
<tr>
<td></td>
<td>metaldehyde</td>
<td>see label</td>
<td></td>
</tr>
<tr>
<td>Sod Webworm</td>
<td>acephate* (Lesco-Fate, Orthene T, T&amp;O)</td>
<td>0.5-1.0 oz</td>
<td>Home lawns only.</td>
</tr>
<tr>
<td></td>
<td>(Precise 4G)</td>
<td>2.8 lb</td>
<td>Irrigate immediately.</td>
</tr>
<tr>
<td></td>
<td>azadirachtin* (Azatrol, Neemix, Turplex)</td>
<td>0.5 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bacillus thuringiensis (various brands)</td>
<td>1-2 lb/acre</td>
<td>Use GC formulation for golf courses.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin* (Menace, Talstar, others)</td>
<td>0.18-0.25 fl oz</td>
<td><strong>Not for use on golf courses and sod farms.</strong> Product must be watered in immediately after application to lawns. DO NOT apply more than 4 times per year to lawns. The minimum reapplication interval to lawns is 7 days. Will only kill pests present at the time of application. Pest must be directly contacted to be effective.</td>
</tr>
<tr>
<td></td>
<td>F, GC and G formulations also available</td>
<td>2 lb</td>
<td></td>
</tr>
</tbody>
</table>

*Several trade names available. Check label for active ingredient. Always follow label instructions.*
### Pest Insecticide and Formulation

<table>
<thead>
<tr>
<th>Pest</th>
<th>Insecticide and Formulation</th>
<th>Amount Per 1,000 Square Feet</th>
<th>Comments/Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sod Webworm</strong></td>
<td></td>
<td></td>
<td>See label. For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. <strong>Restricted Use Pesticide.</strong></td>
</tr>
<tr>
<td>(cont.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>carbaryl</strong> (Sevin 80 WSP)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>chlorantraniliprole</strong> (Acelepryn)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>chlorpyrifos</strong> (Nufarm Chlorpyrifos)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>clothianidin (Arena)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.5 G                                                                            14-22 oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>50 WDG                                                                            0.15-0.22 oz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>clothianidin + bifenthrin (Aloft)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>cyfluthrin (Tempo 2, Tempo Ultra)</td>
<td>0.143 fl oz</td>
<td>Irrigate immediately after application. DO NOT apply to newly seeded stands of bentgrass.</td>
</tr>
<tr>
<td></td>
<td>deltamethrin (DeltaGard) G</td>
<td>2-3 lb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Zylam) 20 SG</td>
<td>1 oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>imidacloprid + bifenthrin (Allectus)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>indoxacarb (Provaunt) SC</td>
<td>0.0625-0.25 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin* (Scimitar, Cyonara)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>methomyl (Lannate) 90 SP</td>
<td>1 lb/acre</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LV</td>
<td>3 pt/acre</td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin* (Astro) LV</td>
<td>0.4-0.8 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>spinosad A and D (Conserve) SC</td>
<td>0.25-1.25 fl oz</td>
<td>Rate varies with size and species.</td>
</tr>
<tr>
<td></td>
<td>trichlorfon* (Dylox 80 SP)</td>
<td>1.5-3.0 oz</td>
<td></td>
</tr>
<tr>
<td><strong>Sowbug, Pillbug</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin* (Talstar)</td>
<td>0.25-0.5 fl oz</td>
<td>Use GC formulation for golf courses.</td>
</tr>
<tr>
<td></td>
<td>F, GC and G forms also available</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin 0.058% + carbaryl 2.3% (Duocide)</td>
<td>8 lb</td>
<td><strong>Not for use on golf courses and sod farms.</strong> Product must be watered in immediately after application to lawns. DO NOT apply more than 4 times per year to lawns. The minimum reapplication interval to lawns is 7 days. Will only kill pests present at the time of application. Pest must be directly contacted to be effective.</td>
</tr>
<tr>
<td></td>
<td>carbaryl* (Carbaryl 4L, Sevin SL) (Sevin 80 WSP)</td>
<td>1.5-3 fl oz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos* (Nufarm Chlorpyrifos)</td>
<td>2.5-5 lb/acre</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cypermethrin* (Demon) TC</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>deltamethrin (DeltaGard) G</td>
<td>2-3 lb/1,000 ft</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin* (Scimitar, Cyonara)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin + bifenthrin + imidacloprid (Triple Crown T&amp;O, Triple Crown Golf)</td>
<td>10-20 fl oz/acre</td>
<td></td>
</tr>
</tbody>
</table>

*Several trade names available. Check label for active ingredient. Always follow label instructions.*
### COMMERCIAL CHRISTMAS TREE PRODUCTION INSECT CONTROL

<table>
<thead>
<tr>
<th>Insect or Mite</th>
<th>Insecticide and Formulations</th>
<th>Amount of Formulation Per Gallon of Spray</th>
<th>Amount Per 100 Gallons of Water</th>
<th>Minimum Interval (Hours) Between Application and Reentry</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adelgids</strong> (balsam woolly adelgid, cooley, eastern spruce gall)</td>
<td>bifenthrin 25% (Sniper)</td>
<td>3.9-12.8 oz/acre</td>
<td>12</td>
<td>Will also control twig aphids and spider mites but not rust mites.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin (OnyxPro)</td>
<td>see label</td>
<td>12</td>
<td>See label.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos (Lorsban 4E, Nufos 4E)</td>
<td>1 qt/acre</td>
<td>24</td>
<td>DO NOT treat plants under extreme heat or drought stress. Control is achieved only when eggs and crawlers are not present.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Safari)</td>
<td>4-8 oz/100 gal</td>
<td>12</td>
<td>DO NOT apply more than 2.7 lb per acre.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>esfenvalerate (Asana XL)</td>
<td>5.8-9.6 oz/100 gal</td>
<td>12</td>
<td>Use full rate to control balsam woolly adelgid.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Pasada 1.6F, Provado 1.6 F)</td>
<td>4-8 oz/acre OR 2 oz/100 gal</td>
<td>12</td>
<td>Adding a spray adjuvant may improve coverage. DO NOT apply more than 40 oz/acre per year.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (Silencer, Warrior)</td>
<td>2.58-5.12 oz/acre</td>
<td>24</td>
<td>Maximum use 1.92 pt/acre per year.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>petroleum oil (Damoil)</td>
<td>2-4 gal/100 gal dormant use 1-3 gal/100 gal summer use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>spirotetramat (Movento)</td>
<td>5-10 oz/acre</td>
<td>24</td>
<td>Maximum use 20 oz/acre per year. Use adjuvant to increase penetration.</td>
<td></td>
</tr>
<tr>
<td><strong>Ants</strong></td>
<td>bifenthrin (OnyxPro)</td>
<td>see label</td>
<td>12</td>
<td>See label.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>carbaryl (Sevin SL)</td>
<td>1 qt/acre</td>
<td>12</td>
<td>DO NOT treat plants under extreme heat or drought stress.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos (Lorsban 4E)</td>
<td>1 qt/acre</td>
<td>24</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aphids</strong> (including balsam twig aphid and cinara aphid)</td>
<td>abamectin (Avid 0.15 EC)</td>
<td>8 oz/100 gal</td>
<td>12</td>
<td>DO NOT apply more than 16 oz or less than 8 oz per acre. To suppress aphids, spray must contact young immatures.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>acephate (Orthene Tree, Turf, &amp; Ornamental) 97% Spray WSP</td>
<td>1/4 to 1/2 lb. (4 to 8 oz.)</td>
<td>24</td>
<td>Apply the specified amount of ORTHENE Turf, Tree &amp; Ornamental in 100 gals. of water with a hydraulic sprayer. The addition of a suitable sticker improves control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>azadirachtin (Aza-Direct)</td>
<td>1/3 to 2/3 lb (5 1/3 to 10 2/3 oz)</td>
<td>1-2 pt/acre</td>
<td>4</td>
<td>Under extremely heavy pest pressure, up to 3 1/2 pt may be used.</td>
</tr>
<tr>
<td></td>
<td>Beavena bassiana (Naturalis L)</td>
<td>0.3-1.0 oz/gal</td>
<td>30-100 oz/100 gal</td>
<td>4</td>
<td>Spray immediately after mixing.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin 25% (Sniper)</td>
<td>3.9-12.8 oz/acre</td>
<td>12</td>
<td>Will also control twig aphid and spider mites but not rust mites.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin (OnyxPro)</td>
<td>see label</td>
<td>12</td>
<td>See label.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>carbaryl (Sevin SL)</td>
<td>1 qt/acre</td>
<td>12</td>
<td>DO NOT treat plants under extreme heat or drought stress.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos (Lorsban 4E, Nufos 4E)</td>
<td>1 qt/acre</td>
<td>24</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>cinnamaldehyde (Cinnamite)</td>
<td>0.85 oz/gal</td>
<td>85 oz/100 gal</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>dimethoate (Dimethoate 400)</td>
<td>1.0-1.5 pt/acre</td>
<td>10 days</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>esfenvalerate (Asana XL)</td>
<td>5.8-9.6 oz/100 gal</td>
<td>12</td>
<td>Adding a spray adjuvant may improve control. DO NOT apply more than 40 oz/acre per year.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Pasada 1.6F, Provado 1.6 F)</td>
<td>4-8 oz/acre OR 2 oz/100 gal</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (Silencer, Warrior)</td>
<td>2.58-5.12 oz/acre</td>
<td>24</td>
<td>Maximum use 1.92 pt/acre per year.</td>
<td></td>
</tr>
<tr>
<td>Insect or Mite</td>
<td>Insecticide and Formulations</td>
<td>Amount of Formulation Per Gallon of Spray</td>
<td>Amount Per 100 Gallons of Water</td>
<td>Minimum Interval (Hours) Between Application and Reentry</td>
<td>Precautions and Remarks</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>------------------------------------------------</td>
<td>------------------------------------------</td>
<td>--------------------------------</td>
<td>----------------------------------------------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td><strong>Aphids (cont.)</strong> (including balsam twig aphid and cinara aphid)</td>
<td>petroleum oil (Damoil)</td>
<td>2-4 gal/100 gal dormant use</td>
<td>1-3 gal/100 gal summer use</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pymetrozine (Endeavor)</td>
<td>up to 10 oz/acre</td>
<td>5-10 oz/acre</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>spirotetramat (Movento)</td>
<td>2-4 oz/100 gal OR 4-8 oz/acre</td>
<td>12</td>
<td>Maximum use 20 oz/acre per year. Use adjuvant to increase penetration.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>thiamethoxam (Flagship 25WP)</td>
<td></td>
<td></td>
<td>Maximum use 8 oz/acre per year.</td>
<td></td>
</tr>
<tr>
<td><strong>Bagworm</strong></td>
<td>acephate (Orthene Tree, Turf, &amp; Ornamental) 97% Spray WSP</td>
<td>1/4 to 1/2 lb. (4 to 8 oz.)</td>
<td>1/3 to 2/3 lb (5 1/3 to 10 2/3 oz)</td>
<td>24</td>
<td>Apply the specified amount of ORTHENE Turf, Tree &amp; Ornamental in 100 gals. of water with a hydraulic sprayer. The addition of a suitable sticker improves control.</td>
</tr>
<tr>
<td></td>
<td>azadirachtin (Aza-Direct)</td>
<td>1-2 pt/acre</td>
<td></td>
<td>4</td>
<td>Under extremely heavy pest pressure, up to 3 1/2 pt may be used.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (OnyxPro)</td>
<td>see label</td>
<td></td>
<td>12</td>
<td>See label.</td>
</tr>
<tr>
<td></td>
<td>carbaryl (Sevin SL)</td>
<td>1 qt/acre</td>
<td></td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>diflu benzuron (Dimilin 25W)</td>
<td>2-4 oz/acre</td>
<td></td>
<td>12</td>
<td>Apply to early instars in mid to late June.</td>
</tr>
<tr>
<td></td>
<td>dimethoate (Dimethoate 400)</td>
<td>1.0-1.5 pt/acre</td>
<td></td>
<td>10 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (Silencer, Warrior)</td>
<td>2.58-5.12 oz/acre</td>
<td></td>
<td>24</td>
<td>Maximum use 1.92 pt/acre per year.</td>
</tr>
<tr>
<td></td>
<td>spinosad (Conserve SC, SpinTor 2SC)</td>
<td>see label</td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>tebufenozide (Confirm 2F)</td>
<td>4-8 oz/acre</td>
<td></td>
<td>4</td>
<td>Apply to early instar larvae; foliage development should be a minimum of 20%. DO NOT apply more than 16 oz/acre per year.</td>
</tr>
<tr>
<td><strong>Elongate Hemlock Scale and CRYPTOMERIA SCALE</strong></td>
<td>bifen thin 25% (Sniper)</td>
<td>3.9-12.8 oz/acre</td>
<td></td>
<td>12</td>
<td>Will also control twig aphid and spider mites but not rust mites. See label.</td>
</tr>
<tr>
<td></td>
<td>bifen thin (OnyxPro)</td>
<td>see label</td>
<td></td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>buprofezin (Talus 70 DF)</td>
<td>14 oz/acre</td>
<td></td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>dimethoate (Dimethoate 400)</td>
<td>1.0-1.5 pt/acre</td>
<td></td>
<td>10 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Safari)</td>
<td>4-8 oz/100 gal</td>
<td></td>
<td>12</td>
<td>DO NOT apply more than 2.7 lb per acre.</td>
</tr>
<tr>
<td></td>
<td>esfenvaler ate (Asana XL)</td>
<td>5.8-9.6 oz/100 gal</td>
<td></td>
<td>12</td>
<td>Best results when mixed with dimethoate.</td>
</tr>
<tr>
<td></td>
<td>spirotetramat (Movento)</td>
<td>5 to 10 oz/acre</td>
<td></td>
<td>24</td>
<td>Maximum use 20 oz/acre/year. Use adjuvant to increase penetration.</td>
</tr>
<tr>
<td><strong>European Pine Shoot Moth</strong></td>
<td>azadirachtin (Aza-Direct)</td>
<td>1-2 pt/acre</td>
<td></td>
<td>4</td>
<td>Under extremely heavy pest pressure, up to 3 1/2 pt may be used.</td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos (Lorsban 4E)</td>
<td>1 qt/acre</td>
<td></td>
<td>24</td>
<td>DO NOT treat plants under extreme heat or drought stress.</td>
</tr>
<tr>
<td></td>
<td>dimethoate (Dimethoate 400)</td>
<td>1.0-1.5 pt/acre</td>
<td></td>
<td>10 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>phosmet (Imidan 70-W)</td>
<td>1.3-1.5 lb/acre</td>
<td></td>
<td>13 days</td>
<td></td>
</tr>
<tr>
<td><strong>Midge</strong> (Douglas fir needle midge, pine needle midge)</td>
<td>acephate (Orthene Tree, Turf, &amp; Ornamental) 97% Spray WSP</td>
<td>1/2 lb. (8 oz.)</td>
<td>2/3 lb (10 2/3 oz)</td>
<td>24</td>
<td>Apply the specified amount of ORTHENE Turf, Tree &amp; Ornamental in 100 gals. of spray per acre by ground.</td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos (Lorsban 4E)</td>
<td>1 qt/acre</td>
<td></td>
<td>24</td>
<td>DO NOT treat plants under extreme heat or drought stress.</td>
</tr>
</tbody>
</table>
### Insect or Mite

### Insecticide and Formulations

<table>
<thead>
<tr>
<th>Insect or Mite</th>
<th>Amount of Formulation Per Gallon of Spray</th>
<th>Amount Per 100 Gallons of Water</th>
<th>Minimum Interval (Hours) Between Application and Reentry</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nantucket Pine Tip Moth</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>acephate (Orthene Tree, Turf, &amp; Ornamental)</td>
<td>97% Spray</td>
<td>3/4 lb. (12 oz.)</td>
<td>24</td>
<td>Apply the specified amount of ORTHENE Turf, Tree &amp; Ornamental in 100 gals. of spray per acre by ground.</td>
</tr>
<tr>
<td>WSP</td>
<td></td>
<td>1 lb (16 oz)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>azadirachtin (Aza-Direct)</td>
<td></td>
<td>1-2 pt/acre</td>
<td>4</td>
<td>Under extremely heavy pest pressure, up to 3 1/2 pt may be used.</td>
</tr>
<tr>
<td>bifenthrin (OnyxPro)</td>
<td></td>
<td>see label</td>
<td>12</td>
<td>See label.</td>
</tr>
<tr>
<td>carbaryl (Sevin SL)</td>
<td></td>
<td>1 qt/acre</td>
<td>12</td>
<td>Apply when second generation instars are present or 70% of first generation pupal cases are empty.</td>
</tr>
<tr>
<td>diflubenzuron (Dimilin 25W)</td>
<td></td>
<td>2-4 oz/acre</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>dimethoate (Dimethoate 400)</td>
<td></td>
<td>1.0-1.5 pt/acre</td>
<td>10 days</td>
<td></td>
</tr>
<tr>
<td>esfenvalerate (Asana XL)</td>
<td></td>
<td>5.8-9.6 oz/100 gal</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>permethrin (Permethrin 3.2 EC, Pounce)</td>
<td></td>
<td>4-8 oz/100 gal</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>phosmet (Imidan 70-W)</td>
<td></td>
<td>1.3-1.5 lb/acre</td>
<td>13 days</td>
<td></td>
</tr>
<tr>
<td>spinosad (Conserve SC, SpinTor 2SC)</td>
<td></td>
<td>see label</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>tebufenozide (Confirm)</td>
<td></td>
<td>8 oz/acre</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>esfenvalerate (Asana XL)</td>
<td></td>
<td>5.8-9.6 oz/100 gal</td>
<td>12</td>
<td>Maximum use 1.92 pt/acre per year.</td>
</tr>
<tr>
<td>lambda-cyhalothrin (Silencer, Warrior)</td>
<td></td>
<td>2.58-5.12 oz/acre</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td><strong>Rosette Bud Mite</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dimethoate (Dimethoate 400)</td>
<td></td>
<td>1.3 pt/acre</td>
<td>10 days</td>
<td>See label.</td>
</tr>
<tr>
<td>bifenthrin (OnyxPro)</td>
<td></td>
<td>see label</td>
<td>12</td>
<td>Maximum use 20 oz/acre per year. Use adjuvant to increase penetration.</td>
</tr>
<tr>
<td>spirotetramat (Movento)</td>
<td></td>
<td>5-10 oz/acre</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td><strong>Rust Mite</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>abamectin (Ardent 0.15 EC)</td>
<td></td>
<td>4 oz/100 gal</td>
<td>12</td>
<td>See label.</td>
</tr>
<tr>
<td>bifenthrin (OnyxPro)</td>
<td></td>
<td>see label</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>chloropyridan (Sanmite)</td>
<td></td>
<td>4 oz/100 gal OR</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>chlorpyrifos (Lorsban 4E)</td>
<td></td>
<td>1 qt/acre</td>
<td>24</td>
<td>DO NOT treat plants under extreme heat or drought stress.</td>
</tr>
<tr>
<td>dimethoate (Dimethoate 400)</td>
<td></td>
<td>1.0-1.5 pt/acre</td>
<td>10 days</td>
<td></td>
</tr>
<tr>
<td>petroleum oil (Damoil)</td>
<td></td>
<td>2-4 gal/100 gal</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-3 gal/100 gal summer use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>spirodiclofen (Envidor 2SC)</td>
<td></td>
<td>18-24.7 oz/acre</td>
<td>24</td>
<td>Make only one application per season.</td>
</tr>
<tr>
<td><strong>Sawfly</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(redheaded pine, red pine, European pine)</td>
<td>acephate (Orthene Tree, Turf, &amp; Ornamental)</td>
<td>3/4 lb. (12 oz.)</td>
<td>24</td>
<td>Apply the specified amount of ORTHENE Turf, Tree &amp; Ornamental in 100 gals. of spray per acre by ground</td>
</tr>
<tr>
<td>WSP</td>
<td></td>
<td>1 lb (16 oz)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>carbaryl (Sevin SL)</td>
<td></td>
<td>1 qt/acre</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>chlorpyrifos (Nufos 4E)</td>
<td></td>
<td>1 qt/acre</td>
<td>24</td>
<td></td>
</tr>
</tbody>
</table>
# COMMERCIAL CHRISTMAS TREE PRODUCTION INSECT CONTROL

<table>
<thead>
<tr>
<th>Insect or Mite</th>
<th>Insecticide and Formulations</th>
<th>Amount of Formulation Per Gallon of Spray</th>
<th>Amount Per 100 Gallons of Water</th>
<th>Minimum Interval (Hours) Between Application and Reentry</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sawfly</strong> (cont.) (redheaded pine, red pine, European pine)</td>
<td>diflubenzuron (Dimilin 25W)</td>
<td>4-8 oz/acre</td>
<td></td>
<td>12</td>
<td>Apply to early instars.</td>
</tr>
<tr>
<td></td>
<td>esfenvalerate (Asana XL)</td>
<td>5.8-9.6 oz/100 gal</td>
<td></td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Pasada 1.6F, Provado 1.6 F)</td>
<td>4-8 oz/acre OR 2 oz/100 gal</td>
<td></td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (Silencer, Warrior)</td>
<td>2.58-5.12 oz/acre OR 2 Tbsp/gal</td>
<td></td>
<td>24</td>
<td></td>
</tr>
<tr>
<td></td>
<td>malathion (Malathion 8 or Gowan)</td>
<td>1 pt/100 gal</td>
<td></td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>phosmet (Imidan 70-W)</td>
<td>1.3-1.5 lb/acre</td>
<td></td>
<td>13 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>spinosad (Conserve SC, SpinTor 2SC)</td>
<td>see label</td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td><strong>Scale</strong> (pine needle, pine tortoise, spruce bud, black pine, stripped pine)</td>
<td>azadirachtin (Aza-Direct)</td>
<td>1-2 pt/acre</td>
<td></td>
<td>4</td>
<td>Under extremely heavy pest pressure, up to 3 1/2 pint may be used.</td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos (Lorsban 4E)</td>
<td>1 qt/acre</td>
<td></td>
<td>24</td>
<td>DO NOT treat plants under extreme heat and drought stress. Apply when scale crawlers are active.</td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Safari)</td>
<td>4-8 oz/100 gal</td>
<td></td>
<td>12</td>
<td>DO NOT apply more than 2.7 lb per acre.</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (Silencer, Warrior)</td>
<td>2.58-5.12 oz/acre</td>
<td></td>
<td>24</td>
<td>Maximum use 1.92 pt/acre/year.</td>
</tr>
<tr>
<td></td>
<td>petroleum oil (Damoil)</td>
<td>2-4 gal/100 gal OR 1-3 gal/100 gal</td>
<td>dormant use</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>thiamethoxam (Flagship 25WP)</td>
<td>2-4 oz/100 gal OR 4-8 oz/acre</td>
<td></td>
<td>12</td>
<td>Maximum use 8 oz/acre per year.</td>
</tr>
<tr>
<td><strong>Seed Bug</strong></td>
<td>lambda-cyhalothrin (Silencer, Warrior)</td>
<td>2.58-5.12 oz/acre</td>
<td></td>
<td>24</td>
<td>Maximum use 1.92 pt/acre per year.</td>
</tr>
<tr>
<td></td>
<td>permethrin (Permethrin 3.2 EC)</td>
<td>30 oz/acre</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Spider Mite</strong> (spruce spider mite)</td>
<td>abamectin (Ardent 0.15 EC)</td>
<td>4 oz/100 gal</td>
<td></td>
<td>12</td>
<td>DO NOT apply more than 16 oz or less than 8 oz per acre.</td>
</tr>
<tr>
<td></td>
<td>abamectin (Avid 0.15 EC)</td>
<td>4-8 oz/100 gal</td>
<td></td>
<td>12</td>
<td>Spray immediately after mixing.</td>
</tr>
<tr>
<td></td>
<td>Beauveria bassiana (Naturalis L)</td>
<td>30-100 oz/100 gal</td>
<td></td>
<td>4</td>
<td>Add an adjuvant like Silwet L-77 or Slygard 309 to the Floramite solution.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Floramite)</td>
<td>2-8 oz/100 gal</td>
<td></td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin 25% (Sniper)</td>
<td>3.9-12.8 oz/acre</td>
<td></td>
<td>12</td>
<td>Will also control twig aphids and spider mites but not rust mites.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (OnyxPro)</td>
<td>see label</td>
<td></td>
<td>12</td>
<td>See label.</td>
</tr>
<tr>
<td></td>
<td>chloropyridan (Sanmite)</td>
<td>4 oz/100 gal OR 10.7 oz/acre</td>
<td></td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos (Lorsban 4E, Nufos 4E)</td>
<td>1 qt/acre</td>
<td></td>
<td>24</td>
<td>DO NOT treat plants under extreme heat or drought stress. If eggs are present, reapply in 7 to 10 days to control newly hatched nymphs.</td>
</tr>
<tr>
<td></td>
<td>clofentezine (Apollo SC)</td>
<td>4-8 oz/acre</td>
<td></td>
<td>12</td>
<td>Most effective when applied at first sign of mite activity and mite eggs.</td>
</tr>
</tbody>
</table>
### COMMERCIAL CHRISTMAS TREE PRODUCTION INSECT CONTROL

<table>
<thead>
<tr>
<th>Insect or Mite</th>
<th>Insecticide and Formulations</th>
<th>Amount of Formulation Per Gallon of Spray</th>
<th>Amount Per 100 Gallons of Water</th>
<th>Minimum Interval (Hours) Between Application and Reentry</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spider Mite (cont.)</strong> (spruce spider mite)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>cinnamaldehyde (Cinnamite)</td>
<td>2 Tbsp/gal</td>
<td>85 oz/100 gal</td>
<td>4</td>
<td>DO NOT exceed the maximum seasonal use rate of 27.4 fl oz of Sultan per crop growing cycle. DO NOT make more than two (2) applications of Sultan per crop per year.</td>
</tr>
<tr>
<td></td>
<td>cyflumetofen (Sultan Miticide)</td>
<td></td>
<td>13.7 fl oz/100 gal</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>dimethoate (Dimethoate 400)</td>
<td></td>
<td>1.0-1.5 pt/acre</td>
<td>10 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>etoxazole (TetraSan 5 WDG)</td>
<td></td>
<td>8-16 oz/100 gal</td>
<td>12</td>
<td>TetraSan kills mite eggs and nymphs but not adult mites. Treated adults will not produce viable eggs.</td>
</tr>
<tr>
<td></td>
<td>fenazaquin Magus</td>
<td></td>
<td>12 to 24 oz/100 gal</td>
<td>12</td>
<td>Do not exceed 24 oz per acre per year for outdoor applications.</td>
</tr>
<tr>
<td></td>
<td>fenpxrozimate (Akari 5 SC)</td>
<td></td>
<td>16-24 oz/100 gal</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>hexathiazox (Savey) 50 WP</td>
<td></td>
<td>3-6 oz/acre</td>
<td>12</td>
<td>DO NOT make more than one application per year.</td>
</tr>
<tr>
<td></td>
<td>propargite (Ornamite-CR)</td>
<td></td>
<td>18-24.7 oz/acre</td>
<td>24</td>
<td>No more than 3 applications per year. Compatibility restrictions. Make only 1 application per season.</td>
</tr>
<tr>
<td></td>
<td>spiromesifen (Judo)</td>
<td></td>
<td>1-4 oz/100 gal</td>
<td>12</td>
<td>DO NOT apply more than 4 times per season.</td>
</tr>
<tr>
<td><strong>Spittlebug</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin (OnyxPro)</td>
<td></td>
<td>see label</td>
<td>12</td>
<td>See label.</td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos (Lorsban 4E)</td>
<td></td>
<td>1 qt/acre</td>
<td>24</td>
<td>DO NOT treat plants under extreme heat or drought stress.</td>
</tr>
<tr>
<td></td>
<td>esfenvalerate (Asana XL)</td>
<td></td>
<td>5.8-9.6 oz/100 gal</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (Silencer, Warrior)</td>
<td></td>
<td>2.58-5.12 oz/acre</td>
<td>24</td>
<td>Maximum use 1.92 pt/ac per year.</td>
</tr>
<tr>
<td><strong>Spruce Needle Miner</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos (Lorsban 4E)</td>
<td></td>
<td>1 qt/acre</td>
<td>24</td>
<td>DO NOT treat plants under extreme heat or drought stress.</td>
</tr>
<tr>
<td><strong>Weevil</strong> (pales, northern pine, pitch eating, root collar, white pine)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>azadirachtin (Aza-Direct)</td>
<td></td>
<td>1-2 pt/acre</td>
<td>4</td>
<td>Under extremely heavy pest pressure, up to 3 1/2 pint may be used.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (OnyxPro)</td>
<td></td>
<td>see label</td>
<td>12</td>
<td>See label.</td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos (Lorsban 4E, Nufos 4E)</td>
<td></td>
<td>2 Tbsp/gal</td>
<td>12</td>
<td>Apply as a cut stump drench.</td>
</tr>
<tr>
<td></td>
<td>diflubenzuron (Dimilin 25W)</td>
<td></td>
<td>3 qt/100 gal</td>
<td>24</td>
<td>Treat prior to egg deposition.</td>
</tr>
<tr>
<td></td>
<td>esfenvalerate (Asana XL)</td>
<td></td>
<td>see label</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>phosmet (Imidan 70-W)</td>
<td></td>
<td>5.8-9.6 oz/100 gal</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.3-1.5 lb/acre</td>
<td>13 days</td>
<td></td>
</tr>
<tr>
<td><strong>White Grub</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos (Lorsban 4E)</td>
<td></td>
<td>1 qt/acre</td>
<td>24</td>
<td>Incorporate into the soil if possible.</td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Admire Pro)</td>
<td></td>
<td>7-14 oz/acre</td>
<td>12</td>
<td>Maximum per season: 14 oz/acre</td>
</tr>
<tr>
<td></td>
<td>thiamethoxam (Flagship 25WG)</td>
<td></td>
<td>8 oz/acre</td>
<td>12</td>
<td>Apply from adult flight through peak hatch of targeted species.</td>
</tr>
<tr>
<td><strong>Zimmerman Pine Moth</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>azadirachtin (Aza-Direct)</td>
<td></td>
<td>1-2 pt/acre</td>
<td>4</td>
<td>Under extremely heavy pest pressure, up to 3 1/2 pint may be used.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (OnyxPro)</td>
<td></td>
<td>see label</td>
<td>12</td>
<td>See label.</td>
</tr>
<tr>
<td></td>
<td>diflubenzuron (Dimilin 25W)</td>
<td></td>
<td>4-8 oz/acre</td>
<td>12</td>
<td>Apply to early instars.</td>
</tr>
<tr>
<td></td>
<td>dimethoate (Dimethoate 400)</td>
<td></td>
<td>1.0-1.5 pt/acre</td>
<td>10 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>tebufenozide (Confirm 2F)</td>
<td></td>
<td>4 to 8 oz/acre</td>
<td>4</td>
<td>Apply to early instar larvae; foliage development should be a minimum of 20%. Do not apply more than 16 oz per acre per year.</td>
</tr>
</tbody>
</table>
### HOUSEHOLD AND STRUCTURAL PEST CONTROL – Products for Use by the General Public and Products for Professional Use Only

The following tables provide household and structural pest control recommendations with pesticides for use by the homeowner and with pesticides for use by licensed pest control operators only. Mention of pesticides in this section does not imply that chemicals are or should be the first or only means of control. Nonchemical control methods, including exclusion and sanitation, should always be considered when seeking to obtain a long-term solution to household pest problems.

All chemical information provided below is given with the understanding that no endorsement of named products is intended nor is criticism implied of similar products that are not mentioned. Individuals who use pesticides are responsible for ensuring that the intended use complies with current regulations and conforms to the product label. Before purchasing or using any pesticide, always read and carefully follow the label directions.

Insecticides listed below are identified by common chemical name. A trade name in parentheses may also be listed as a convenience for the reader. Additional trade names that may be available locally are listed in the HOMEOWNER INSECTICIDE PRODUCT LIST beginning on page 324.

**Formulation Designations:**
- A = Aerosol (injectable or spray)
- B = Bait (gel or granular)
- D = Dust
- F = Fogger (total release aerosol)
- FM = Foam
- FU = Fumigant
- G = Granular
- P = Powder (for mixing with water)
- L = Liquid (for mixing with water or ready-to-use)
- RC = Repellent coil
- S = Bait (station)

#### Pests

##### Ants

**Insecticide** | **Formulation** | **Precautions and Remarks**
--- | --- | ---
Abamectin | S | Place bait stations in areas where ants are active. Keep out of reach of children and pets. Use dust formulations only in inaccessible areas. Treat ant-traveled areas. Repeat treatment as effectiveness diminishes. Some products are not suitable for use in residential kitchens or commercial food/feed preparation sites. Read the product label carefully. Remove food from storage areas before treating. Apply products as directed on the label.

**Formulation Designations**

- A = Aerosol (injectable or spray)
- B = Bait (gel or granular)
- D = Dust
- F = Fogger (total release aerosol)
- FM = Foam
- FU = Fumigant
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- S = Bait (station)
# HOUSEHOLD AND STRUCTURAL PEST CONTROL – Products for Use by the General Public and Products for Professional Use Only

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<tr>
<th>Pests</th>
<th>Insecticide</th>
<th>Formulation</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ANT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Outdoors (cont.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>diatomaceous earth (Perma-Guard)</td>
<td>D</td>
<td>Apply granular bait around nest. Place bait stations in areas where ants are active.</td>
</tr>
<tr>
<td></td>
<td>dinotefuran (Hot Shot, Spectracide)</td>
<td>S</td>
<td>Treat nest and surrounding area. May be applied along building perimeter.</td>
</tr>
<tr>
<td></td>
<td>fipronil (Combat)</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (Spectracide)</td>
<td>G, L</td>
<td>Apply products as directed on the label.</td>
</tr>
<tr>
<td></td>
<td>hydramethylnon (Amdro, Combat)</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td></td>
<td>indoxacarb (Hot Shot, Spectracide)</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (Hot Shot, Spectracide, Terro)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin (various)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>tetramethrin (various)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin (Cynoff)</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>BED BUG</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
<td>Apply to mattress tufts and folds, crevices in bed frame and cracks and crevices along baseboard. Mattress heat sanitizing is an alternative.</td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>L</td>
<td>Apply products as directed on the label.</td>
</tr>
<tr>
<td></td>
<td>cypermethrin (Hot Shot)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>deltamethrin (Black Flag)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>diatomaceous earth (Perma-Guard)</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td></td>
<td>dichlorvos (Hot Shot)</td>
<td>Pest Strip</td>
<td></td>
</tr>
<tr>
<td></td>
<td>d-phenothrin (Raid)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>imiprothrin (Raid)</td>
<td>A</td>
<td>Imiprothrin is formulated with other pesticides in these products.</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (Hot Shot)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin (various)</td>
<td>L, A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>phenoxybenzil (Bayer, Black Flag, Hot Shot)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>prallethrin (Hot Shot)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>silicon dioxide (Hot Shot)</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin (Cynoff)</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BEE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Indoors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
<td>Apply only for sporadic invaders. If bees are found frequently, locate and remove the nest.</td>
</tr>
<tr>
<td></td>
<td>cypermethrin (Black Flag, Hi-Yield, Hot Shot, Spectracide)</td>
<td>A, F, L</td>
<td>Apply products as directed on the label.</td>
</tr>
<tr>
<td></td>
<td>deltamethrin (Raid)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>diatomaceous earth (Perma-Guard)</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td></td>
<td>d-phenothrin (Raid)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>imiprothrin (Raid)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin (various)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pyrethrins, pyrethrum</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>tetramethrin (various)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Outdoors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
<td>Apply after dark when insects have returned to nest. Some materials are available in pressurized cans that propel an insecticide stream up to 10 feet. Repeat treatment may be necessary.</td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>L</td>
<td>Apply products as directed on the label.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Ortho)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>carbaryl (various)</td>
<td>D, L, P</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cypermethrin (Hi-Yield)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>deltamethrin (Raid)</td>
<td>L</td>
<td></td>
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<tr>
<td></td>
<td>d-phenothrin (Raid)</td>
<td>A</td>
<td></td>
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<tr>
<td></td>
<td>gamma-cyhalothrin (Spectracide)</td>
<td>L</td>
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<tr>
<td></td>
<td>For carpenter bees, see Carpenter Bee entry.</td>
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</tr>
</tbody>
</table>

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**HOUSEHOLD PESTS**
### HOUSEHOLD AND STRUCTURAL PEST CONTROL – Products for Use by the General Public and Products for Professional Use Only

<table>
<thead>
<tr>
<th>Pests</th>
<th>Insecticide</th>
<th>Formulation</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BEE</strong>&lt;br&gt;(b) Outdoors (cont.)&lt;br&gt;For carpenter bees, see Carpenter Bee entry.</td>
<td>permethrin (various)</td>
<td>A, L</td>
<td>Apply as a barrier spray along foundation and entry points (doors and windows). Read labels to determine which products are suitable for indoor use. Clean up moisture problems that may attract insects indoors. Excess moisture may impede product effectiveness.</td>
</tr>
<tr>
<td></td>
<td>prallethrin (Hot Shot)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>tetramethrin (various)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin (Cynoff)</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td><strong>BOOKLOUSE</strong> (psocid)&lt;br&gt;(indoors and outdoors)</td>
<td>allethrin (Ultra-Kill)</td>
<td>A</td>
<td>Imiprothrin is formulated with other pesticides in these products.</td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Ortho)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cypermethrin (Spectracide)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>deltamethrin (Black Flag)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>diatomaceous earth (Perma-Guard)</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td></td>
<td>imiprothrin (Raid)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin (various)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pyrethrins, pyrethrum</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td><strong>BOXELDER BUG</strong>&lt;br&gt;(Outdoors)</td>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
<td>Harmless insects become nuisances when searching indoors for hibernation sites in the fall. Treat door thresholds, window ledges and other areas where the insects congregate or may gain entry.</td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Ortho)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cypermethrin (Black Flag)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>deltamethrin (Spectracide)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>d-phenothrin (Raid)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (Spectracide)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin (various)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td><strong>BROWN DOG TICK</strong>&lt;br&gt;(a) Indoors</td>
<td>allethrin (Ultra-Kill)</td>
<td>A, L</td>
<td>Spot-treat pet beds (not actual bedding) along with cracks, crevices and similar hiding areas. DO NOT apply to animals (see also ANIMAL INSECT CONTROL section). discard or launder infested bedding in hot, soapy water.</td>
</tr>
<tr>
<td></td>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cypermethrin (Black Flag, Hi-Yield, Hot Shot, Spectracide)</td>
<td>A, F, L</td>
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<tr>
<td></td>
<td>deltamethrin (Spectracide)</td>
<td>L</td>
<td></td>
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<tr>
<td></td>
<td>diatomaceous earth (Perma-Guard)</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td></td>
<td>d-phenothrin (Raid)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>imiprothrin (Black Flag)</td>
<td>A</td>
<td>Imiprothrin is formulated with other pesticides in these products.</td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (Spectracide)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (Spectracide)</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lemongrass oil (Hot Shot)</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin (various)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pyrethrins, pyrethrum</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td><strong>BROWN DOG TICK</strong>&lt;br&gt;(b) Outdoors and under buildings</td>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
<td>See also ANIMAL INSECT CONTROL section.</td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Ortho)</td>
<td>G</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cypermethrin (Hi-Yield)</td>
<td>L</td>
<td></td>
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</tbody>
</table>
## Pests

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Formulation</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BROWN DOG TICK</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Outdoors and under buildings (cont.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>deltamethrin (Black Flag, Spectracide)</td>
<td>L</td>
<td>See also ANIMAL INSECT CONTROL section.</td>
</tr>
<tr>
<td>diatomaceous earth (Perma-Guard)</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>gamma-cyhalothrin (Spectracide)</td>
<td>G, L</td>
<td></td>
</tr>
<tr>
<td>lambda-cyhalothrin (Spectracide)</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td>lemongrass oil (Hot Shot)</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td>permethrin (various)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>tetramethrin (various)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td><strong>CARPENTER ANT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Indoors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>abamectin (Advance)</td>
<td>B</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>acetamiprid + bifenthrin (Transport Mikron)</td>
<td>L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>allethrin (Ultra-Kill)</td>
<td>A</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>beta-cyfluthrin (Bayer Advanced, Tempo)</td>
<td>L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>bifenthrin (Ortho, Talstar)</td>
<td>A, L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>boric acid (Niban, Mother Earth G)</td>
<td>B</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>chlorfenapyr (Phantom)</td>
<td>L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>cyfluthrin (Bayer Advanced, Tempo)</td>
<td>L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>cypermethrin (Cynoff EC)</td>
<td>D</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>deltamethrin (Bayer Advanced, Spectracide, Suspend)</td>
<td>L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>dinotefuran (Alpine)</td>
<td>FM, L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>disodium octaborate tetrahydrate (Bora-Care, Tim-bor, Borathor)</td>
<td>D, L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>esfenvalerate (Onslaught)</td>
<td>L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>fipronil (Combat, Maxforce)</td>
<td>B</td>
<td>Bait where you see ant activity. Apply as directed on label.</td>
</tr>
<tr>
<td>hydramethylnon (Combat)</td>
<td>B</td>
<td>Bait where you see ant activity. Apply as directed on label.</td>
</tr>
<tr>
<td>imidacloprid + cyfluthrin (Temprid SC)</td>
<td>L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>indoxacarb (Advion, Anlion)</td>
<td>B, L</td>
<td>Bait where you see ant activity. Apply as directed on label.</td>
</tr>
<tr>
<td>lambda-cyhalothrin (Demand, Spectracide)</td>
<td>FM, L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>permethrin (Dragnet, various others)</td>
<td>L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>thiamethoxam (Optigard)</td>
<td>L</td>
<td>Apply as foam to wall voids or infested wood.</td>
</tr>
<tr>
<td>zeta-cypermethrin (Cynoff)</td>
<td>D</td>
<td>Apply dust formulation directly to galleries.</td>
</tr>
<tr>
<td><strong>CARPENTER ANT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Outdoors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>abamectin (Advance)</td>
<td>B</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>acetamiprid + bifenthrin (Transport Mikron)</td>
<td>L</td>
<td>Apply outdoors only as pinstream, spot, crack and crevice, or perimeter spray.</td>
</tr>
<tr>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>beta-cyfluthrin (Bayer Advanced, Tempo)</td>
<td>L</td>
<td>Treat into and around the nest, then seal holes.</td>
</tr>
<tr>
<td>bifenthrin (Ortho, Bifen, Talstar)</td>
<td>L</td>
<td>Spray or inject into wood.</td>
</tr>
<tr>
<td>boric acid (Niban, Mother Earth G)</td>
<td>B</td>
<td>Place bait granules around perimeter.</td>
</tr>
<tr>
<td>chlorfenapyr (Phantom)</td>
<td>L</td>
<td>Exterior use limited to spot (2 square feet) and crack and crevice treatments at points of entry.</td>
</tr>
<tr>
<td>cyfluthrin (Bayer Advanced, Tempo)</td>
<td>L</td>
<td>Treat into and around the nest, then seal holes.</td>
</tr>
</tbody>
</table>
### Pests Insecticide Formulation Precautions and Remarks

#### CARPENTER ANT

**Outdoors** (cont.)
- **cypermethrin** (Cynoff EC, Hi-Yield, Martin’s Viper, Demon TC)
  - **Formulation**: D, L
  - **Precaution**: Apply dust formulation directly to galleries.
- **deltamethrin** (Suspend)
  - **Formulation**: L
  - **Precaution**: Treat into and around the nest.
- **dinotefuran** (Alpine)
  - **Formulation**: FM, L
  - **Precaution**: Apply as directed on label.
- **disodium octaborate tetrahydrate** (Bora-Care, Tim-bor, Borathor)
  - **Formulation**: D, L
  - **Precaution**: Apply as directed on label.
- **esfenvalerate** (Onslaught)
  - **Formulation**: L
  - **Precaution**: Apply as directed on label.
- **fipronil** (Maxforce, Termidor, Taurus)
  - **Formulation**: B, G, P
  - **Precaution**: Apply bait granules in ant foraging areas. Water area after applying granules.
- **gamma-cyhalothrin** (Spectracide)
  - **Formulation**: B
  - **Precaution**: Apply granules along perimeter of building or nest. (Maxforce is for professional use.)
- **imidacloprid** (Bayer Advanced)
  - **Formulation**: FM
  - **Precaution**: Apply to galleries as directed on label.
- **imidacloprid + cyfluthrin** (Temprid SC)
  - **Formulation**: B, L
  - **Precaution**: Apply as directed on label.
- **indoxacarb** (Arilon, Advion)
  - **Formulation**: B, L
  - **Precaution**: Apply as directed on label.
- **lambda-cyhalothrin** (Demand, Spectracide)
  - **Formulation**: A, L
  - **Precaution**: Apply as crack and crevice or spot treatment or paint onto surface. Application by drilling and injecting is also permitted.
- **permethrin** (Dragnet, various others)
  - **Formulation**: L
  - **Precaution**: Apply liquid as a surface spray and into entrance hole. Puff into and around entrance holes using dust applicator. Seal with wood plugs, putty, or stainless steel or copper wool.
- **zeta-cypermethrin** (Cynoff)
  - **Formulation**: D

#### CARPENTER BEE

- **alpha cypermethrin** (Fendona CS)
  - **Formulation**: L
  - **Precaution**: Apply directed on label.
- **beta-cyfluthrin** (Bayer Advanced, Tempo)
  - **Formulation**: L
  - **Precaution**: Apply as directed on label.
- **bifenthrin** (Ortho, Bifen, Talstar)
  - **Formulation**: D, L
  - **Precaution**: Apply liquid as a surface spray and into entrance hole. Puff into and around entrance holes using dust applicator. Seal with wood plugs, putty, or stainless steel or copper wool.
- **chlorfenapyr** (Phantom)
  - **Formulation**: L
  - **Precaution**: Apply as directed on label.
- **cyfluthrin** (Bayer Advanced, Tempo)
  - **Formulation**: L
  - **Precaution**: Apply as directed on label.
- **cypermethrin** (Demon TC)
  - **Formulation**: L
  - **Precaution**: Treat into and around the nest.
- **deltamethrin** (Bayer Advanced, Suspend SC)
  - **Formulation**: D, L
  - **Precaution**: Apply liquid as a coarse surface spray and into gallery entrance. Puff into and around entrance holes using dust applicator. Seal with wood plugs, putty or stainless steel or copper wool.
- **disodium octaborate tetrahydrate** (Bora-Care, Tim-bor, Borathor)
  - **Formulation**: D, L
  - **Precaution**: Apply as directed on label.
- **imidacloprid** (Bayer Advanced, Premise)
  - **Formulation**: FM
  - **Precaution**: Apply to galleries as directed on label.
- **imidacloprid + cyfluthrin** (Temprid SC)
  - **Formulation**: L
  - **Precaution**: Spray or inject into wood. Seal holes in wood before injecting. Avoid runoff.
- **lambda-cyhalothrin** (Demand, Spectracide)
  - **Formulation**: L
  - **Precaution**: Spray or inject into wood. Seal holes in wood before injecting. Avoid runoff.
- **permethrin** (Dragnet)
  - **Formulation**: FM
  - **Precaution**: Apply to galleries as directed on label.
- **prallethrin-lambda-cyhalothrin** (Spectracide)
  - **Formulation**: D
  - **Precaution**: Apply dust formulation directly into galleries.

#### CARPET BEETLE

**Nonfabric areas and infested areas of carpets only**
- **allethrin** (Ultra-Kill)
  - **Formulation**: A, L
  - **Precaution**: Treat cracks, crevices and hidden areas to point of runoff with spray. Moisten but DO NOT saturate fabric. For valuable rugs or cloth items, consider hiring a pest control professional.
- **alpha cypermethrin** (Fendona CS)
  - **Formulation**: A

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**HOUSEHOLD AND STRUCTURAL PEST CONTROL – Products for Use by the General Public and Products for Professional Use Only**

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### Pests Insecticide Formulation Precautions and Remarks

#### CARPET BEETLE

(a) Nonfabric areas and infested areas of carpets only
(cont.)

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Formulation</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>imiprothrin (Hot Shot)</td>
<td>A</td>
<td>Imiprothrin is formulated with other pesticides in these products.</td>
</tr>
<tr>
<td>prallethrin (Ortho)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>pyrethrins, pyrethrum</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>zeta-cypermethrin (Cynoff)</td>
<td>D</td>
<td>Use Cynoff insecticide as a crack and crevice treatment in closets and other storage areas where these pests are found. This is an adjunct treatment and will not control moth larvae already on the clothes. DO NOT apply this product directly to clothing.</td>
</tr>
</tbody>
</table>

(b) On fabric

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Formulation</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>allethrin (Ultra-Kill)</td>
<td>A, L</td>
<td>Other pyrethroids are also available ready-to-use. While many are specifically recommended for clothes moths, they are also effective on carpet beetles. DO NOT saturate fabric.</td>
</tr>
<tr>
<td>diatomaceous earth (Perma-Guard)</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>prallethrin (Black Flag)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>pyrethrins, pyrethrum</td>
<td>A, L</td>
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</tbody>
</table>

#### CENTIPEDE

(a) Indoors

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Formulation</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>allethrin (Ultra-Kill)</td>
<td>A, L</td>
<td>Usually infest damp areas such as basements. Spot-treat cracks, crevices and moldings where pests may crawl. Some products are not suitable for use in residential kitchens or commercial food/feed preparation sites. Read the product label carefully.</td>
</tr>
<tr>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>A, L</td>
<td>Imiprothrin is formulated with other pesticides in these products.</td>
</tr>
<tr>
<td>cypermethrin (Black Flag, Hi-Yield, Hot Shot)</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td>deltamethrin (Spectracide)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>diatomaceous earth (Perma-Guard)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>gamma-cyhalothrin (Spectracide)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>imiprothrin (Hot Shot, Raid)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>permethrin (various)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>prallethrin (Ortho)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>pyrethrins, pyrethrum</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>zeta-cypermethrin (Cynoff)</td>
<td>D</td>
<td></td>
</tr>
</tbody>
</table>

(b) Outdoors

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Formulation</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>L</td>
<td>Treat infested areas around building foundations, vents and similar access points. Barrier sprays of 12 to 18 inches along perimeter may be effective.</td>
</tr>
<tr>
<td>bifenthrin (Ortho)</td>
<td>G</td>
<td></td>
</tr>
<tr>
<td>cypermethrin (Hi-Yield)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>deltamethrin (Spectracide)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>diatomaceous earth (Perma-Guard)</td>
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<td></td>
</tr>
<tr>
<td>gamma-cyhalothrin (Spectracide)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>lemongrass oil (Hot Shot)</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td>permethrin (various)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>tetramethrin (various)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>zeta-cypermethrin (Cynoff)</td>
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<tr>
<td>Pests</td>
<td>Insecticide</td>
<td>Formulation</td>
</tr>
<tr>
<td>-------</td>
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<td>-------------</td>
</tr>
<tr>
<td>CHIGGER (red bug) (Outdoors)</td>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Ortho)</td>
<td>G, L</td>
</tr>
<tr>
<td></td>
<td>deltamethrin (Spectracide)</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (Spectracide)</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (Bonide)</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>permethrin (various)</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>tetramethrin (various)</td>
<td>L</td>
</tr>
<tr>
<td>CLOTHES MOTH (a) Nonfabric areas and infested areas of carpet only</td>
<td>dichlorvos (Hot Shot)</td>
<td>FU strip</td>
</tr>
<tr>
<td>CLOTHES MOTH (b) On fabric</td>
<td>paradichlorobenzene (various)</td>
<td>Crystals or similar solid</td>
</tr>
<tr>
<td>CLOTHES MOTH (c) In storage areas</td>
<td>alithrin (Ultra-Kill)</td>
<td>A, L</td>
</tr>
<tr>
<td></td>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>A, L</td>
</tr>
<tr>
<td></td>
<td>cypermethrin (Black Flag)</td>
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</tr>
<tr>
<td></td>
<td>deltamethrin (Spectracide)</td>
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</tr>
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<td>diatomaceous earth (Perma-Guard)</td>
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<tr>
<td></td>
<td>improthrin (Raid)</td>
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</tr>
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<td></td>
<td>gamma-cyhalothrin (Spectracide)</td>
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<tr>
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</tr>
<tr>
<td></td>
<td>prallethrin (Ortho)</td>
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</tr>
<tr>
<td></td>
<td>pyrethrins, pyrethrum</td>
<td></td>
</tr>
<tr>
<td>CLOVER MITE (a) Indoors</td>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>A, L</td>
</tr>
<tr>
<td></td>
<td>cypermethrin (Black Flag)</td>
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<td>permethrin (various)</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>tetramethrin (various)</td>
<td>L</td>
</tr>
<tr>
<td>CLOVER MITE (b) Outdoors</td>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>G, L</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Ortho)</td>
<td>C, G</td>
</tr>
<tr>
<td></td>
<td>cypermethrin (Black Flag)</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>deltamethrin (Spectracide)</td>
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<td></td>
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<td></td>
<td>permethrin (various)</td>
<td>G, L</td>
</tr>
<tr>
<td></td>
<td>tetramethrin (various)</td>
<td>L</td>
</tr>
</tbody>
</table>
# HOUSEHOLD AND STRUCTURAL PEST CONTROL – Products for Use by the General Public and Products for Professional Use Only

<table>
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<tr>
<th>Pests</th>
<th>Insecticide</th>
<th>Formulation</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COCKROACH (a) Indoors</strong></td>
<td>abamectin (Raid Max)</td>
<td>S</td>
<td>Apply sprays along baseboards, under sinks, in cabinets and other infested areas. DO NOT restock shelves until surface dries completely. Some products are not suitable for use in residential kitchens or commercial food/feed preparation sites. Read the product label carefully. Place bait stations in infested areas; follow label instructions. Keep out of reach of children and pets. Sanitation is critical; before using baits, eliminate other food sources. Place bait stations in cabinets under sinks and behind stoves and refrigerators. Dusts are slow acting but gives long-lasting control. Force small amounts into all hidden nesting areas with dust applicator. Avoid over-application and inhalation of dust. Some formulations may contain pyrethrins or pyrethrum. DO NOT contaminate food preparation or storage sites. Use diatomaceous earth in the same manner as boric acid powders. Apply products as directed on the label.</td>
</tr>
<tr>
<td></td>
<td>allethrin (Ultra-Kill)</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
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<tr>
<td></td>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>L</td>
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<td></td>
<td>bifenthrin (Ortho)</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>boric acid (Bonide, Niban)</td>
<td>B, D</td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorpyrifos (Hot Shot)</td>
<td>S</td>
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</tr>
<tr>
<td></td>
<td>cypermethrin (Black Flag, Hi-Yield, Hot Shot, Spectracide)</td>
<td>A, F, L</td>
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<td>diatomaceous earth (Perma-Guard)</td>
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<td></td>
<td>deltamethrin (Black Flag)</td>
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<td></td>
<td>dinotefuran (Hot Shot)</td>
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<td>eugenol (Bayer Advanced)</td>
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<tr>
<td></td>
<td>fipronil (Combat)</td>
<td>B, S</td>
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<td></td>
<td>hydramethylnon (Amdro, Combat)</td>
<td>B</td>
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</tr>
<tr>
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<td>hydroprene (Egg Stopper)</td>
<td>S</td>
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<tr>
<td></td>
<td>imiprothrin (Hot Shot, Raid)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>indoxacarb (Hot Shot)</td>
<td>B</td>
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<td></td>
<td>gamma-cyhalothrin (Spectracide)</td>
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<td>lambda-cyhalothrin (Spectracide)</td>
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<tr>
<td></td>
<td>lemongrass oil (Hot Shot)</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin (various)</td>
<td>A</td>
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</tr>
<tr>
<td></td>
<td>prallethrin (Ortho)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pyrethrins, pyrethrum</td>
<td>A</td>
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</tr>
<tr>
<td></td>
<td>tetramethrin (various)</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin (Cynoff)</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td><strong>COCKROACH (b) Outdoors</strong></td>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
<td>Some species of cockroaches can live indoors and outdoors. Cockroaches that live outdoors tend to hide under mulch, ivy and similar cover. Treat groundcover and along foundation walls, patios and other areas where cockroaches are seen. Certain products cannot be used on or around edible plants. Read product labels for any limitations. Apply products as directed on the label.</td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Ortho)</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cypermethrin (Hi-Yield)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>deltamethrin (Spectracide)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>diatomaceous earth (Perma-Guard)</td>
<td>D</td>
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</tr>
<tr>
<td></td>
<td>dinotefuran (Hot Shot)</td>
<td>S</td>
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<td></td>
<td>gamma-cyhalothrin (Spectracide)</td>
<td>G, L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>hydramethylnon (Amdro, Combat)</td>
<td>B</td>
<td></td>
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<td></td>
<td>lambda-cyhalothrin (Spectracide)</td>
<td>A, L</td>
<td></td>
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<tr>
<td></td>
<td>lemongrass oil (Hot Shot)</td>
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## COCKROACH

### (b) Outdoors (cont.)

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Formulation</th>
<th>Precautions and Remarks</th>
</tr>
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<tbody>
<tr>
<td>permethrin (various)</td>
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<tr>
<td>tetramethrin (various)</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td>zeta-cypermethrin (Cynoff)</td>
<td>D</td>
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</tbody>
</table>

## CRICKET

### (Indoors and in crawlspaces)

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Formulation</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>allethrin (Ultra-Kill)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>bifenthrin (Ortho)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>boric acid (Bonide, Niban)</td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>cypermethrin (Black Flag, Hi-Yield, Hot Shot, Spectracide)</td>
<td>A, F, L</td>
<td>Crickets enter homes through basements and similar areas. Some formulations may be sprinkled along foundation. Read product label before using outdoors. Treat along foundation walls, patios and other areas where crickets are seen. Apply in a light 2-to 4-inch band around foundation. DO NOT use excessive amounts, and DO NOT apply to foliage of ornamentals or to food crops. Apply products as directed on the label. Imiprothrin is formulated with other pesticides in these products.</td>
</tr>
<tr>
<td>deltamethrin (Spectracide)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>diatomaceous earth (Perma-Guard)</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>eugenol (Bayer Advanced)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>gamma-cyhalothrin (Spectracide) OUTDOORS ONLY</td>
<td>G, L</td>
<td></td>
</tr>
<tr>
<td>imiprothrin (Raid)</td>
<td>A</td>
<td>Imiprothrin is formulated with other pesticides in these products.</td>
</tr>
<tr>
<td>lambda-cyhalothrin (Spectracide)</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td>lemongrass oil (Hot Shot)</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td>permethrin (various)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>prallethrin (Ortho)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>pyrethrins, pyrethrum</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>tetramethrin (various)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>zeta-cypermethrin (Cynoff)</td>
<td>D</td>
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</table>

## EARWIG

### (a) Indoors

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Formulation</th>
<th>Precautions and Remarks</th>
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</thead>
<tbody>
<tr>
<td>allethrin (Ultra-Kill)</td>
<td>A</td>
<td>Repeat treatments may be necessary at two-week intervals. Some products are not suitable for use in residential kitchens or commercial food/feed preparation sites. Read the product label carefully. Imiprothrin is formulated with other pesticides in these products.</td>
</tr>
<tr>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>bifenthrin (Ortho)</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td>cypermethrin (Black Flag, Hi-Yield, Hot Shot, Spectracide)</td>
<td>A, F, L</td>
<td></td>
</tr>
<tr>
<td>diatomaceous earth (Perma-Guard)</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>eugenol (Bayer Advanced)</td>
<td>L</td>
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</tr>
<tr>
<td>imiprothrin (Raid)</td>
<td>A</td>
<td>Imiprothrin is formulated with other pesticides in these products.</td>
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<tr>
<td>gamma-cyhalothrin (Spectracide)</td>
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</tr>
<tr>
<td>lambda-cyhalothrin (Spectracide)</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td>lemongrass oil (Hot Shot)</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td>prallethrin (Ortho)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>tetramethrin (various)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>zeta-cypermethrin (Cynoff)</td>
<td>D</td>
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<td>Pests</td>
<td>Insecticide</td>
<td>Formulation</td>
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<td><strong>EARWIG</strong></td>
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<tr>
<td></td>
<td>alpha cypermethrin (Fendona CS)</td>
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<td>beta-cyfluthrin (Bayer Advanced)</td>
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<td></td>
<td>bifenthrin (Ortho)</td>
<td>G, L</td>
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<tr>
<td></td>
<td>cypermethrin (Hi-Yield)</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>diatomaceous earth (Perma-Guard)</td>
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</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (Spectracide)</td>
<td>G, L</td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (Spectracide)</td>
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<tr>
<td></td>
<td>lemongrass oil (Hot Shot)</td>
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<tr>
<td></td>
<td>permethrin (various)</td>
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</tr>
<tr>
<td></td>
<td>prallethrin (Hot Shot, Raid)</td>
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</tr>
<tr>
<td></td>
<td>tetramethrin (various)</td>
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</tr>
<tr>
<td></td>
<td>zeta-cypermethrin (Cynoff)</td>
<td>D</td>
</tr>
<tr>
<td><strong>FLEA</strong></td>
<td><strong>(a) Indoors</strong></td>
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</tr>
<tr>
<td></td>
<td>allethrin (Ultra-Kill)</td>
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<tr>
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<td>alpha cypermethrin (Fendona CS)</td>
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</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (Bayer Advanced)</td>
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<tr>
<td></td>
<td>bifenthrin (Ortho)</td>
<td>A</td>
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<td></td>
<td>boric acid (Bonide, Niban)</td>
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<td></td>
<td>cypermethrin (Black Flag, Hi-Yield, Hot Shot, Spectracide)</td>
<td>A, F, L</td>
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<tr>
<td></td>
<td>deltamethrin (Spectracide)</td>
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<tr>
<td></td>
<td>d-phenothrin (Raid)</td>
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<tr>
<td></td>
<td>eugenol (Bayer Advanced)</td>
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<tr>
<td></td>
<td>imiprothrin (Black Flag)</td>
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<td>lambda-cyhalothrin (Spectracide)</td>
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<td>lemongrass oil (Hot Shot)</td>
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<td>methoprene (Precor)</td>
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<td>phenoxybenzil (Hot Shot)</td>
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<td>pyrethrins, pyrethrum</td>
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<td>pyriproxyfen (Archer, Nylar)</td>
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<td>tetramethrin (Enforcer)</td>
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<td></td>
<td>zeta-cypermethrin (Cynoff)</td>
<td>D</td>
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<tr>
<td><strong>FLEA</strong></td>
<td><strong>(b) Outdoors</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>alpha cypermethrin (Fendona CS)</td>
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</tr>
<tr>
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<td>beta-cyfluthrin (Bayer Advanced)</td>
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<td>bifenthrin (Ortho)</td>
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<td>cypermethrin (Hi-Yield)</td>
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<td>deltamethrin (Spectracide)</td>
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<td></td>
<td>diatomaceous earth (Perma-Guard)</td>
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<tr>
<td></td>
<td>gamma-cyhalothrin (Spectracide)</td>
<td>G, L</td>
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<td>lambda-cyhalothrin (Spectracide)</td>
<td>L</td>
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<td></td>
<td>lemongrass oil (Hot Shot)</td>
<td>A, L</td>
</tr>
<tr>
<td></td>
<td>permethrin (various)</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>tetramethrin (various)</td>
<td>L</td>
</tr>
</tbody>
</table>
### Pests Insecticide Formulation Precautions and Remarks

#### FLIES

**(a) Indoors**
- allethrin (Ultra-Kill)  
- alpha-cypermethrin (Fendona CS)  
- beta-cyfluthrin (Bayer Advanced)  
- cypermethrin (Black Flag, Hi-Yield, Hot Shot, Spectracide)  
- deltamethrin (Black Flag, Spectracide)  
- dichlorvos (Vapona, Pest Strip, Ortho No-Pest, Hot Shot)  
- eugenol (Bayer Advanced)  
- d-phenoxythrin (Raid)  
- lemongrass oil (Hot Shot)  
- permethrin (various)  
- pyrethrins, pyrethrum (various)  
- tetramethrin (various)

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Formulation</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>allethrin</td>
<td>A</td>
<td>Strips can only be used in unoccupied areas. Apply as labeled to areas or objects (such as garbage cans) infested with flies. Repeat treatments as may be necessary. See label before treating areas of vegetation. Sanitation in the area is essential for satisfactory control of flies.</td>
</tr>
<tr>
<td>alpha-cypermethrin</td>
<td>L</td>
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<tr>
<td>beta-cyfluthrin</td>
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</tr>
<tr>
<td>cypermethrin</td>
<td>A, F, L</td>
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</tr>
<tr>
<td>deltamethrin</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>dichlorvos</td>
<td>FU strip</td>
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<td>eugenol</td>
<td>L</td>
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</tr>
<tr>
<td>d-phenoxythrin</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>lemongrass oil</td>
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<td>permethrin</td>
<td>A, F</td>
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<tr>
<td>pyrethrins, pyrethrum</td>
<td>A, L</td>
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<tr>
<td>tetramethrin</td>
<td>L, F</td>
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</table>

**FLIES**

**(b) Outdoors**
- alpha-cypermethrin (Fendona CS)  
- beta-cyfluthrin (Bayer Advanced)  
- bifenthrin (Ortho)  
- cypermethrin (Hi-Yield)  
- deltamethrin (Black Flag, Spectracide)  
- d-phenoxythrin (Raid)  
- imidacloprid (Maxforce)  
- lambda-cyhalothrin (Spectracide)  
- permethrin (various)  
- prallethrin (Hot Shot)  
- tetramethrin (various)

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Formulation</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>alpha-cypermethrin</td>
<td>L</td>
<td>Apply as a surface spray to areas or objects (such as garbage cans) infested with flies. Repeat treatments may be necessary. See label before treating areas of vegetation. Sanitation in the area is essential for satisfactory control using any of these chemicals but particularly important with baits. Use as directed.</td>
</tr>
<tr>
<td>beta-cyfluthrin</td>
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</tr>
<tr>
<td>bifenthrin</td>
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<tr>
<td>cypermethrin</td>
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</tr>
<tr>
<td>deltamethrin</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td>d-phenoxythrin</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>imidacloprid</td>
<td>B</td>
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<td>lambda-cyhalothrin</td>
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<tr>
<td>permethrin</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>prallethrin</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>tetramethrin</td>
<td>A</td>
<td></td>
</tr>
</tbody>
</table>

#### HORNETS, MUD DAUBERS, WASPS, YELLOW JACKETS

**(a) Indoors**
- allethrin (Ultra-Kill)  
- alpha-cypermethrin (Fendona CS)  
- beta-cyfluthrin (Bayer Advanced)  
- cypermethrin (Black Flag, Hi-Yield, Hot Shot, Spectracide)  
- d-phenoxythrin (Raid)  
- deltamethrin (Black Flag, Spectracide)  
- prallethrin (Ultra-Kill, Spectracide)  
- pyrethrins, pyrethrum  
- S-bioallethrin (Spectracide)  
- tetramethrin (various)

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Formulation</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>allethrin</td>
<td>A</td>
<td>Apply to insects as needed for quick knockdown. Mechanical control (swatting) is usually adequate. Use product with &quot;crack and crevice&quot; nozzle to reach nests in wall voids. Remove nest when wasps are dead.</td>
</tr>
<tr>
<td>alpha-cypermethrin</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>beta-cyfluthrin</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>cypermethrin</td>
<td>A, F, L</td>
<td></td>
</tr>
<tr>
<td>d-phenoxythrin</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>deltamethrin</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td>prallethrin</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>pyrethrins, pyrethrum</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td>S-bioallethrin</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>tetramethrin</td>
<td>A</td>
<td></td>
</tr>
</tbody>
</table>

**HORNETS, MUD DAUBERS, WASPS, YELLOW JACKETS**

**(b) Nest and adjacent areas**
- alpha-cypermethrin (Fendona CS)  
- beta-cyfluthrin (Bayer Advanced)  
- bifenthrin (Ortho)  
- carbaryl (various)  
- cypermethrin (Hi-Yield)  
- deltamethrin (Spectracide)  
- diatomaceous earth (Perma-Guard)

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Formulation</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>alpha-cypermethrin</td>
<td>L</td>
<td>Apply to nest or opening after dark when insects have returned to nest. Repeat treatment may be necessary. Most are packaged in pressurized containers that direct an insecticide stream of up to 10 feet. For yellow jackets and other soil-dwelling wasps, apply chemical to nests in soil. Fendona CS for use on yellow jackets only.</td>
</tr>
<tr>
<td>beta-cyfluthrin</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>bifenthrin</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>carbaryl</td>
<td>D, L</td>
<td></td>
</tr>
<tr>
<td>cypermethrin</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>deltamethrin</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>diatomaceous earth</td>
<td>D</td>
<td></td>
</tr>
</tbody>
</table>
## HOUSEHOLD AND STRUCTURAL PEST CONTROL – Products for Use by the General Public and Products for Professional Use Only

<table>
<thead>
<tr>
<th>Pests</th>
<th>Insecticide</th>
<th>Formulation</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>HORNETS, MUD DAUBERS, WASPS, YELLOW JACKETS</td>
<td>d-phenothrin (Raid)</td>
<td>A</td>
<td>Apply to nest or opening after dark when insects have returned to nest. Repeat treatment may be necessary. Most are packaged in pressurized containers that direct an insecticide stream of up to 10 feet. For yellow jackets and other soil-dwelling wasps, apply chemical to nests in soil.</td>
</tr>
<tr>
<td>(b) Nest and adjacent areas</td>
<td>lambda-cyhalothrin (Hot Shot, Spectracide)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin (various)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>prallethrin (Hot Shot, Spectracide, Ultra-Kill)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>tetramethrin (various)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin (Cynoff)</td>
<td>D</td>
<td>Not for use on paper wasps.</td>
</tr>
<tr>
<td>LICE: body, head, crab</td>
<td>malathion (Ovide)</td>
<td>L</td>
<td>Shampoo formulations. Thoroughly treat infested areas of body with lotion. Wash infested clothing with strong soap and very hot water. Dryclean woolens.</td>
</tr>
<tr>
<td>(on person)</td>
<td>permethrin (Nix)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pyrethrins, pyrethrum (Rid)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>MILLIPEDE</td>
<td>allethrin (Ultra-Kill)</td>
<td>A</td>
<td>Harmless pest is short-lived once indoors; therefore, insecticides may not be necessary. Spot-treat pest entrance areas (door thresholds). Outside treatment is necessary for satisfactory control. Some products are not suitable for use in residential kitchens or commercial food/feed preparation sites. Read the product label carefully.</td>
</tr>
<tr>
<td>(a) Indoors</td>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Ortho)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cypermethrin (Black Flag, Hi-Yield, Hot Shot, Spectracide)</td>
<td>A, F, L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>deltamethrin (Spectracide)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>diatomaceous earth (Perma-Guard)</td>
<td>D</td>
<td>Imiprothrin is formulated with other pesticides in these products.</td>
</tr>
<tr>
<td></td>
<td>imiprothrin (Raid)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (Hot Shot, Spectracide)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin (various)</td>
<td>D, L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>prallethrin (Hot Shot)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pyrethrins, pyrethrum</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin (Cynoff)</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>(b) Outdoors</td>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
<td>Use as a barrier treatment along foundation wall, door threshold and window ledges. Some sprays may damage vegetation under hot, humid conditions. Read label precautions. For lawn treatment, apply an insecticide band 10 to 15 feet wide. Apply liquid formulations with sufficient spray volume to saturate soil. Use granular formulations outdoors only; water into soil or apply before rain. Repeat as needed at 4- to 6-week intervals.</td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Ortho)</td>
<td>G, L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cypermethrin (Hi-Yield)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>diatomaceous earth (Perma-Guard)</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (Spectracide)</td>
<td>G, L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (Hot Shot, Spectracide)</td>
<td>D, G, L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lemongrass oil (Hot Shot)</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin (various)</td>
<td>D, G, L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>tetramethrin (various)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin (Cynoff)</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>MOSQUITOES</td>
<td>allethrin (Ultra-Kill)</td>
<td>A</td>
<td>Aerosol sprays may provide temporary relief. Keep insects out by installing and repairing screens. Other labeled pyrethrroids are also effective.</td>
</tr>
<tr>
<td>(a) Indoors</td>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cypermethrin (Black Flag, Hi-Yield, Hot Shot, Spectracide)</td>
<td>A, F, L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>deltamethrin (Black Flag, Spectracide)</td>
<td>A</td>
<td></td>
</tr>
</tbody>
</table>
# Household and Structural Pest Control

## Pests

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Formulation</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>d-phenothrin (Raid)</td>
<td>A</td>
<td>Bacillus thuringiensis is a “biopesticide” containing bacteria that kill mosquitoes and some biting flies. Place in small ponds, bird baths and ornamental pools (not swimming pools). Follow instructions for specifics of application.</td>
</tr>
<tr>
<td>lemongrass oil (Hot Shot)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>permethrin (various)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>pyrethrins, pyrethrum (Raid)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>tetramethrin (various)</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>allethrin (Coleman)</td>
<td>RC</td>
<td></td>
</tr>
<tr>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>Bacillus thuringiensis (Bti) (Mosquito Dunks)</td>
<td>Solid</td>
<td></td>
</tr>
<tr>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>bifenthrin (Ortho)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>cypermethrin (Hi-Yield)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>deltamethrin (Black Flag, Spectracide)</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td>gamma-cyhalothrin (Spectracide)</td>
<td>G, L</td>
<td></td>
</tr>
<tr>
<td>lambda-cyhalothrin (Spectracide)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>permethrin (various)</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td>prallethrin (Ortho)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>tetramethrin (various)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>aluminum phosphide (Phostoxin)</td>
<td>FU</td>
<td>Use aluminum phosphide for infested furniture, stacked lumber and other wood products. Apply under gas-tight tarpaulins or in a sealed chamber. Requires an Arkansas Class 3 General Fumigation Commercial Pesticide Applicator’s License.</td>
</tr>
<tr>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>beta-cyfluthrin (Bayer Advanced, Tempo)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>bifenthrin (Ortho, Bifen, Talstar)</td>
<td>L</td>
<td>Spray, brush on or inject into wood. Seal holes in wood before injecting. Avoid runoff.</td>
</tr>
<tr>
<td>cypermethrin (Demon TC)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>deltamethrin (Suspend SC)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>disodium octaborate tetrahydrate (Bora-Care, Tim-bor, Borathor)</td>
<td>D, L</td>
<td>Spray, brush on, or inject into wood. For permanent protection, a water repellent should be applied to exterior surfaces 2 to 3 weeks after treatment.</td>
</tr>
<tr>
<td>imidacloprid + cyfluthrin (Temprid SC)</td>
<td>L</td>
<td>Apply as directed on the label.</td>
</tr>
<tr>
<td>permethrin (Dragan, various others)</td>
<td>L</td>
<td>Apply as directed on the label.</td>
</tr>
<tr>
<td>sulfuryl fluoride (Vikane)</td>
<td>FU</td>
<td>Apply under gas-tight tarpaulins only. Hold for 24 hours at temperature above 60 degrees F. Requires an Arkansas Class 3 General Fumigation Commercial Pesticide Applicator’s License.</td>
</tr>
<tr>
<td>allethrin (Ultra-Kill)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>L</td>
<td>Discard infested material. Overall treatment of storage shelves and pantry is usually not necessary. Treat cracks, crevices, moldings and similar areas only. Remove and cover food and cooking and eating utensils before spraying storage cabinets. DO NOT restock shelves until surfaces are dry. Cover treated shelves with shelf paper if desired. Some products are not suitable for use in residential kitchens or commercial food/feed preparation sites. Read the product label carefully.</td>
</tr>
<tr>
<td>bifenthrin (Ortho)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>cypermethrin (various)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td>deltamethrin (Black Flag, Spectracide)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>diatomaceous earth (Perma-Guard)</td>
<td>D</td>
<td></td>
</tr>
</tbody>
</table>
### PANTRY PESTS
(Pests in food storage areas)  
(cont.)

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Formulation</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>eugenol (Bayer Advanced)</td>
<td>L</td>
<td>Discard infested material. Overall treatment of storage shelves and pantry is usually</td>
</tr>
<tr>
<td>fipronil (Maxforce FC Magnum Roach Killer Bait Gel)</td>
<td>B</td>
<td>not necessary. Treat cracks, crevices, moldings and similar areas only. Remove and</td>
</tr>
<tr>
<td>gamma-cyhalothrin (Spectracide)</td>
<td>L</td>
<td>cover food and cooking and eating utensils before spraying storage cabinets. DO NOT</td>
</tr>
<tr>
<td>imiprothrin (Raid)</td>
<td>A</td>
<td>restock shelves until surfaces are dry. Cover treated shelves with shelf paper if</td>
</tr>
<tr>
<td>permethrin (various)</td>
<td>L</td>
<td>desired. Some products are not suitable for use in residential kitchens or commercial</td>
</tr>
<tr>
<td>prallethrin (Hot Shot)</td>
<td>A</td>
<td>food/feed preparation sites. Read the product label carefully.</td>
</tr>
<tr>
<td>pyrethrins, pyrethrum</td>
<td>A, F</td>
<td>Imiprothrin is formulated with other pesticides in these products.</td>
</tr>
</tbody>
</table>

### POWDERPOST BEETLE

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Formulation</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>aluminum phosphide (Phostoxin)</td>
<td>FU</td>
<td>Use aluminum phosphide for infested furniture, stacked lumber or other wood products.</td>
</tr>
<tr>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>beta-cyfluthrin (Bayer Advanced, Tempo)</td>
<td>L</td>
<td>Coarse spray, brush on or inject into wood. Avoid excessive runoff.</td>
</tr>
<tr>
<td>bifenthrin (Ortho, Bifen, Talstar)</td>
<td>L</td>
<td>Coarse spray, brush on or inject into wood. Avoid excessive runoff.</td>
</tr>
<tr>
<td>chlorfenapyr (Phantom)</td>
<td>L</td>
<td>Apply as directed on the label.</td>
</tr>
<tr>
<td>cypermethrin (Demon TC)</td>
<td>L</td>
<td>Apply as directed on the label.</td>
</tr>
<tr>
<td>deltamethrin (Suspend SC)</td>
<td>L</td>
<td>Apply as directed on the label.</td>
</tr>
<tr>
<td>disodium octaborate tetrahydrate (Bora-Care, Tim-bor, Borathor)</td>
<td>D, L</td>
<td>For long-term protection, apply a water repellent to exterior surfaces 2 to 3 weeks after treatment.</td>
</tr>
<tr>
<td>imidacloprid (Bayer Advanced)</td>
<td>FM</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>imidacloprid + cyfluthrin (Temprid SC)</td>
<td>L</td>
<td>Apply as directed on the label.</td>
</tr>
<tr>
<td>lambda-cyhalothrin (Demand, Spectracide)</td>
<td>L</td>
<td>Apply as directed on the label.</td>
</tr>
<tr>
<td>permethrin (Dragnet, various others)</td>
<td>L</td>
<td>Apply as directed on the label.</td>
</tr>
<tr>
<td>sulfuryl fluoride (Vikane)</td>
<td>FU</td>
<td>Use sulfuryl fluoride for infested furniture, stacked lumber or other wood products.</td>
</tr>
<tr>
<td>zeta-cypermethrin (Cynoff)</td>
<td>D</td>
<td>Apply under gas-tight tarpaulins only. Hold for 24 hours at temperature above 60 degrees F. Requires an Arkansas Class 3 General Fumigation Commercial Pesticide Applicator's License.</td>
</tr>
</tbody>
</table>

### SCORPIONS

<table>
<thead>
<tr>
<th>Insecticide</th>
<th>Formulation</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>acetamiprid + bifenthrin (Transport)</td>
<td>L</td>
<td>Apply as directed on the label.</td>
</tr>
<tr>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
<td>Apply as directed on the label.</td>
</tr>
<tr>
<td>beta-cyfluthrin (Bayer Advanced, Tempo)</td>
<td>L</td>
<td>Apply as directed on the label.</td>
</tr>
<tr>
<td>bifenthrin (Bifen, Talstar)</td>
<td>G, L</td>
<td>Apply as directed on the label.</td>
</tr>
<tr>
<td>cypermethrin (Cynoff, Demon, Martin’s Viper)</td>
<td>L</td>
<td>Apply as directed on the label.</td>
</tr>
<tr>
<td>diatomaceous earth (Mother Earth D)</td>
<td>D</td>
<td>Apply as directed on the label.</td>
</tr>
<tr>
<td>gamma-cyhalothrin (Spectracide)</td>
<td>G, L</td>
<td>Apply as directed on the label.</td>
</tr>
<tr>
<td>lambda-cyhalothrin (Demand, 228L, Spectracide)</td>
<td>G, L</td>
<td>Apply as directed on the label.</td>
</tr>
<tr>
<td>lemongrass oil (Hot Shot)</td>
<td>A, L</td>
<td>Apply as directed on the label.</td>
</tr>
<tr>
<td>permethrin (Flee, Dragnet, Prelude, various others)</td>
<td>L</td>
<td>Apply as directed on the label.</td>
</tr>
<tr>
<td>phenothrin (Bedlam)</td>
<td>L</td>
<td>Apply as directed on the label.</td>
</tr>
<tr>
<td>pyrethrins, pyrethrum (Kicker, Pyrenone, various others)</td>
<td>A, L</td>
<td>Apply as directed on the label.</td>
</tr>
<tr>
<td>silica gel (Drione, Tri-Die)</td>
<td>D</td>
<td>Apply as directed on the label.</td>
</tr>
</tbody>
</table>
### HOUSEHOLD AND STRUCTURAL PEST CONTROL – Products for Use by the General Public and Products for Professional Use Only

<table>
<thead>
<tr>
<th>Pests</th>
<th>Insecticide</th>
<th>Formulation</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SILVERFISH</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>allethrin (Ultra-Kill)</td>
<td>A</td>
<td>Treat cracks, crevices, moldings and similar areas. Attic treatment may be necessary.</td>
</tr>
<tr>
<td></td>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
<td>Apply to cracks and crevices and behind and underneath appliances. Spray along</td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>L</td>
<td>baseboards and other areas where silverfish are found.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Ortho)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cypermethrin (Black Flag, Hi-Yield, Hot Shot, Spectracide)</td>
<td>A, F, L</td>
<td>Apply as directed on the label.</td>
</tr>
<tr>
<td></td>
<td>deltamethrin (Black Flag, Spectracide)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>diatomaceous earth (Perma-Guard)</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (Spectracide)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>imiprolarin (Raid)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (Spectracide)</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lemongrass oil (Hot Shot)</td>
<td>A, L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin (various)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>prallethrin (Ortho)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pyrethrin (various)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>tetramethrin (various)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin (Cynoff)</td>
<td>D</td>
<td></td>
</tr>
</tbody>
</table>

| **SOWBUGS AND PILLBUGS**     |                                                  |             |                                                                                        |
| (a) Indoors                  | allethrin (Ultra-Kill)                          | A           | Clean up breeding and hiding places; treat thoroughly. Outdoor barrier treatments      |
|                              | alpha cypermethrin (Fendona CS)                | L           | along foundation and door thresholds are usually sufficient. Some products are not    |
|                              | beta-cyfluthrin (Bayer Advanced)               | L           | suitable for use in residential kitchens or commercial food/feed preparation sites.   |
|                              | bifenthrin (Ortho)                             | L           | Read the product label carefully.                                                    |
|                              | cypermethrin (Black Flag, Hi-Yield, Hot Shot, Spectracide) | A, F, L     |                                                                                        |
|                              | deltamethrin (Black Flag, Spectracide)         | A, L        |                                                                                        |
|                              | diatomaceous earth (Perma-Guard)               | D           |                                                                                        |
|                              | gamma-cyhalothrin (Spectracide)                | L           |                                                                                        |
|                              | lambda-cyhalothrin (Spectracide)               | A, L        |                                                                                        |
|                              | permethrin (various)                           | A           |                                                                                        |
|                              | prallethrin (Ortho)                            | A           |                                                                                        |
|                              | pyrethrin (various)                            | A           |                                                                                        |
|                              | zeta-cypermethrin (Cynoff)                     | D           |                                                                                        |

| **SOWBUGS AND PILLBUGS**     |                                                  |             |                                                                                        |
| (b) Outdoors                 | alpha cypermethrin (Fendona CS)                | L           | Use as a barrier treatment along foundation wall, door threshold and window ledges.   |
|                              | beta-cyfluthrin (Bayer Advanced)               | L           | Oil (petroleum-distillate) sprays may harm asphalt, rubber and vinyl tiles. Some sprays |
|                              | bifenthrin (Ortho)                             | G, L        | may damage vegetation under hot, humid conditions. Read label precautions. For lawn   |
|                              | cypermethrin (Hi-Yield)                        | L           | treatment, apply an insecticide band 10 to 15 feet wide. Apply liquid formulations    |
|                              | deltamethrin (Spectracide)                     | A           | with sufficient spray volume to saturate soil. Granular formulations are for outdoor   |
|                              | diatomaceous earth (Perma-Guard)               | D           | use only and must be watered into soil or applied before rain. Repeat as needed at 4-   |
|                              | gamma-cyhalothrin (Spectracide)                | G, L        | to 6-week intervals.                                                                |
|                              | lambda-cyhalothrin (Spectracide)               | L           |                                                                                        |
|                              | permethrin (various)                           | D, G, L     |                                                                                        |
|                              | tetramethrin (various)                         | L           |                                                                                        |
|                              | zeta-cypermethrin (Cynoff)                     | D           |                                                                                        |
### HOUSEHOLD AND STRUCTURAL PEST CONTROL – Products for Use by the General Public and Products for Professional Use Only

<table>
<thead>
<tr>
<th>Pests</th>
<th>Insecticide</th>
<th>Formulation</th>
<th>Precautions and Remarks</th>
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</thead>
<tbody>
<tr>
<td><strong>SPIDERS (a) Indoors</strong></td>
<td>allethrin (Ultra-Kill)</td>
<td>A</td>
<td>Treat infested areas along baseboards. Use foggers if rooms have been undisturbed</td>
</tr>
<tr>
<td></td>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
<td>for some time and spider populations are extensive. Some products are not suitable</td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>L</td>
<td>for use in residential kitchens or commercial food/feed preparation sites. Read the</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Ortho)</td>
<td>L</td>
<td>product label carefully.</td>
</tr>
<tr>
<td></td>
<td>cypermethrin (Black Flag, Hi-Yield, Hot Shot, Spectracide)</td>
<td>A,F,L</td>
<td>Apply as directed on the label.</td>
</tr>
<tr>
<td></td>
<td>deltamethrin (Black Flag, Spectracide)</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td></td>
<td>diatomaceous earth (Perma-Guard)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>eugenol (Bayer Advanced)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (Spectracide)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>imiprothrin (Raid)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (Spectracide)</td>
<td>A,L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lemongrass oil (Hot Shot)</td>
<td>A,L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>permethrin (various)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>prallethrin (Ortho)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>pyrethrins, pyrethrum</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>tetramethrin (various)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin (Cynoff)</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td><strong>SPIDERS (b) Outdoors</strong></td>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
<td>Not for use on black widow and brown recluse spiders.</td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Ortho)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cypermethrin (Hi-Yield)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>deltamethrin (Black Flag, Spectracide)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>diatomaceous earth (Perma-Guard)</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (Spectracide)</td>
<td>G,L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (Spectracide)</td>
<td>L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lemongrass oil (Hot Shot)</td>
<td>A,L</td>
<td></td>
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<tr>
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<td>permethrin (various)</td>
<td>A</td>
<td></td>
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<td>A</td>
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<tr>
<td></td>
<td>zeta-cypermethrin (Cynoff)</td>
<td>D</td>
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</tr>
<tr>
<td><strong>SPRINGTAILS (Indoors and Outdoors)</strong></td>
<td>allethrin (Ultra-Kill)</td>
<td>A</td>
<td>Apply as a barrier spray along foundation and entry points. Some products may be</td>
</tr>
<tr>
<td></td>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
<td>used indoors for temporary relief. Clean up moisture conditions that may attract insects</td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>L</td>
<td>indoors. Excess moisture may impede product effectiveness. Use indoors for temporary</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Ortho)</td>
<td>L</td>
<td>relief. Some products are not suitable for use in residential kitchens or commercial</td>
</tr>
<tr>
<td></td>
<td>cypermethrin (Black Flag, Hi-Yield, Hot Shot, Spectracide)</td>
<td>A,F,L</td>
<td>food/feed preparation sites. Read the product label carefully.</td>
</tr>
<tr>
<td></td>
<td>deltamethrin (Spectracide)</td>
<td>A</td>
<td>Apply as directed on the label.</td>
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<tr>
<td></td>
<td>diatomaceous earth (Perma-Guard)</td>
<td>D</td>
<td></td>
</tr>
<tr>
<td></td>
<td>gamma-cyhalothrin (Spectracide)</td>
<td>G,L</td>
<td></td>
</tr>
<tr>
<td></td>
<td>imiprothrin (Raid)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>lambda-cyhalothrin (Spectracide)</td>
<td>L</td>
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<td>prallethrin (Ortho)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>pyrethrins, pyrethrum</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>tetramethrin (various)</td>
<td>A</td>
<td></td>
</tr>
<tr>
<td>zeta-cypermethrin (Cynoff)</td>
<td>D</td>
<td></td>
</tr>
</tbody>
</table>

**SPRINGTAILS**
(Indoors and Outdoors)
(cont.)

**STINGING CATERPILLARS**
See Caterpillar entry under INSECT CONTROL FOR ORNAMENTALS GROWN IN NURSERIES OR LANDSCAPES section.

**STINK BUGS**
(Indoors and outdoors)

<table>
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<tr>
<th>Insecticide</th>
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<th>Precautions and Remarks</th>
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</thead>
<tbody>
<tr>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>beta-cyfluthrin (Bayer Advanced)</td>
<td>L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>bifenthrin (Ortho)</td>
<td>L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>cypermethrin (Raid)</td>
<td>A</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>deltamethrin (Raid)</td>
<td>A</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>gamma-cyhalothrin (Spectracide)</td>
<td>G, L</td>
<td>Apply as directed on label.</td>
</tr>
</tbody>
</table>

**STORED FOOD PESTS**
See Pantry Pests.

**TERMITE DRYWOOD SPECIES**
(Wood treatment)

<table>
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<tr>
<th>Insecticide</th>
<th>Formulation</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>acetamiprid + bifenthrin (Transport)</td>
<td>L</td>
<td>Coarse spray or drill and inject into wood.</td>
</tr>
<tr>
<td>alpha cypermethrin (Fendona CS)</td>
<td>L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>aluminum phosphide (Phostoxin)</td>
<td>FU</td>
<td>Apply under gas-tight tarpaulins or in sealed chamber. Requires an Arkansas Class 3 General Fumigation Commercial Pesticide Applicator’s License.</td>
</tr>
<tr>
<td>beta-cyfluthrin (Bayer Advanced, Tempo)</td>
<td>L</td>
<td>Coarse surface spray or inject into wood.</td>
</tr>
<tr>
<td>bifenthrin (Ortho, Bifen, Talstar)</td>
<td>L</td>
<td>Coarse spray or inject into wood.</td>
</tr>
<tr>
<td>cypermethrin (Demon TC)</td>
<td>L</td>
<td>Coarse spray or inject into wood for localized infestations.</td>
</tr>
<tr>
<td>dinotefuran (Alpine)</td>
<td>FM, L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>disodium octaborate tetrahydrate (Bora-Care, Tim-bor, Borathor)</td>
<td>L</td>
<td>Coarse surface spray or inject wood</td>
</tr>
<tr>
<td>fipronil (Termidor, Taurus)</td>
<td>FM, L</td>
<td>Coarse spray or inject into wood.</td>
</tr>
<tr>
<td>imidacloprid (Bayer Advanced, Dominion, Premise)</td>
<td>FM, L</td>
<td>Drill and inject spray or foam into voids.</td>
</tr>
<tr>
<td>imidacloprid + cyfluthrin (Temprid SC)</td>
<td>L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td>lambda-cyhalothrin (Demand, Spectracide)</td>
<td>L</td>
<td>Apply as directed on label. Localized treatments. Spectracide is not recommended as a sole protection against termites.</td>
</tr>
<tr>
<td>permethrin (Dragnet, various others)</td>
<td>L</td>
<td>Coarse spray on wood for localized infestation.</td>
</tr>
<tr>
<td>sulfuryl fluoride (Vikane)</td>
<td>FU</td>
<td>Apply under gas-tight tarpaulins only. Hold for 24 hours at temperature above 60 degrees F. Requires an Arkansas Class 3 General Fumigation Commercial Pesticide Applicator’s License.</td>
</tr>
<tr>
<td>thiamethoxam (Optigard)</td>
<td>L</td>
<td>Coarse spray or drill and inject into wood.</td>
</tr>
</tbody>
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### HOUSEHOLD AND STRUCTURAL PEST CONTROL – Products for Use by the General Public and Products for Professional Use Only

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<tr>
<td><strong>TERMITE DRYWOOD SPECIES</strong></td>
<td><strong>(Wood treatment)</strong> (cont.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>zeta-cypermethrin (Cynoff)</td>
<td>D</td>
<td>This product is intended to kill workers and/or winged reproductive forms of termites present at the time of application only. Application of this product will not provide structural protection nor substitute for mechanical alteration, soil or foundation treatment with termiticide. This product is not to be used as sole protection against termites, as it is not intended for use for elimination of termite infestations nor for protection against future infestations. A professional inspection is recommended.</td>
</tr>
<tr>
<td><strong>TERMITE SUBTERRANEAN</strong></td>
<td><strong>SPECIES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>(a) Wood treatment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>acetamiprid + bifenthrin (Transport)</td>
<td>L</td>
<td>Coarse spray, brush on or inject into wood. Avoid excess runoff.</td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (Bayer Advanced, Tempo)</td>
<td>L</td>
<td>For use only in voids or channels in damaged wood or to cracks and spaces between wooden members of structures.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Ortho, Bifen, Talstar)</td>
<td>L</td>
<td>Coarse spray or inject into wood.</td>
</tr>
<tr>
<td></td>
<td>cypermethrin (Demon TC)</td>
<td>L</td>
<td>Coarse surface spray or inject into wood.</td>
</tr>
<tr>
<td></td>
<td>deltamethrin (Suspend SC)</td>
<td>L</td>
<td>Coarse surface spray or inject into wood.</td>
</tr>
<tr>
<td></td>
<td>diflubenzuron (Advance, Isopthor, Labyrinth, Truth)</td>
<td>S</td>
<td>Aboveground stations used in conjunction with in-ground baiting systems.</td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole (Altriset)</td>
<td>L</td>
<td>Coarse spray around or inject into infested poles, trees and stumps (outdoors).</td>
</tr>
<tr>
<td></td>
<td>chlorfenapyr (Phantom)</td>
<td>L</td>
<td>Coarse spray or inject into wood.</td>
</tr>
<tr>
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<td>cypermethrin (Demon TC)</td>
<td>L</td>
<td>Coarse surface spray or inject into wood.</td>
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<td>chlorantraniliprole (Altriset)</td>
<td>L</td>
<td>Coarse spray around or inject into infested poles, trees and stumps (outdoors).</td>
</tr>
<tr>
<td></td>
<td>chlorfenapyr (Phantom)</td>
<td>L</td>
<td>Coarse spray or inject into wood.</td>
</tr>
<tr>
<td></td>
<td>cypermethrin (Demon TC)</td>
<td>L</td>
<td>Coarse surface spray or inject into wood.</td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole (Altriset)</td>
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<td></td>
<td>chlorantraniliprole (Altriset)</td>
<td>L</td>
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</tr>
</tbody>
</table>
### HOUSEHOLD AND STRUCTURAL PEST CONTROL – Products for Use by the General Public and Products for Professional Use Only

<table>
<thead>
<tr>
<th>Pests</th>
<th>Insecticide</th>
<th>Formulation</th>
<th>Precautions and Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TERMITE SUBTERRANEAN SPECIES</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(b) Soil treatment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NOTE: Most structural termite infestations</td>
<td>Most structural termite infestations require treatment by a pest control professional with a Class 1 Termite and Other Structural Pest Control License issued by the Arkansas State Plant Board.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>acetamiprid + bifenthrin (Transport)</td>
<td>L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td></td>
<td>beta-cyfluthrin (Bayer Advanced, Tempo)</td>
<td>L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td></td>
<td>bifenthrin (Bifen, Ortho, Talstar)</td>
<td>L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td></td>
<td>chlorfenapyr (Phantom)</td>
<td>L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td></td>
<td>chlorantraniliprole (Altriset)</td>
<td>L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td></td>
<td>cypermethrin (Demon, Prevail FT)</td>
<td>L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td></td>
<td>diflubenzuron (Advance, Isopthor, Labyrinth, Truth)</td>
<td>S</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td></td>
<td>fipronil (Termidor, Taurus)</td>
<td>L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td></td>
<td>hexaflumuron (Shatter)</td>
<td>B</td>
<td>Shatter is for localized treatments.</td>
</tr>
<tr>
<td></td>
<td>imidacloprid (Bayer Advanced, Premise)</td>
<td>G, L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td></td>
<td>imidacloprid + cyfluthrin (Temprid SC)</td>
<td>L</td>
<td>Apply as directed on label.</td>
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<tr>
<td></td>
<td>indoxacarb (Arilon)</td>
<td>L</td>
<td>Arilon should be used for spot or localized treatment only. (Arilon is not intended as a sole protection against termites.)</td>
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<tr>
<td></td>
<td>lambda-cyhalothrin (Demand, Spectracide)</td>
<td>L</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td></td>
<td>novaluron (Trelona)</td>
<td>B</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td></td>
<td>noviflumuron (Recruit HD)</td>
<td>S</td>
<td>Apply as directed on label.</td>
</tr>
<tr>
<td></td>
<td>permethrin (Dragnet)</td>
<td>L</td>
<td>Apply as directed on label.</td>
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</tbody>
</table>

**TICKS (Outdoors)**

See Brown Dog Tick and control of ticks in ANIMAL INSECT CONTROL section.

**WASPS, YELLOW JACKETS**

See Hornets, Mud Daubers, Wasps, Yellow Jackets.
Alternating uses of insecticides in different chemical classes can help reduce the likelihood of the pests developing resistance to one group or class of compounds.

**Formulations:**
- Aerosol includes Crack & Crevice. Bait may be granular, gel, or station.
- Sprayable may be concentrate or powder, some RTU formulations.
- Some formulations of diatomaceous earth and silica gel contain pyrethrins as a flushing agent.
- Not to be used in or around residences or other buildings where children may be present.
- True bugs includes boxelder bugs, stink bugs, kudzu bugs, and similar occasional invaders.

### Pesticide Formulations

<table>
<thead>
<tr>
<th>Chemical Class</th>
<th>Inorganic</th>
<th>Carbamates</th>
<th>Organophosphates</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pesticide</strong></td>
<td>Boric acid (Niban, Perma-Dust, InTico)</td>
<td>Diatomaceous earth (Mother Earth D)</td>
<td>Sodium Tetrateborate (Gourmet Liquid Ant Bait, Cyrene)</td>
</tr>
<tr>
<td></td>
<td>Silica gel (Drone, Tri-Dale, Crimer Dust)</td>
<td>Carbaryl (Pyrethrum, Syco Fly Bait)</td>
<td>Methomyl (Flytek, Sysco Fly Bait)</td>
</tr>
<tr>
<td></td>
<td>Acephate (Orthene)</td>
<td>Propoxur (PT 2, Invader Permacide Plus)</td>
<td>Dichlorvos (Nuvan)</td>
</tr>
<tr>
<td><strong>Formulation</strong></td>
<td>Bait</td>
<td>Dust</td>
<td>Dust</td>
</tr>
<tr>
<td><strong>Pests</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ants</td>
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<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Bed Bugs</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Bees</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Booklice</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Bugs (True)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Carpet Beetles</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Centipedes</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Clothes Moths</td>
<td>X</td>
<td>X</td>
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</tr>
<tr>
<td>Clover Mites</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Cockroaches</td>
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<td>Crickets</td>
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<tr>
<td>Earwigs</td>
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<td>Fleas</td>
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<td>X</td>
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</tr>
<tr>
<td>Flies</td>
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<td>X</td>
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</tr>
<tr>
<td>Hornets/Wasps</td>
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<td>X</td>
<td>X</td>
</tr>
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<td>Lady Beetles</td>
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<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Millipedes</td>
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<td>Mosquitoes</td>
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<td>Stored Product</td>
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<tr>
<td><strong>Pests</strong></td>
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<td>Spiders</td>
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<tr>
<td>Sowbugs</td>
<td>X</td>
<td>X</td>
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</tr>
<tr>
<td>Springtails</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Ticks</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

1. Alternating uses of insecticides in different chemical classes can help reduce the likelihood of the pests developing resistance to one group or class of compounds.
2. Formulations:
   - Aerosol includes Crack & Crevice. Bait may be granular, gel, or station.
   - Sprayable may be concentrate or powder, some RTU formulations.
3. Some formulations of diatomaceous earth and silica gel contain pyrethrins as a flushing agent.
4. Not to be used in or around residences or other buildings where children may be present.
5. True bugs includes boxelder bugs, stink bugs, kudzu bugs, and similar occasional invaders.
### INDUSTRIAL AND HOUSEHOLD PESTS—For use by licensed pest management professionals only (cont.)

<table>
<thead>
<tr>
<th>Chemical Class¹</th>
<th>Pyrethroids¹</th>
</tr>
</thead>
</table>

| **Pests** | Ants | Bed Bugs | Bees | Booklice | Bugs (True)⁵ | Carpet Beetles | Centipedes | Clothes Moths | Clover Mites | Cockroaches | Crickets | Earwigs | Fleas | Flies/Gnats | Hornets/Wasp | Lady Beetles | Millipedes | Mosquitoes | Stored Product | Pests | Scorpions | Silverfish | Spiders | Sowbugs | Springtails | Ticks |
|-----------|------|----------|------|----------|------------|-------------|-----------|-------------|-------------|------------|---------|--------|-------|--------|-------------|-------------|-----------|---------|---------|-------------|-------|----------|-----------|--------|---------|-----------|-------|
| Ants      | X     | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |
| Bed Bugs  | X     | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |
| Bees      | X     | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |
| Booklice  | X     | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |
| Bugs (True)⁵ | X   | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |
| Carpet Beetles | X | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |
| Centipedes | X   | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |
| Clothes Moths | X | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |
| Clover Mites | X | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |
| Cockroaches | X   | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |
| Crickets   | X   | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |
| Earwigs   | X   | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |
| Fleas     | X   | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |
| Flies/Gnats | X | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |
| Hornets/Wasp | X | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |
| Lady Beetles | X | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |
| Millipedes | X   | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |
| Mosquitoes | X   | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |
| Stored Product | X | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |
| Pests     | X   | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |
| Scorpions | X   | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |
| Silverfish | X   | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |
| Spiders   | X   | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |
| Sowbugs   | X   | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |
| Springtails | X | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |
| Ticks     | X   | X        | X     | X        | X          | X           | X         | X           | X           | X          | X       | X      | X     | X      | X            | X            | X         | X       | X        | X            | X     | X        | X         | X      | X       | X         | X     |

¹ Alternating use of insecticides in different chemical classes can help reduce development of pesticide resistance to one class/group of compounds. Piperonyl butoxide tank-mixed with many pyrethroids will synergize performance.

² Some products use alpha-cypermethrin or zeta-cypermethrin which contain chemical isomers of cypermethrin. Talstar Xtra is a mixture of zeta-cypermethrin and bifenthrin.

³ KEY TO FORMULATION SYMBOLS: A = aerosol; B = bait (granular or station) D = dust; G = granular; S = sprayable (concentrate or powder, some RTU formulations);

⁴ Some formulations of pyrethrins contain piperonyl butoxide as a synergist.

⁵ True bugs includes boxelder bugs, stink bugs, kudzu bugs, and similar occasional invaders.

⁶ Nyguard Plus contains the IGR pyriproxyfen.
### INDUSTRIAL AND HOUSEHOLD PESTS—For use by licensed pest management professionals only (cont.)

<table>
<thead>
<tr>
<th>Chemical Class</th>
<th>Insect Growth Regulators</th>
<th>Neonicotinoids</th>
<th>Other Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pesticide</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydropropene (Gencon)</td>
<td></td>
<td></td>
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<tr>
<td>Fenoxycarb (Altosid, reStrike)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Methoprene (Altosid, Kabai, Pharid, Prec, Vigen)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Pyriproxyfen (Archer, Ultraide)</td>
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</tr>
<tr>
<td>Acetamiprid + Ethenothion (Transport)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Dinoflubenz (Advance, Alpine)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Imidacloprid (FlyBait, Premise, Tempred)</td>
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</tr>
<tr>
<td>Thiamethoxam (Optigard)</td>
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<tr>
<td>Clothianidin (Maxforce Impact)</td>
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<tr>
<td>Abamectin (Ascend, vext, Advance)</td>
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<td>Aluminum Phosphide (Phostoxin)</td>
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<td>Chlorfenapyr (Phantom)</td>
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<tr>
<td>Cyrantranilprole (ZyroX)</td>
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<td>d-Limonene (ProCitra DL)</td>
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<td>Fipronil (Maxforce F, TopChoice, Termidor)</td>
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<td>2-Phenyl Propionate (EcoPCO EC)</td>
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<td>Hydramethylnon (Amdro, Siege, Maxforce)</td>
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<td>Indoxacarb (Advion, Arilion)</td>
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<tr>
<td>Mint oil (Victor)</td>
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<tr>
<td>Sulfur/fluoride (Vikane, Protume, Zythor)</td>
<td></td>
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</tr>
</tbody>
</table>

|-------------|-----------------|

| Pests       |                           |               |               |               |
|-------------|---------------------------|---------------|---------------|
| Ants        | X                         | X             | X             | X             |
| Bed Bugs    | X                         | X             | X             | X             |
| Bees        |                           | X             |               |               |
| Booklice    |                           |               |               |               |
| Bugs (True) |                           |               |               |               |
| Carpet Beetles |                       |               |               |               |
| Crowd Pedes |                           |               |               |               |
| Clothes Moths |                         |               |               |               |
| Clover Mites |                           |               |               |               |
| Cockroaches |                           |               |               | X             |
| Crickets    |                           |               |               |               |
| Earwigs     | X                         |               |               |               |
| Fleas       |                           |               | X             | X             |
| Flies/Gnats |                           |               | X             | X             |
| Hornets/Wasps |                         |               | X             |               |
| Lady Beetles |                           |               |               |               |
| Millipedes  |                           |               |               | X             |
| Mosquitoes  |                           |               | X             |               |
| Stored Product |                     |               | X             |               |
| Product Pests |                         |               |               | X             |
| Scorpions   |                           |               |               |               |
| Silverfish  |                           |               |               |               |
| Spiders     |                           |               |               |               |
| Sowbugs     |                           |               |               |               |
| Springtails |                           |               |               |               |
| Ticks       |                           |               |               | X             |

1 Alternating uses of insecticides in different chemical classes can help reduce the likelihood of the pest developing resistance to one class or group of compounds.

2 KEY TO FORMULATION SYMBOLS: A = Aerosol (includes Crack & Crevice) B = Bait (granular, gel or station) D = Dust  F = Fumigant  G = Granular  S = Sprayable (concentrate or powder, some RTU formulations)

3 IGR products are not typically effective against adult stage of pests; use with an adulticide to provide quicker control of pest population.

4 True bugs includes boxelder bugs, stink bugs, kudzu bugs, and similar occasional invaders

5 Requires an F-Phase Structural Pest Control License.

6 Chlorfenapyr labeled for indoor use only for these pests or limited spot treatment outdoors.

7 Termidor liquid formulations are labeled for outdoor use only; use other insecticide products indoors.

8 *Temprid contains both imidacloprid and cyfluthrin.*

9 *Optigard not for use against pharaoh ants or carpenter ants.*

10 *Phantom is not a knockdown insecticide for pests such as wasps.*
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<th>FLOWERS, SHRUBS, TREES, LAWNS</th>
<th>VEGETABLES</th>
<th>FRUIT</th>
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<tbody>
<tr>
<td><strong>INSECTICIDES</strong></td>
<td></td>
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<tr>
<td>Stinger Mosquito Octenol Lure</td>
<td>1-octen-3-ol</td>
<td>exterior X</td>
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<tr>
<td>Ortho Orthene Fire Ant Killer</td>
<td>acephate</td>
<td>—</td>
<td>X</td>
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</tr>
<tr>
<td>Ortho Flower, Fruit, Vegetable Insect Killer</td>
<td>acetamiprid</td>
<td>X</td>
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<td>—</td>
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<tr>
<td>Ortho MAX Flower, Fruit, &amp; Vegetable Insect Killer</td>
<td>acetamiprid</td>
<td>—</td>
<td>X</td>
<td>X</td>
<td>—</td>
</tr>
<tr>
<td>Ortho Rose &amp; Flower Insect Killer</td>
<td>acetamiprid</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Ortho Rose Pride Insect Killer</td>
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<td>—</td>
<td>X</td>
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<td>Ultra-Kill Ant &amp; Roach Killer (aerosol)</td>
<td>allethrin, lambda-cyhalothrin</td>
<td>X</td>
<td>X</td>
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<td>Mosquito Bits</td>
<td>Bacillus thuringiensis</td>
<td>X</td>
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<tr>
<td>Summit Mosquito Dunks</td>
<td>Bacillus thuringiensis</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Mosquito Dunks, Mosquito Bits by Summit</td>
<td>Bacillus thuringiensis subspecies israelensis</td>
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<td>Bayer Advanced Carpenter Ant &amp; Termite Killer Plus</td>
<td>beta-cyfluthrin</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Bayer Advanced Fire Ant Killer</td>
<td>beta-cyfluthrin</td>
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<td>Bayer Advanced Home Pest Control Indoor &amp; Outdoor Insect</td>
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<td>X</td>
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<tr>
<td>Bayer Advanced Rose &amp; Flower Insect Killer</td>
<td>beta-cyfluthrin, imidacloprid</td>
<td>X</td>
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<tr>
<td>Ortho Bug-B-Gon MAX Insect Killer For Lawns Granules</td>
<td>bifenthrin</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Ortho Bug-B-Gon MAX Lawn &amp; Garden Insect Killer 1</td>
<td>bifenthrin</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Ortho Fire Ant Killer Broadcast Granules</td>
<td>bifenthrin</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Ortho Fire Ant Killer Mound Treatment</td>
<td>bifenthrin</td>
<td>—</td>
<td>X</td>
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<tr>
<td>Ortho Home Defense Max Granules</td>
<td>bifenthrin</td>
<td>X</td>
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<td>—</td>
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<tr>
<td>Ortho Home Defense MAX Indoor &amp; Outdoor Insect Killer 5</td>
<td>bifenthrin</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Ortho MAX Ant &amp; Roach Killer Aerosol</td>
<td>bifenthrin</td>
<td>X</td>
<td>—</td>
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</tr>
</tbody>
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<th>FRUIT</th>
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<tbody>
<tr>
<td>Insecticides (cont.)</td>
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<tr>
<td>Ortho MAX Lawn &amp; Garden Insect Killer 1</td>
<td>bifenthrin</td>
<td>exterior</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Ortho Termite and Destructive Bug Killer</td>
<td>bifenthrin</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Ortho Rose &amp; Flower Insect Killer 1</td>
<td>bifenthrin</td>
<td>—</td>
<td>X</td>
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<tr>
<td>Ortho RTU Houseplant &amp; Garden Insect Killer</td>
<td>bifenthrin</td>
<td>—</td>
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<tr>
<td>Total Kill Lawn &amp; Garden Insect Killer Granules</td>
<td>bifenthrin</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Garden Tech Over 'n Out Fire Ant Killer Advanced</td>
<td>bifenthrin, zeta-cypermethrin</td>
<td>—</td>
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<tr>
<td>Ortho Bug-B-Gon Insect Killer – Lawns, Gardens</td>
<td>bifenthrin, zeta-cypermethrin</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Ortho Home Defense Max</td>
<td>bifenthrin, zeta-cypermethrin</td>
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<tr>
<td>Bayer Advanced Complete Insect Killer for Garden R-T-U</td>
<td>carbaryl</td>
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<td>X</td>
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<td>GardenTech Sevin Bug Killer</td>
<td>carbaryl</td>
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<tr>
<td>GardenTech Sevin-5 Dust</td>
<td>carbaryl</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Scott’s Grub Ex</td>
<td>chlorantraniliprole</td>
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<tr>
<td>Bonide Garden Dust</td>
<td>copper, rotenone</td>
<td>—</td>
<td>X</td>
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<tr>
<td>Ortho Home Defense Bedbug Killer Aerosol</td>
<td>cyclopropanecarboxylate, bycycloheptene</td>
<td>X</td>
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<tr>
<td>Black Flag Foger &amp; Fogging Insecticide</td>
<td>cyclopropanecarboxylate, piperonyl butoxide</td>
<td>exterior</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Bayer Advanced Vegetable &amp; Garden Insect Spray</td>
<td>cyfluthrin</td>
<td>X</td>
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<tr>
<td>Real Kill Home Insect Control Indoor &amp; Outdoor Insect Killer</td>
<td>cyfluthrin</td>
<td>X</td>
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<tr>
<td>Hot Shot Bedbug Killer</td>
<td>cypermethrin</td>
<td>X</td>
<td>—</td>
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<tr>
<td>Hot Shot Pest Control Concentrate</td>
<td>cypermethrin</td>
<td>X</td>
<td>—</td>
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<tr>
<td>Raid Concentrated Deep Roach Fogger</td>
<td>cypermethrin</td>
<td>X</td>
<td>—</td>
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<tr>
<td>Raid Max Concentrated Deep Roach Fogger</td>
<td>cypermethrin</td>
<td>X</td>
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<tr>
<td>Real Kill Indoor Fogger</td>
<td>cypermethrin</td>
<td>X</td>
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<tr>
<td>Ortho Ant &amp; Roach Killer Aerosol</td>
<td>cypermethrin, pyrethrins</td>
<td>X</td>
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<tr>
<td>Bayer Advanced Home Carpenter Ant &amp; Termite Killer Plus</td>
<td>deltamethrin</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Bayer Advanced Power Force Carpenter Ant &amp; Termite Killer Plus</td>
<td>deltamethrin</td>
<td>X</td>
<td>X</td>
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<td></td>
<td></td>
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<tr>
<td>Bengal Fire Ant Killer Ultra Dust 2X</td>
<td>deltamethrin</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Black Flag Home Insect Control</td>
<td>deltamethrin</td>
<td>interior, exterior</td>
<td>—</td>
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<tr>
<td>Green Light Fire Ant Dust</td>
<td>deltamethrin</td>
<td>X</td>
<td>X</td>
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</tr>
<tr>
<td>Green Light Roach, Ant &amp; Spider Control</td>
<td>deltamethrin</td>
<td>X</td>
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<tr>
<td>Harris Home Pest control Stink Bug Killer (also Kudzu Bugs)</td>
<td>deltamethrin</td>
<td>X</td>
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<tr>
<td>Ortho Insect Killer Rose &amp; Flower</td>
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<td>—</td>
<td>X</td>
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<tr>
<td>Raid Max Bug Barrier Indoor/Outdoor</td>
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<td>X</td>
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<td>Spectracide Carpenter Ant &amp; Carpenter Bee Killer</td>
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<td>Ortho Home Defense Bedbug Dust</td>
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<td>X</td>
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<td>Spectracide Japanese Beetle Insect Fogger</td>
<td>deltamethrin, S-bioallethrin</td>
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<tr>
<td>Hot Shot No-Pest Strip Kills Flying &amp; Crawling Insects</td>
<td>dichlorvos</td>
<td>X</td>
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<tr>
<td>Spectracide Bug &amp; Weed Killer for Lawns</td>
<td>dimethylamine salt, gamma-cyhalothrin</td>
<td>—</td>
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<tr>
<td>Spectracide Terminate Termite &amp; Carpenter Ant Killing Dust</td>
<td>disodium octaborate tetrahydrate</td>
<td>X</td>
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<tr>
<td>Ortho Volck Oil Spray</td>
<td>dormant horticultural oil</td>
<td>—</td>
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<td>Raid Flying Insect</td>
<td>d-phenoxylin, prallethrin</td>
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<tr>
<td>No-Pest Ant &amp; Roach Killer Aerosol</td>
<td>d-trans allethrin, lambda-cyhalothrin</td>
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<tr>
<td>Real Kill Ant &amp; Roach Killer (aerosol)</td>
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<td>Real Kill Wasp &amp; Hornet Fogger</td>
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<tr>
<td>Real Kill Wasp &amp; Hornet Killer</td>
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<tr>
<td>Bengal Insecticide Concentrate</td>
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<tr>
<td>Ortho Bug-B-Gon MAX Garden &amp; Landscape Insect Killer</td>
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<tr>
<td>Ortho Bug-B-Gon Multi-Purpose Insect Killer Ready-To-Use</td>
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<td>X</td>
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<tr>
<td>Ortho MAX Garden &amp; Landscape Insect Killer</td>
<td>esfenvalerate</td>
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<td>X</td>
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<td>X</td>
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<tr>
<td>Combat Quick Kill Formula 1</td>
<td>fipronil</td>
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<tr>
<td>Combat Roach Gel Bait</td>
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<tr>
<td>Spectracide Bug Stop Home Barrier</td>
<td>gamma-cyhalothrin</td>
<td>X</td>
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<tr>
<td>Spectracide Triazicide Insect Killer for Lawns Granules</td>
<td>gamma-cyhalothrin</td>
<td>—</td>
<td>X</td>
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<tr>
<td>Spectricide Triazicide Insect Killer – Lawns &amp; Landscapes</td>
<td>gamma-cyhalothrin</td>
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<tr>
<td>Spectracide Triazicide Once &amp; Done! Insect Killer 2 Conc. for Lawn</td>
<td>gamma-cyhalothrin</td>
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<tr>
<td>Terminix Ultimate Protection Stinging Insect Killer</td>
<td>geraniol</td>
<td>X</td>
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<tr>
<td>Ortho Home Defense Max Termite &amp; Destructive Bug Killer</td>
<td>hexaflumuron</td>
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<tr>
<td>Bayer Advanced 2 in 1 Systemic Rose &amp; Flower Care</td>
<td>imidacloprid</td>
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<td>Bayer Advanced Fruits, Citrus &amp; Vegetables Insect Control</td>
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<tr>
<td>Bayer Advanced Season-Long Grub Control Ready-to-Spread Granules</td>
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<tr>
<td>Bayer Advanced Termite Killer, Carpenter Ant</td>
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<tr>
<td>Bayer Advanced Termite Killer Ready-to-Spread Granules</td>
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<tr>
<td>Ortho MAX Tree &amp; Shrub Insect Control</td>
<td>imidacloprid</td>
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<tr>
<td>Ortho Rose &amp; Flower Control Plus Miracle-Gro</td>
<td>imidacloprid</td>
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<td>Pointer Insecticide</td>
<td>imidacloprid</td>
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</tr>
<tr>
<td>Bayer Advanced Complete Insect Killer for Soil &amp; Turf</td>
<td>imidacloprid, beta-cyfluthrin</td>
<td>—</td>
</tr>
<tr>
<td>Bayer Advanced Dual Action Rose &amp; Flower Insect Killer R-T-U</td>
<td>imidacloprid, beta-cyfluthrin</td>
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<tr>
<td>Bayer Advanced Home Pest Insect Killer All-Purpose Insect Spray</td>
<td>imidacloprid, beta-cyfluthrin</td>
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<tr>
<td>Bayer Advanced 12 Month Tree &amp; Shrub Protect &amp; Feed</td>
<td>imidacloprid, clothianidin</td>
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<tr>
<td>Ortho Home Defense Dual-Action Bedbug Killer</td>
<td>imidacloprid, N-Obd cyclopropane-carboxylate</td>
<td>exterior barrier</td>
</tr>
<tr>
<td>Black Flag Ant &amp; Roach Killer Aerosol</td>
<td>imiprothrin, lambda-cyhalothrin</td>
<td>X</td>
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<tr>
<td>Black Flag Flying Insect Killer</td>
<td>imiprothrin, lambda-cyhalothrin</td>
<td>X</td>
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<tr>
<td>Raid Ant &amp; Roach Aerosol</td>
<td>imiprothrin, cypermethrin</td>
<td>X</td>
</tr>
<tr>
<td>Raid Max 2-Way Roach Spray (aerosol)</td>
<td>imiprothrin, deltamethrin</td>
<td>X</td>
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<tr>
<td>Black Flag Ant &amp; Roach Killer Dry Formula</td>
<td>imiprothrin, gamma-cyhalothrin</td>
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</tbody>
</table>
### COMMON INSECTICIDE PRODUCTS AVAILABLE FOR HOME USE

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<th>FLOWERS, SHRUBS, TREES, LAWNS</th>
<th>VEGETABLES</th>
<th>FRUIT</th>
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<tr>
<td>(cont.)</td>
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<tr>
<td>Hot Shot Ultra Ant &amp; Roach Killer Aerosol</td>
<td>imiprothrin, lambda-cyhalothrin</td>
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<td>Spectracide Ant Shield Outdoor Killing Stakes</td>
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<td>Bonide Bug &amp; Slug Killer</td>
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<td>Cutter Backyard Bug Control</td>
<td>lambda-cyhalothrin</td>
<td>—</td>
<td>outdoor</td>
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<tr>
<td>Hot Shot Home Insect Control Clear Formula</td>
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<td>No-Pest Home Insect Control</td>
<td>lambda-cyhalothrin</td>
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<td>Off Bug Control Backyard Pretreat</td>
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<td>Real Kill Home Insect Control Indoor &amp; Outdoor</td>
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<td>Spectracide Ant Shield Home Barrier Granules</td>
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<td>Spectracide Bug Stop Indoor/Outdoor Home Insect Control</td>
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<tr>
<td>Spectracide Fire Ant Killer Granules Mound Destroyer</td>
<td>lambda-cyhalothrin</td>
<td>—</td>
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<td>Spectracide Japanese Beetle Insect Control Foliage Spray</td>
<td>lambda-cyhalothrin</td>
<td>—</td>
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<td>Spectracide Terminate Termite &amp; Carpenter Ant Killer Concentrate</td>
<td>lambda-cyhalothrin</td>
<td>X</td>
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<td>Spectracide Triazicide Brand Lawn &amp; Garden Insect Killer</td>
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<td>Spectracide Triazicide Once &amp; Done! Insect Killer for Lawn &amp; Landscape</td>
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<tr>
<td>Spectracide Triazicide Once &amp; Done! Insect Killer Granules</td>
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<td>Terro Ant Killer Plus Outdoor Shaker Bag</td>
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<tr>
<td>Pre-Strike Mosquito Torpedo</td>
<td>methoprene</td>
<td>exterior</td>
<td>X</td>
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<tr>
<td>Enforcer Flea Spray for Homes</td>
<td>nylar, permethrin</td>
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<td>Hot Shot MaxAttrax Roach Killing Powder with Boric Acid</td>
<td>orthoboric acid</td>
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<td>Bayer Advanced Complete Insect Dust for Gardens</td>
<td>permethrin</td>
<td>X</td>
<td>—</td>
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<tr>
<td><strong>INSECTICIDES (cont.)</strong></td>
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<td>Bengal Roach Spray Aerosol</td>
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<td>Bonide Borer-Miner Killer</td>
<td>permethrin</td>
<td>X</td>
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<td>Bonide Eight Vegetable, Fruit &amp; Flower</td>
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<td>X</td>
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<td>Bonide Eight Yard &amp; Garden</td>
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<td>Cutter Bug Free Backyard Outdoor Fogger Aerosol</td>
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<td>Green Light Borer Killer</td>
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<td>Green Light Conquest Insecticide Concentrate</td>
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<td>Hot Shot Bedbug &amp; Flea Home Insect Killer</td>
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<td>Ortho Ant-B-Gon Dust</td>
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<td>Ortho Bug-B-Gon MAX Garden Insect Dust</td>
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<td>Ortho Bug-B-Gon Multi-Purpose Garden Dust 1</td>
<td>permethrin</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Raid Fumigator</td>
<td>permethrin</td>
<td>X</td>
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<tr>
<td>Schultz Houseplant &amp; Garden Insect Spray</td>
<td>permethrin</td>
<td>X</td>
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<td>Scotts Outdoor Defense Insect Killer</td>
<td>permethrin</td>
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<td>Spectracide Bug Stop for Gardens</td>
<td>permethrin</td>
<td></td>
<td>X</td>
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<td>Spectracide Fire Ant Killer Ready-to-Use Dust</td>
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<td>Sprayway Good Night – Kills Bed Bugs</td>
<td>permethrin</td>
<td>X</td>
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<tr>
<td>Terro Ant Killer Outdoor</td>
<td>permethrin</td>
<td>X</td>
<td>X</td>
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<td>Total Kill Lawn &amp; Garden Insect Killer Concentrate</td>
<td>permethrin</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Raid Yard-Guard Mosquito Fogger</td>
<td>permethrin, d-cis/trans allethrin</td>
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<tr>
<td>Hot Shot Flying Insect Aerosol</td>
<td>permethrin, d-trans allethrin</td>
<td>X</td>
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<tr>
<td>Spectracide Ant Shield Home Barrier Insect Killer</td>
<td>permethrin, lambda-cyhalothrin</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>Raid Flying Insect Aerosol</td>
<td>permethrin, tetramethrin, d-trans allethrin</td>
<td>X</td>
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<tr>
<td>Ortho Elementals Insecticidal Soap</td>
<td>potassium salts of fatty acids</td>
<td>X</td>
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<tr>
<td>Off Backyard Pretreat Fogger Outdoor</td>
<td>prallethrin, cyfluthrin</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Hot Shot Ant &amp; Roach plus Germ Killer</td>
<td>prallethrin, cypermethrin</td>
<td>X</td>
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<tr>
<td>Black Flag Spider &amp; Scorpion Killer</td>
<td>prallethrin, lambda-cyhalothrin</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Hot Shot Bedbug &amp; Flea Killer</td>
<td>prallethrin, lambda-cyhalothrin</td>
<td>X</td>
<td></td>
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</tr>
</tbody>
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<tr>
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<tr>
<td>Hot Shot Roach &amp; Ant Killer (aerosol)</td>
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<tr>
<td>Hot Shot Spider &amp; Scorpion Killer</td>
<td>prallethrin, lambda-cyhalothrin</td>
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<td>Hot Shot Spider Killer Water-based Non-staining</td>
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<td>No-Pest Wasp &amp; Hornet Killer Aerosol</td>
<td>prallethrin, lambda-cyhalothrin</td>
<td>X</td>
<td>yard area</td>
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<tr>
<td>Spectracide Carpenter Bee &amp; Ground Nesting Yellow Jacket Killer</td>
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<td>Spectracide Termite Killing Foam</td>
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<td>Spectracide Wasp &amp; Hornet Killers Aerosol</td>
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<tr>
<td>Ultra-Kill Wasp &amp; Hornet Killer</td>
<td>prallethrin, lambda-cyhalothrin</td>
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<td>X</td>
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<td>Garden Safe Insect Killer Fruit &amp; Vegetable</td>
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<td>Garden Safe Insect Killer Rose &amp; Flower</td>
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<td>Garden Safe Multi-Purpose Garden Insect Killer</td>
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<td>Garden Safe House Plant &amp; Garden Insect Spray</td>
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<td>Miracle Gro Natures Care Garden Insect Control</td>
<td>pyrethrins, canola oil</td>
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<tr>
<td>Ortho EcoSense Brand Outdoor Insect Killer</td>
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<td>Terro Spider Killer Aerosol</td>
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<td>Ortho MAX Indoor Insect Fogger</td>
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<td>Hot Shot Kitchen Bug Killer Botanical (aerosol)</td>
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<td>Hot Shot Bedbug &amp; Flea Fogger</td>
<td>pyrethrins, piperonyl butoxide, benzeneacetate</td>
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<td>Green Light Fruit Tree Spray</td>
<td>pyrethrins, piperonyl butoxide, hydrophobic extract of neem oil</td>
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<td>—</td>
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<td>Ortho Tree and Shrub – Fruit Tree Spray</td>
<td>pyrethrins, piperonyl butoxide, neem oil</td>
<td>X</td>
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<td>Real Kill Flea Fogger Indoor</td>
<td>pyrethrins, piperonyl butoxide</td>
<td>X</td>
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<td>Black Flag Fogging Insecticide</td>
<td>resmethrin</td>
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<td>EcoSmart Flying Insect Killer</td>
<td>rosemary oil, geraniol, peppermint oil</td>
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<tr>
<td>Bayer Advanced Home Pest Plus Germ Killer</td>
<td>sodium o-phenylphenate, beta-cyfluthrin</td>
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<tr>
<td>Ferti-Lome 'Come and Get It' Fire Ant Killer</td>
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<tr>
<td>Ortho Insect Killer Tree and Shrub</td>
<td>spinosad</td>
<td>—</td>
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<td>Spectracide Terminate Termite Detection &amp; Killing Stakes</td>
<td>sulfuramid</td>
<td>—</td>
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<td>X</td>
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<td>Bonide Citrus, Fruit &amp; Nut Orchard Spray</td>
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<td>Bayer Advanced All-In-One Rose &amp; Flower Care</td>
<td>tebuconazole, imidacloprid, clothianidin</td>
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<tr>
<td>Hot Shot Fogger with Odor Neutralizer</td>
<td>tetrachlorvinphos, permethrin</td>
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<tr>
<td>Raid Wasp &amp; Hornet (aerosol)</td>
<td>tetrachlorvinphos, permethrin</td>
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<td>Hot Shot No-Mess Fogger</td>
<td>tetrachlorvinphos, permethrin, piperonyl butoxide</td>
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<td>Spectracide Commercial Wasp &amp; Hornet Killer Aerosol</td>
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<tr>
<td>Spectracide Pro Wasp &amp; Hornet Killer</td>
<td>tetrachlorvinphos, permethrin, piperonyl butoxide</td>
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<tr>
<td>Ortho MAX Flying Insect Killer Aerosol</td>
<td>tetrachlorvinphos, phenothrin</td>
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<td>Cutter Bug Free Backyard One-Step Fogger</td>
<td>tetrachlorvinphos, piperonyl butoxide, permethrin</td>
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<td>Total Kill Wasp &amp; Hornet Killer (aerosol)</td>
<td>tetrachlorvinphos, sumithrin</td>
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<td>tetrachlorvinphos, sumithrin, cyclopropanecarboxylate</td>
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<td>Bonide Fruit Tree Spray</td>
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<td>Bonide Insecticide-Miticide Fungicide</td>
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<th>ACTIVE INGREDIENTS</th>
<th>INDOORS, PATIOS, DECKS, EXTERIOR HARDSCAPES &amp; PATHS</th>
<th>FLOWERS, SHRUBS, TREES, LAWNS</th>
<th>VEGETABLES</th>
<th>FRUIT</th>
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<tbody>
<tr>
<td>Bayer Advanced 3-in-1 Insect, Disease, &amp; Mite Control</td>
<td>imidachloprid, fluvalinate, tebuconazole</td>
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<td>Bayer Advanced 3-in-1 Insect, Disease, &amp; Mite Control</td>
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<td>Green Light Rose Defense II</td>
<td>neem, pyrethrins</td>
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<td>Spectracide Immunox Plus Insect &amp; Disease Control</td>
<td>permethrin, myclobutanil</td>
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<td>Spectracide Immunox Fungus Plus Insect Control for Lawns</td>
<td>propiconazole, lambda-cyhalothrin</td>
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<td>Ortho Orthene Garden Insect &amp; Disease Control Concentrate</td>
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<td>Ortho Econsense Brand 3-in-1 Rose &amp; Flower Care</td>
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<td>Bonide Citrus, Fruit &amp; Nut Orchard Spray</td>
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<td>Bonide Tomato &amp; Vegetable Insect, Fungicide, Miticide</td>
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<td>Miracle Gro Natures Care 3-in-1 Insect, Disease, Mite Control</td>
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<tr>
<td>Ortho Elements 3-in-1 Rose &amp; Flower Care</td>
<td>sulfur, pyrethrins</td>
<td>X</td>
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<tr>
<td>Bayer Advanced All-in-One Rose and Flower Care Concentrate</td>
<td>tebuconazole, imidacloprid</td>
<td>—</td>
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CONTACT MITICIDES

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<th>PRODUCTS</th>
<th>ACTIVE INGREDIENTS</th>
<th>INDOORS, PATIOS, DECKS, EXTERIOR HARDSCAPES &amp; PATHS</th>
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<th>FRUIT</th>
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<tbody>
<tr>
<td>Ortho Isox Insect Killer Formula IV Concentrate</td>
<td>acephate, fenbutatin-oxide</td>
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BAIT INSECTICIDES

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<th>VEGETABLES</th>
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<td>Raid Double Control Roach Baits</td>
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<td>Grant’s Kills Ants Ant Stakes</td>
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<td>Raid Outdoor Ant Spikes</td>
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<td>X</td>
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<td>Raid Max Double Control Large Roach Baits</td>
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<td>Terro Liquid Ant Baits Outdoor</td>
<td>borax</td>
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<tr>
<td>Harris Famous Roach Tablets</td>
<td>boric acid</td>
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<td>Hot Shot Max Attract Roach Bait</td>
<td>chlorpyrifos</td>
<td>X</td>
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</table>
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<td><strong>BAIT INSECTICIDES (cont.)</strong></td>
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<td>Hot Shot Ultra Clear Roach &amp; Ant Gel Bait</td>
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<td>X</td>
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<tr>
<td>Logic</td>
<td>fenoxycarb</td>
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<td>Combat Ant Killing Bait Strips</td>
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<td>Amdro Ant Bait</td>
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<td>Amdro Firesstrike Fire Ant Bait</td>
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<td>Amdro Kills Ants &amp; Roaches Gel Bait</td>
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<td>Amdro Yard Treatment Bait</td>
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<td>Bayer Advanced Home Pest Roach Killer Gel</td>
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<td>Ortho Fire Ant Killer Mound Bait</td>
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<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Victor Fly Catcher Sticky Roll</td>
<td>adhesive trap</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Victor Fly Magnet</td>
<td>adhesive trap</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Victor The Ultimate Flea Trap</td>
<td>adhesive trap</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Black Flag Roach Motel</td>
<td>attractant</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Rescue Fly Trap Attractant</td>
<td>attractant</td>
<td>X</td>
<td>X</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Rescue Yellow Jacket Trap</td>
<td>attractant</td>
<td>X</td>
<td>X</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Rescue Yellow Jacket Trap Attractant &amp; Trap</td>
<td>attractant</td>
<td>X</td>
<td>X</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Safer The Pantry Pest</td>
<td>attractant</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Stinger Insect Killer</td>
<td>bug zapper</td>
<td>—</td>
<td>X</td>
<td>—</td>
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<tr>
<td>Trap-N-Kill Mosquito Trap</td>
<td>DDVP</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td>Pic Insect Killer Bug Zapper</td>
<td>electricity</td>
<td>X</td>
<td>X</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Spectracide Bag-A-Bug Japanese Beetle Trap</td>
<td>eugenol, geraniol</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Mosquito Magnet Trap Octenol Biting Insect Attractant</td>
<td>octenol</td>
<td>exterior</td>
<td>X</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Mosquito Octenol Lure</td>
<td>octenol</td>
<td>X</td>
<td>X</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Mosquito Octenol Lure</td>
<td>octenol</td>
<td>outdoors</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Black Flag Mosquito</td>
<td>octenol lure</td>
<td>X</td>
<td>X</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Mosquito 2 in 1 Power Bait</td>
<td>octenol, lactic acid</td>
<td>X</td>
<td>X</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Stinger Mosquito Power Bait</td>
<td>octenol, lactic acid</td>
<td>X</td>
<td>X</td>
<td>—</td>
<td>—</td>
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</tbody>
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<tbody>
<tr>
<td><strong>INSECT TRAPS AND ATTRACTANTS (cont.)</strong></td>
<td></td>
<td></td>
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<tr>
<td>Raid Disposable Yellow Jacket Trap</td>
<td>plant-based attractant</td>
<td>X</td>
<td>X</td>
<td>—</td>
<td>—</td>
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<tr>
<td>Black Flag Pantry Pest Trap</td>
<td>proprietary components</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Terro Fruit Fly Trap</td>
<td>sodium lauryl sulfate</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Rescue Reusable Fly Trap</td>
<td>sucrose, egg solids, yeast, trimethylamine, indole</td>
<td>X</td>
<td>X</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Bees ‘N Things Carpenter Bee Trap</td>
<td>trap</td>
<td>X</td>
<td>X</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Black Flag Fly Paper</td>
<td>trap</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Black Flag Fly Trap Disposable</td>
<td>trap</td>
<td>X</td>
<td>X</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Stinger Bug Zapper Bulbs</td>
<td>UVB4S, UV40</td>
<td>X</td>
<td>X</td>
<td>—</td>
<td>—</td>
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</tbody>
</table>

| **INSECT REPELLENTS** | | | | | |
| Off Power Pad Lamp/Lantern | allethrin | X | X | — | — |
| TheraCell Mosquito Repellent | allethrin | exterior | X | — | — |
| TheraCell Mosquito Repellent Patio Lantern | allethrin | exterior | X | — | — |
| Green Light Yard Safe Insect Repellent Granules | cedar oil | — | X | X | — |
| Scotts Insect Repellent Granules | cedar oil | — | X | X | — |
| Cutter Scented Candles | citronella oil | X | X | — | — |
| Garden Accents Citronella Candle | citronella oil | X | X | — | — |
| Off Tabletop Candle | citronella oil | X | X | — | — |
| Tiki Citronella Candles | citronella oil | X | — | — | — |
| Liquid Fence Yard Net Granular Insect Repellant | citronella oil, cedar wood oil, lemongrass oil, sodium lauryl sulfate, peppermint oil, potassium sorbate, eugenol, geraniol | X | X | — | — |
| Bonide Mosquito Beater | citronella, garlic, geranium, cedar, lemongrass oils | X | X | — | — |
| DecoShield Mosquito Repellent | clove, lemongrass, peppermint, cinnamon oils | X | — | — | — |
| Cutter Backwoods Insect Repellent | deet | X | — | — | — |
| Cutter Backwoods Mosquito Wipes | deet | X | — | — | — |
| Cutter Dry Insect Repellent | deet | X | — | — | — |
| Cutter SkinSations Insect Repellent | deet | X | — | — | — |
| Off Active Insect Repellen | deet | X | X | — | — |
| Off Deep Woods Dry | deet | on person | — | — | — |
| Off Deep Woods Spray | deet | X | — | — | — |
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<tbody>
<tr>
<td><strong>INSECT REPELLENTS (cont.)</strong></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Repel Insect Repellent</td>
<td>deet</td>
<td>X</td>
<td>X</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Repel Mosquito Wipes</td>
<td>deet</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Bug Band Insect Repellent Band</td>
<td>geraniol</td>
<td>on person, outside</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Swamp Gator All Natural Insect Repellent</td>
<td>geraniol, soybean oil, peppermint, rosemary, geranium oil</td>
<td>on person</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Repel Natural Insect Repellent</td>
<td>geraniol, soybean oil, sodium laryl sulfate, potassium sorbate</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Off Clip On</td>
<td>metofluthrin</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Off Mosquito Coil IV</td>
<td>metofluthrin</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Off Mosquito Lamp</td>
<td>metofluthrin</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Enoz Old Fashioned Moth Balls</td>
<td>naphthalene</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>IMS Original Moth Balls</td>
<td>naphthalene</td>
<td>X</td>
<td>—</td>
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<td>—</td>
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<tr>
<td>Cutter Citro Guard Candle</td>
<td>oil of citronella</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Cutter Lemon Eucalyptus Insect Repellent</td>
<td>oil of lemon, eucalyptus</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Enoz Moth Ball Packets</td>
<td>paradichlorobenzene</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Enoz Moth Bar Cedar Scented</td>
<td>paradichlorobenzene</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>IMS Moth Ball Packets</td>
<td>paradichlorobenzene</td>
<td>X</td>
<td>—</td>
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<td>—</td>
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<tr>
<td>Sawyer Insect Repellent</td>
<td>permethrin</td>
<td>X</td>
<td>—</td>
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<tr>
<td><strong>ORGANIC INSECTICIDES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EcoSmart Organic Insect Killer</td>
<td>2-phenethyl propionate, sodium lauryl sulfate, eugenol, thyme oil, sesame oil</td>
<td>X</td>
<td>X</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>EcoSmart Organic Insecticide Mosquito &amp; Tick Control</td>
<td>2-phenethyl propionate, sodium lauryl sulfate, peppermint oil, rosemary oil, eugenol, thyme oil, sesame oil</td>
<td>exterior</td>
<td>X</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Garden Safe Bt Worm &amp; Caterpillar Killer</td>
<td>Bacillus thuringiensis</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Green Light BT Worm Killer</td>
<td>Bacillus thuringiensis subspecies kurstaki</td>
<td>—</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Safer Caterpillar Killer</td>
<td>Bacillus thuringiensis subspecies kurstaki</td>
<td>—</td>
<td>X</td>
<td>X</td>
<td>—</td>
</tr>
<tr>
<td>Green Light Roach Powder</td>
<td>boric acid</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Safer Roach &amp; Ant Killing Powder</td>
<td>boric acid, German cockroach pheromone</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Bayer Advanced Natria Multi-Insect Control</td>
<td>canola oil</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Safer Ant &amp; Crawling Insect Killer</td>
<td>diatomaceous earth</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
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</tr>
</thead>
</table>
| **ORGANIC INSECTICIDES (cont.)**
| Safer Ant & Roach Killer | D-limonene, pyrethrins, potassium salts of fatty acids | X | — | — | — |
| Safer Wasp & Hornet Killer | D-limonene, pyrethrins, potassium salts of fatty acids | X | — | — | — |
| Safer Ant & Roach Killer | D-limonene, pyrethrins, potassium salts of fatty acids | X | — | — | — |
| Safer Wasp & Hornet Killer | D-limonene, pyrethrins, potassium salts of fatty acids | X | — | — | — |
| Safer Flying Insect Killer | d-limonene, pyrethrins, salts of fatty acids | X | — | — | — |
| Safer Flying Insect Killer | d-limonene, pyrethrins, salts of fatty acids | X | — | — | — |
| Diatomaceous earth | fossilized bodies of diatoms | X | X | X | X |
| Terminix Ultimate Protection Flying Insect Killer | geraniol | indoor | — | — | — |
| Terminix Ultimate Protection Crawling Insect Control | geraniol, cinnamon oil | indoor | — | — | — |
| EcoSmart Organic Insect Repellant | geraniol, rosemary, cinnamon, lemongrass oils | on person | — | — | — |
| EcoSmart Organic Insecticide Mosquito Fogger | geraniol, rosemary, peppermint oils | X | — | — | — |
| Cutter Natural Insect Repellant | geraniol, soybean oil, potassium sorbate, SLS | on person | X | — | — |
| Safer Tomato & Vegetable Insect Killer II | insecticidal soap, pyrethrin | — | X | X | X |
| Gardens Alive Surround at Home Crop Protectant | kaolin clay | — | — | X | X |
| Azadirachtin | leaf extracts from the neem tree | X | X | X | X |
| EcoLogic Ant & Roach Killer | lemongrass oil | X | — | — | — |
| EcoLogic Bedbug Killer | lemongrass oil | X | — | — | — |
| EcoLogic Flying Insect Killer | lemongrass oil | X | — | — | — |
| EcoLogic Home Insect Control | lemongrass oil | X | — | — | — |
| EcoLogic Lawn & Yard Insect Killer | lemongrass oil | X | — | — | — |
| Hot Shot Natural Ant & Roach Killer | lemongrass oil | X | — | — | — |
| Hot Shot Natural Flying Insect Killer | lemongrass oil | indoor | — | — | — |
| Hot Shot Natural Home Insect Control | lemongrass oil, potassium sorbate | X | — | — | — |
| Green Light Rose Defense | neem oil | — | X | X | X |
| Neem | neem tree nut oil extract | — | X | X | X |
| Nematodes | nematodes that attack select insect species | — | X | X | X |
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EcoSmart Organic Insecticide Flying Insect Killer</td>
<td>peppermint oil, cinnamon oil, sesame oil</td>
<td>X</td>
<td></td>
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<tr>
<td>Bonide All Seasons Spray Oil – Horticultural &amp; Dormant</td>
<td>petroleum oil</td>
<td>X</td>
<td></td>
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<td>Bayer Advanced Natria Insecticidal Soap</td>
<td>potassium salts</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Garden Safe Insect Killer Insecticidal Soap</td>
<td>potassium salts</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
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<tr>
<td>Miracle Gro Nature Care Insecticidal Soap</td>
<td>potassium salts of fatty acid</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Ortho Elements Insecticidal Soap</td>
<td>potassium salts of fatty acids</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Safer Insect Killing Soap</td>
<td>potassium salts of fatty acids</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Pyrethrin products</td>
<td>pyrethrin</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>EcoSmart Organic Garden Insect Killer</td>
<td>rosemary, peppermint, thyme, clove oils</td>
<td>—</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Dr. Earth Final Stop Rose &amp; Flower Insect Killer</td>
<td>rosemary, sesame, peppermint, thyme, cinnamon, garlic oil, malic acid</td>
<td>—</td>
<td>X</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>Dr. Earth Final Stop Vegetable Garden Insect Killer</td>
<td>rosemary, sesame, peppermint, thyme, cinnamon, garlic oils</td>
<td>—</td>
<td>—</td>
<td>X</td>
<td>—</td>
</tr>
<tr>
<td>Organocide Organic Insecticide &amp; Fungicide &amp; Miticide</td>
<td>sesame oil</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Garden Safe Crawling Insect Killer</td>
<td>silicon dioxide</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Ortho Ant &amp; Roach Killer Aerosol (100% natural)</td>
<td>soybean oil</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td></td>
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<tr>
<td>Ortho Home Insect Killer (100% natural)</td>
<td>soybean oil</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td>Bonide Captain Jacks Deadbug Brew</td>
<td>spinosad</td>
<td>—</td>
<td>X</td>
<td>X</td>
<td>—</td>
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<tr>
<td>Safer Fire Ant Bait R-T-U</td>
<td>spinosad</td>
<td>—</td>
<td>X</td>
<td>X</td>
<td>—</td>
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<tr>
<td>Greenlight Home &amp; Garden Insect Spray</td>
<td>thyme oil, clove oil, sesame oil</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>SunSpray Ultra-Fine Pest Oil</td>
<td>verdant (summer) horticultural oil</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>EcoSmart Organic Home Pest Control</td>
<td>z-phenethyl propionate, clove oil, rosemary oil, peppermint oil, thyme oil</td>
<td>X</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td><strong>ORGANIC COMBINATION INSECTICIDES, FUNGICIDES &amp; MITICIDES</strong></td>
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<tr>
<td>Greenlight Neem Concentrate Insecticide, Fungicide, Miticide</td>
<td>clarified hydrophobic extract of neem oil</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Ag Southern Triple Action Neem Oil</td>
<td>neem oil</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Bayer Advanced Natria Neem Oil for Insect, Disease &amp; Mite Control</td>
<td>neem oil</td>
<td>—</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Bonide Rose Rx 3 in 1 Insecticide, Fungicide, Miticide</td>
<td>neem oil</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Safer 3-in-1 Garden Spray II - kills: fungus, mites, insects</td>
<td>potassium salts of fatty acids, sulfur</td>
<td>—</td>
<td>X</td>
<td>X</td>
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</tr>
<tr>
<td>Organocide 3-in-1 Garden Spray</td>
<td>sesame oil</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>ORGANIC MITICIDES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Southern Ag Triple Action Neem Oil Insecticide, Fungicide, Miticide</td>
<td>neem oil</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>SunSpray Ultra-Fine Pest Oil</td>
<td>verdant (summer) horticultural oil</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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