

# Spraying and Dusting Tomatoes

John D. Hopkins  
Extension Entomologist

Tomatoes must be protected from insects and diseases that may damage plants or reduce fruit quality. Plants can be protected from many insects and diseases with insecticides and fungicides. Tomato insect pests and their control are discussed below. Tomato diseases and their control are discussed in MP430, *Managing Tomato Diseases in Arkansas*.

## Insect Pests

Insects cause damage by eating the leaves, stem, fruit or roots. Many insects attack tomatoes, but only the more important ones are covered here.

### Flea Beetles

Small black beetles often eat shot-holes in the leaves of tomato plants in the seedbed or in the field early in the season. When disturbed, these insects jump like a flea.

Flea beetles cause most injury to tomatoes when the young plants are becoming established in the field following transplanting. Spray or dust the plants in flats or bed before transplanting. Repeat in field as necessary.

**Control:** Materials suggested for flea beetle control are listed in the spray table.

### Cutworms

Plants in the seedbed and newly set plants are often cut down at or near the soil line by various species of cutworms. These large, dark-colored caterpillars curl up to form a tight C-shape when disturbed. They feed at night and hide in the soil or under trash in daytime.

**Control:** Prepare seedbeds and fields as thoroughly and as early as possible. Chemicals for cutworm control are listed in the spraying and dusting schedule. Do not work fields for several days after spraying.

If plants are attacked in the cold-frame, spray thoroughly with 3 table-spoons of Sevin 50% wettable powder per gallon of spray.

### Tomato Fruit Worm

The tomato fruit worm, or corn earworm, may cause severe damage by boring into the fruit.



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Winter is spent in the pupal or resting stage in the soil. The adult, a tan-colored moth with a wing span of about 1 3/4 inches, lays eggs on legume crops very early in the spring. Here the first generation is passed. Second generation moths start laying eggs the last of May and early June. The second generation causes heaviest damage to tomatoes.

**Control:** To control tomato fruit worm, apply insecticides regularly every seven days beginning at fruit set. Cover the entire plant with a dust or spray. **If foliage injury is noticed after using Sevin, discontinue its use.** The tomato fruit worm control program also controls flea beetles, blister beetles and horn worms. Beginning at fruit set, carefully consider a fungicide. Sprays must be repeated after rains.

Some insects may attack tomatoes before the regular insecticide schedule for tomato fruit worm is started. These insects and control measures for them follow.

### Wireworms

Larvae of click beetles (wireworms) sometimes attack roots of tomatoes. These larvae are slender and the body wall is hard. Where wireworms have been troublesome rather consistently or where tomatoes follow sod, control is necessary.

**Control:** Treat the soil with diazinon (see table for suggested dosage). Work thoroughly into the upper 4 to 8 inches of soil. Soil temperature should be at least 50°F when diazinon is applied. Check the container label for granule dosage information.

### Blister Beetles

Striped, black or gray beetles about 1/2-inch long often attack tomato foliage. These beetles may move into a field in swarms, completely defoliating plants in their path.

**Control:** Blister beetles are controlled by the regular schedule of applications for tomato fruit worm.

### Horn Worms

These large, green caterpillars with a spine on the back near the rear-end feed on foliage. The worms may be spotted most readily from droppings on the ground under the plants.

**Control:** Hand pick, spray or dust. Horn worms are controlled by the regular schedule of applications for tomato fruit worm.



### Aphids

Pink or green aphids become very numerous on the underside of leaves and on stems early in the season.

**Control:** Any of the pesticides recommended in the table under aphids will give control.

### Stink Bugs

Several species, brown, green, blackish, with or without markings, may be found in tomato fields. They are shield-shaped and up to 5/8-inch long and 1/3-inch wide. Nymphs resemble adults but are smaller, and wing development is incomplete. All stink bugs discharge a foul odor. Adults and nymphs suck juice from the plant and fruit. Feeding damage results in a small, whitish depression around the puncture as well as wilting of the leaves.

**Control:** Refer to the table for control measures. Dust or spray should be equally effective with adequate coverage.

### Mites

Mites are green or red and so small they are scarcely visible without a magnifying glass. Mites are usually favored by dry weather. They move to tomato plants from other host plants where they have fed during the winter and early spring. Light webbing on the underside of leaves, leaf distortion and discoloration indicate the presence of spider mites. Sevin and pyrethroids may increase mite problems if mites are present.

**Control:** See the table for materials to use. Several applications of miticide may be necessary to control mites.

## Spraying and Dusting

After plants have been set in the field, fungicide and insecticide applications normally are necessary to hold the leaf spotting and fruit diseases and various insects in check.

### Combination Sprays

Combining an insecticide and a fungicide in one spray may be desirable. Diazinon and Sevin are not compatible with fixed copper fungicides. Any other combination of an insecticide and a fungicide listed in the table should be satisfactory, but a jar test will confirm compatibility.

## Spraying

Mixing these materials in 75 to 100 gallons of water gives enough solution to thoroughly cover the foliage and stems of one acre of mature tomato plants. For younger, smaller plants use the same dilution, but less gallonage will be required per acre.

## Dusting

Fungicides and insecticides can be applied in dust form. However, in disease control, spraying has given consistently better results than dusting. Up to 40 pounds of dusting material may be required to adequately cover 1 acre of mature plants. Younger, smaller plants require proportionately less material. Dust formulations may contain varying percentages of actual pesticide chemical. These percentages may vary from 4 to 10 percent. Never should the amount of actual active pesticide per acre exceed the amounts recommended in the table.

## Tomato Insect Control Recommendations

Insect	Insecticide	Formulation/ Acre	Lb ai/Acre	Application, Remarks/ Precautions	Days to Harvest
Fruit worm Horn worm	aziphosmethyl Guthion 2L (R)	3-6 pt	0.75-1.5		14
	bifenthrin (R) Capture 2 EC	2.1-5.2 oz	0.033-0.08		1
	carbaryl Sevin 80S Sevin 4F Sevin XLR Plus	1 1/4-2 1/2 lb 1-2 qt 1-2 qt	1.0-2.0		0
	endosulfan Thiodan 2 EC Phaser 3 EC	2 qt 1 1/3 qt	1.0	Make applications at 7-day intervals as needed. <i>Bacillus thuringiensis</i> 1/2 lb/A may be used in combination with either Thiodan or methomyl. Other areas have had good results.	2
	esfenvalerate Asana XL 0.66 EC (R)	5.8-9.6 oz	0.03-0.05		1
	lambda-cyhalothrin Warrior 1EC (R)	3.20-3.84 oz	0.025-0.03	Make applications at 5-day intervals as needed.	5
	methomyl Lannate 2.4 LV (R) Lannate SP (R)	1 1/2-3 pt 1/2-1 pt	0.45-0.9		
	spinosad Spintor 2 SC	3-6 fl oz	0.047-0.094		1
	tebufenozide Confirm 2F	6-16 fl oz	0.09-0.25	Horn worm only.	7
	zeta-cypermethrin (R) Fury 1.5 EC Mustang Max 0.8 EC	2.4-4.3 oz 2.24-4.0 oz	0.028-0.05 (Fury) 0.014-0.025 (Mustang Max)		1
	<i>Bacillus thuringiensis</i> Dipel, Javelin, Biobit, Agree		Check label.	Recommended for tomato horn worms only. Does not control fruit worms.	

(R) = Restricted Use Pesticide.

Insect	Insecticide	Formulation/ Acre	Lb ai/Acre	Application, Remarks/ Precautions	Days to Harvest
<b>Cabbage loopers</b>	endosulfan		0.75-1.0		
	Phaser 3 EC	1-1 1/3 qt			
	Thiodan 2 EC	1 1/2 qt			
	esfenvalerate		0.03-0.05		2
	Asana XL 0.66 EC (R)	5.8-9.6 oz			
	methomyl		0.45-0.9	Apply on foliage as needed when loopers are small. Methomyl is preferred treatment.	1
	Lannate 2.4 LV (R)	1 1/2-3 pt			
	Lannate SP (R)	1/2-1 lb			
	tebufenozide		0.09-0.25		7
	Confirm 2F	6-16 fl oz			
	<i>Bacillus thuringiensis</i>		Check label.		
	Dipel, Javelin, Biobit, Agree				
<b>Colorado potato beetle</b>	azinphosmethyl		0.375-0.75		14
	Guthion 2L (R)	1 1/2-3 pt			
<b>Flea beetles</b>	bifenthrin (R)		0.033-0.08		1
<b>Stink bugs</b>	Capture 2 EC	2.1-5.2 oz			
	carbaryl		1.0-2.0	Apply on foliage as needed.	0
	Sevin 80S	1 1/4-2 1/2 lb			
	Sevin 4F	1-2 qt			
	Sevin XLR Plus	1-2 qt			
	endosulfan		0.5-1.0	When insects appear.	1
	Thiodan 2 EC	1-2 qt		Phaser label includes stink bugs.	
	Phaser 3 EC	2/3-1 1/3 qt			
	zeta-cypermethrin (R)		0.028-0.05		1
	Fury 1.5 EC	2.4-4.3 oz	(Fury)		
	Mustang Max 0.8 EC	2.24-4.0 oz	0.014-0.025 (Mustang Max)		
<b>Leaf miners</b>	abamectin		0.010-0.019	20 gallons of water/acre required.	7
<b>Aphids</b>	Agri-Mek 0.15 EC (R)	8-16 fl oz		Mites, leaf miners, pinworms, potato beetle.	
	azinphosmethyl		0.5-0.75		14
	Guthion 2L (R)	2-3 pt			
	bifenthrin (R)		0.033-0.08		1
	Capture 2 EC	2.1-5.2 oz			
	diazinon		0.25		1
	Diazinon AG500 (R)	1/2 pt			
	4 lbs/gal				
	Diazinon 50 W (R)	1/2 lb			
	Diazinon AG600 (R)	6 1/2 fl oz			
	dimethoate		0.25-0.5		7
	Dimethoate 400	1/2-1 pt			
	Dimethoate 4EC	1/2-1 pt			
	Dimethoate 5 lb	6.4-12.8 oz			
	endosulfan		0.5-1.0	Apply on foliage as needed.	2
	Thiodan 2 EC	1 qt		Phaser and Thiodan are not registered for leaf miner.	
	Phaser 3 EC	2/3-1 1/3 qt			
	esfenvalerate		0.05	Use 5.8-9.6 oz of Asana per acre for aphids.	1
	Asana XL 0.66 EC (R)	9.6 oz			
	imidacloprid		0.047		
	Provado 1.6 F	3.75 fl oz			
	methomyl		0.45-0.9	Aphids only.	0
	Lannate 2.4 LV (R)	1 1/2-3 pt			
	Lannate SP (R)	1/2-1 lb			
	zeta-cypermethrin (R)		0.028-0.05	Aphid control may be variable.	1
	Fury 1.5 EC	2.4-4.3 oz	(Fury)		
	Mustang Max 0.8 EC	2.24-4.0 oz	0.014-0.025 (Mustang Max)		

<b>Insect</b>	<b>Insecticide</b>	<b>Formulation/ Acre</b>	<b>Lb ai/Acre</b>	<b>Application, Remarks/ Precautions</b>	<b>Days to Harvest</b>
<b>Cutworms</b>	bifenthrin (R) Capture 2 EC	2.1-5.2 oz	0.033-0.08		1
	carbaryl Sevin 80S Sevin 4F Sevin XLR Plus	2 1/2 lb 2 qt 2 qt	2.0	Apply to soil surface 2-3 days prior to transplanting or when damage occurs.	0
	diazinon Diazinon AG500 Diazinon 50 W Diazinon AG600	2-4 qt 4-8 lb 51-102 fl oz	2.0-4.0	Broadcast to soil surface just prior to planting. Incorporate into soil 3-6 inches immediately. Mix in a minimum of 5 gals of water per acre.	
	esfenvalerate Asana XL 0.66 EC (R)	5.8-9.6 oz	0.03-0.05	Broadcast prior to planting and work into soil 4-8 inches.	1
	tebufenozide Confirm 2F	6-8 fl oz	0.09-0.12		
	zeta-cypermethrin (R) Fury 1.5 EC Mustang Max 0.8 EC	2.4-4.3 oz 2.24-4.0 oz	0.028-0.05 (Fury) 0.014-0.025 (Mustang Max)		1
<b>Wireworms</b>	diazinon Diazinon 50W (R) Diazinon AG600 (R) Diazinon AG500 (R)	6-8 lb 76 1/2-102 fl oz 3-4 qt	3.0-4.0	Broadcast prior to planting and immediately work into soil 4-8 inches.	
<b>Spider mites</b>	abamectin Agri-Mek 0.15 EC (R)	8-16 fl oz	0.010-0.019	Do not apply Agri-Mek in less than 20 gallons of water per acre.	7
	dicofol Kelthane MF	3/4- 1 1/2 pt	0.375-0.75	Apply at first sign of mite buildup.	2
<b>Thrips</b>	azinphosmethyl Guthion 2L (R)	2-3 pt	0.5-0.75		0
<b>Pinworms</b>	abamectin Agri-Mek 0.15 EC (R)	1 pt	0.019		
	esfenvalerate Asana XL 0.66 EC	5.8-9.6 oz	0.03-0.05	Do not exceed 0.5 lb ai per acre per season.	1
	methomyl Lannate LV (R) Lannate SP (R)	1 1/2-3 pt 1/2-1 lb	0.45-0.9	All are alternatives. Check dosage on label.	0
	No-Mate Spiral Bioinsecticide			Read product label. Comes in a plastic coil that is wrapped around tomato vines or support stakes.	

## Tomato Spraying and Dusting Schedule - Home Gardeners

Insect	Insecticide	Amount to Mix with 1 gal water	Application	Remarks and Precautions	Days to Harvest
<b>Tomatoes</b>					
<b>Flea beetle</b>	Permethrin				
<b>Fruitworm</b>	Eliminator 2.5%	Check label.			0
	Ortho 0.25% dust	Check label.			0
	Sevin 5% D	Check label.	When insects appear.	Apply every 5-10 days beginning at bloom for fruit worm.	0
	Thiodan 25% EC	1 t	When insects appear.		1
<b>Horn worms</b>	Diazinon 25% EC	2 t			1
<b>Stink bugs</b>	Permethrin				
	Eliminator 2.5%	Check label.			0
	Ortho 0.25% dust	Check label.			0
	Sevin 50% WP	5 T			0
<b>Aphids</b>	Diazinon 25% EC	2 t			1
<b>Blister beetles</b>	Malathion 4% D	Check label.			1
	Malathion 57% EC	1 T			1
	Thiodan 50% WP	1 T			1
<b>Mites</b>	Diazinon 25% EC	2 t			
	Malathion 57% EC	1 T	When damage appears.		1
	Safer Soap	Check label.			
<b>Cutworms</b>	Diazinon 5% G	7-14 oz/500 sq ft	When damage appears.	Mix 3-6 inches deep in the soil just prior to planting time.	
	Permethrin				
	Eliminator 2.5%	Check label.			
	Ortho 0.25% dust	Check label.			
<b>Whitefly</b>	Resmethrin	Check label.	When damage appears.		
	Safer Soap	Check label.			
<b>Slugs and Snails</b>			Use metaldehyde bait.	Follow label directions.	

L = Liquid Concentrate; EC = Emulsifiable Concentrate; WP = Wettable Powder; S = Soluble Powder or Sprayable Powder; R = Restricted Use Pesticide. Home tomato growers should consult Extension MP 144, "Insecticide Recommendation for Arkansas," to determine the amount of insecticide to use in one gallon of water. Insecticide or fungicide labels will also furnish this information.

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

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**DR. JOHN D. HOPKINS** is Extension entomologist, University of Arkansas Cooperative Extension Service, Little Rock.

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