

## 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.

Pest	Insecticide and Formulation	Amount Per 1,000 Square Feet	Comments/Precautions
<b>Ant</b>	bifenthrin* (Menace, Talstar, others) F, GC and G formulations also available	0.5-1 fl oz	Use GC formulation for golf courses.
	bifenthrin 0.058% + carbaryl 2.3% (Duocide)	4-8 lb	<b>Not for use on golf courses and sod farms.</b> 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.
	carbaryl* (Sevin 80 WSP)	see label	
	chlorpyrifos* (Nufarm Chlorpyrifos)	see label	See label. For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. <b>Restricted Use Pesticide.</b>
	clothianidin + bifenthrin (Aloft)	see label	
	GC SC	0.27-0.44 fl oz	
	LC SC	0.27-0.54 fl oz	
	GC G	1.8-3.6 lb	
	LC G	1.8-3.6 lb	
	cyfluthrin (Tempo 2)	0.143 fl oz	Home lawns only.
	cypermethrin* (Demon) TC	see label	
	deltamethrin (DeltaGard) G	2-3 lb	
	fipronil 0.0143 G (Top Choice)	2 lb	
	fipronil 0.0143% + bifenthrin 0.23% + lambda-cyhalothrin 0.059% (Taurus Trio G)	2 lb	
hydramethylnon* (Maxforce G, Amdro)	see label		
lambda-cyhalothrin* (Scimitar, Cyonara)	see label	DO NOT make applications within 20 ft of any body of water. No reentry until spray has dried.	
zeta-cypermethrin + bifenthrin + imidacloprid (Triple Crown T&O, Triple Crown Golf)	0.46-0.80 fl oz	Triple Crown Golf is a <b>Restricted Use Pesticide.</b>	
<b>Ant, Red Imported Fire</b>	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. <b>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).</b>		
	<b>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.</b>		
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 Acelepryn, 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.

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<b>Pest</b>	<b>Insecticide and Formulation</b>	<b>Amount Per 1,000 Square Feet</b>	<b>Comments/Precautions</b>
<b>Ant, Red Imported Fire (cont.)</b>	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. <b>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).</b>		
	<b>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.</b>		
	acephate* (Lesco-Fate) (Orthene T, T&O) 75 S (Ortho Orthene Fire Ant Killer1) 50 S (Precise 4G)	see label 1-2 tsp/mound 1 Tbsp/mound see label	Distribute uniformly over mound. For best results, apply early in morning or late afternoon.
	avermectin/B1 (Affirm) 0.011% bait	5-7 Tbsp/mound	Distribute uniformly 5 to 7 level tablespoons of bait 3 to 4 feet around base of each mound.
	bifenthrin 0.058% + carbaryl 2.3% (Duocide)	4-8 lb	<b>Not for use on golf courses and sod farms.</b> 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.
	chlorpyrifos* (Nufarm Chlorpyrifos)	see label	See label. For use on golf course turf, turf and ornamentals around industrial buildings; turf and ornamentals in road medians. <b>Restricted Use Pesticide.</b>
	chlorpyrifos (Dursban Pro)	see label	Single mound treatment ONLY.
	clothianidin + bifenthrin (Aloft) GC SC LC SC GC G LC G	see label 0.27-0.44 fl oz 0.27-0.54 fl oz 1.8-3.6 lb 1.8-3.6 lb	
	fipronil (Maxforce FC) 0.00045% (Top Choice) 0.0143% granular insecticide (Chipco Choice) 0.1% granular contact insecticide	see label 87 lb/acre 12.5 lb/acre	Apply as a broadcast. May treat up to 4 times per year. Broadcast only Broadcast only  The fipronil products have the same active ingredient but are different formulations; read and follow the label.
	hydramethylNon (Amdro, Amdro Pro, Maxforce Fire Ant Granular Bait)	2-5 Tbsp/mound 2 lb/acre	Single mound treatment rate Broadcast rate
	fipronil 0.0143% + bifenthrin 0.23% + lambda-cyhalothrin 0.059% (Taurus Trio G)	87lbs/acre	
	imidacloprid + bifenthrin (Allectus)	see label	Rate varies with pest. Different formulations for different sites.
	indoxacarb (Advion) fire ant bait 0.045%	4 Tbsp/mound 1.5 lb/acre	DO NOT apply to top of mound. Distribute uniformly 3 to 4 feet around mound. Broadcast rate
	metaflumizone (Siesta Fire Ant Bait) 0.063%	1.0-1.5 lb/acre 2-4 Tbsp/mound	Broadcast rate Single mound treatment rate DO NOT exceed 6.0 lb/acre total or 4 applications in a one-year period.
	pyrethroids (various brands) bifenthrin (Menace, Talstar, others) F and G formulations also available cyfluthrin (Tempo) deltamethrin (DeltaGard) G lambda-cyhalothrin (Scimitar, Cyonara)	see label	

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<b>Pest</b>	<b>Insecticide and Formulation</b>	<b>Amount Per 1,000 Square Feet</b>	<b>Comments/Precautions</b>
<b>Ant, Red Imported Fire (cont.)</b>	pyriproxyfen (Distance)	1-4 Tbsp/mound 1.0-1.5 lb/acre	Single mound treatment rate Broadcast rate This is an IGR.
	S-methoprene (Extinguish)	3-5 Tbsp/mound 1.0-1.5 lb/acre	Single mound treatment rate Broadcast rate This is an IGR.
	S-methoprene + hydramethylnon (Extinguish Plus)	3-5 Tbsp/mound 1.0-1.5 lb/acre	Single mound treatment rate Broadcast rate This is an IGR plus a toxicant.
	spinosad 0.015% (Conserve Fire Ant Bait)	2.5-5.0 lb/acre	
	spinosad (Conserve SC)	0.1 fl oz/gal/mound	Dilute 0.1 fluid ounce in 1 gallon water. Use 1-2 gallons per mound.
	zeta-cypermethrin + bifenthrin + imidacloprid (Triple Crown T&O, Triple Crown Golf)	0.46-0.80 fl oz	Triple Crown Golf is a <b>Restricted Use Pesticide</b> .
<b>Bee and Wasp (burrowing)</b>	carbaryl* (Sevin 80 WSP)	see label	
	chlorpyrifos* (Nufarm Chlorpyrifos)	see label	See label. For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. <b>Restricted Use Pesticide</b> .
	pyrethroids (Advanced Garden, DeltaGard, Menace, Scimitar, Talstar, Tempo)	see label	
<b>Billbug</b>	bifenthrin* (Menace, Talstar, others) F, GC and G formulations also available	0.25-0.5 fl oz	Use GC formulation for golf courses.
	chlorantraniliprole (Acelepryn)	0.184-0.46 fl oz	Suppression.
	chlorpyrifos* (Nufarm Chlorpyrifos)	see label	See label. For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. <b>Restricted Use Pesticide</b> .
	clothianidin (Arena) 0.5 G 50 WDG	14-22 oz 0.15-0.22 oz	
	clothianidin + bifenthrin (Aloft) GC SC LC SC GC G LC G	see label 0.27-0.44 fl oz 0.27-0.54 fl oz 1.8-3.6 lb 1.8-3.6 lb	
	deltamethrin (DeltaGard) G	2-3 lb	
	dinotefuran (Zylam) 20 SG	1 oz	For optimum control of billbugs and annual bluegrass weevil, make application to or during egg hatch of the target pest.
	imidacloprid* (Merit) 75 WSP	3-4 level tsp	Make application prior to egg hatch.
	imidacloprid + bifenthrin (Allectus)	see label	Rate varies with pest. Different formulations for different sites.
	lambda-cyhalothrin* (Scimitar, Cyonara)	see label	Observe restrictions near water.
	thiamethoxam (Meridian) 0.33 G 25 WG	60-80 lb/acre 12.7-17 oz/acre	Optimum control when applied from peak flight of adults to peak of egg hatch. Also suppresses mole crickets and chinch bugs.
	zeta-cypermethrin + bifenthrin + imidacloprid (Triple Crown T&O, Triple Crown Golf)	10-20 fl oz/acre	Triple Crown Golf is a <b>Restricted Use Pesticide</b> .

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

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<b>Pest</b>	<b>Insecticide and Formulation</b>	<b>Amount Per 1,000 Square Feet</b>	<b>Comments/Precautions</b>
<b>Chinch Bug</b>	acephate* (Orthene T, T&O) 75 S	1.2-2.4 oz	
	<i>Beauveria bassiana</i> (Botanigard, Naturalis-T)	see label	
	bifenthrin* (Menace, Talstar, others) F, GC and G formulations also available	0.25-0.5 fl oz	Use GC formulation for golf courses.
	bifenthrin 0.058% + carbaryl 2.3% (Duocide)	2-4 lb	<b>Not for use on golf courses and sod farms.</b> 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.
	carbaryl* (Sevin 80 WSP)	see label	
	chlorantraniliprole (Acelepryn)	0.184-0.46 fl oz	Suppression.
	chlorpyrifos* (Nufarm Chlorpyrifos)	see label	See label. For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. <b>Restricted Use Pesticide.</b>
	clothianidin (Arena) 0.25 G, 50 WDG	see label	
	clothianidin + bifenthrin (Aloft) GC SC LC SC GC G LC G	see label 0.27-0.44 fl oz 0.27-0.54 fl oz 1.8-3.6 lb 1.8-3.6 lb	
	cypermethrin (Demon) TC	0.33 to 0.65 fl oz	
	deltamethrin (DeltaGard) G	2-3 lb	
	dinotefuran (Zylam) 20 SG	1 oz	For suppression of chinch bugs, make application prior to hatching of the first instar nymphs.
	imidacloprid + bifenthrin (Allectus)	see label	Rate varies with pest. Different formulations for different sites.
	lambda-cyhalothrin* (Scimitar, Cyonara)	see label	DO NOT make applications within 20 ft of any body of water. No reentry until spray has dried.
	permethrin* (Astro)	0.4-0.8 fl oz	
	zeta-cypermethrin + bifenthrin + imidacloprid (Triple Crown T&O, Triple Crown Golf)	20-35 fl oz/acre	Triple Crown Golf is a <b>Restricted Use Pesticide.</b>
	<b>Cutworm, Armyworm</b>	acephate* (Orthene T, T&O)	1.2-2.4 oz
azadirachtin* (Neemix, Turplex)		see label	
bifenthrin* (Menace, Talstar, others) F, GC and G formulations also available		0.18-0.25 fl oz	Use GC formulation for golf courses.
bifenthrin 0.058% + carbaryl 2.3% (Duocide)		2 lb	<b>Not for use on golf courses and sod farms.</b> 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.
<i>B.t.</i> products (various labels)		see label	
carbaryl* baits		0.75-1.5 oz	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.

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<b>Cutworm, Armyworm</b> (cont.)	carbaryl* (Sevin) 80 WSP	see label	
	chlorantraniliprole (Acelepryn)	0.046-0.092 fl oz	
	chlorpyrifos* (Nufarm Chlorpyrifos)	see label	See label. For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. <b>Restricted Use Pesticide.</b>
	clothianidin (Arena)		Cutworms only.
	0.5 G	1.4-1.8 oz	
	50 WDG	0.2-0.3 oz	
	clothianidin + bifenthrin (Aloft)	see label	
	cyfluthrin* (Tempo 2)	0.143 fl oz	Home lawns only.
	deltamethrin (DeltaGard) G	2-3 lb	
	dinotefuran (Zylam) 20 SG	1 oz	Cutworm only.
	entomogenous nematodes*	see label	Read and follow special application instructions. Effective only against small cutworms.
	imidacloprid + bifenthrin (Allectus)	see label	Rate varies with pest. Different formulations for different sites.
	indoxacarb (Provaunt) WDG	see label	Not labeled for use on sod farms.
	lambda-cyhalothrin* (Scimitar, Cyonara)	see label	DO NOT make applications within 20 ft of any body of water. No reentry until spray has dried.
spinosad (Conserve SC)	0.25-1.2 fl oz	Rate varies with size and species.	
trichlorfon (Dylox 80 SP)	1.5-3.0 oz		
zeta-cypermethrin + bifenthrin + imidacloprid (Triple Crown T&O, Triple Crown Golf)	10-15 fl oz/acre	Triple Crown Golf is a <b>Restricted Use Pesticide</b> . 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.	
<b>Earthworm</b>			Usually not a problem. No effective controls available.
<b>Eriophyid Mites</b> (zoysiagrass mite and bermudagrass stunt mite)	azadirachtin (Azatrol)	see label	Registered for use on eriophyid mites in turfgrass.
	bifenthrin (Allectus GC SC, Bifenthrin 2EC, Quali-Pro Bifenthrin, Talstar F)	see label	Registered for use on eriophyid mites in turfgrass.
	chlorpyrifos* (Nufarm Chlorpyrifos)	see label	See label. For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. <b>Restricted Use Pesticide.</b>
	deltamethrin (DeltaGard T&O 5SC)	see label	Registered for use on eriophyid mites in turfgrass.
	lambda-cyhalothrin* (Quali-Pro Lambda GC-O, Scimitar)	see label	Registered for use on eriophyid mites in turfgrass.
	zeta-cypermethrin + bifenthrin + imidacloprid (Triple Crown T&O, Triple Crown Golf)	10-20 fl oz/acre	Triple Crown Golf is a <b>Restricted Use Pesticide</b> . 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.

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

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<b>Pest</b>	<b>Insecticide and Formulation</b>	<b>Amount Per 1,000 Square Feet</b>	<b>Comments/Precautions</b>
<b>Fall Armyworm</b>	acephate* (Orthene T, T&O)	0.5-1.2 oz	Water into soil immediately after application.
	bifenthrin 0.058% + carbaryl 2.3% (Duocide)	2 lb	<b>Not for use on golf courses and sod farms.</b> 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.
	chlorantraniliprole (Acelepryn)	0.046-0.092 fl oz	
	chlorpyrifos* (Nufarm Chlorpyrifos)	see label	See label. For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. <b>Restricted Use Pesticide.</b>
	indoxacarb (Provaunt WDG)	see label	Not labeled for use on sod farms.
	pyrethroids* (Advanced Garden, DeltaGard, Menace, Scimitar, Talstar, Tempo, Cyonara)	see label	
	spinosad (Conserve) SC	0.25 to 1.2 fl oz	Rate varies with size and species.
	zeta-cypermethrin + bifenthrin + imidacloprid (Triple Crown T&O, Triple Crown Golf)	10-15 fl oz/acre	Triple Crown Golf is a <b>Restricted Use Pesticide.</b>
<b>Grasshopper</b>	acephate* (Orthene T, T&O)	0.5 oz	DO NOT mow turfgrass for at least 24 hours after application.
	bifenthrin 0.058% + carbaryl 2.3% (Duocide)	2-4 lb	<b>Not for use on golf courses and sod farms.</b> 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.
	chlorpyrifos* (Nufarm Chlorpyrifos)	see label	See label. For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. <b>Restricted Use Pesticide.</b>
	deltamethrin (DeltaGard) G	2-3 lb	
	lambda-cyhalothrin* (Scimitar, Cyonara)	see label	DO NOT make applications within 20 ft of any body of water. No reentry until spray has dried.
	zeta-cypermethrin + bifenthrin + imidacloprid (Triple Crown T&O, Triple Crown Golf)	10-20 fl oz/acre	Triple Crown Golf is a <b>Restricted Use Pesticide.</b>
<b>Ground Pearl</b>			No effective control; practice good management.
<b>Grub</b> (white, May beetle, chafers, green June beetle, others)	bifenthrin 0.058% + carbaryl 2.3% (Duocide)	4-8 lb	<b>Not for use on golf courses and sod farms.</b> 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.
	carbaryl* (Sevin 80 WSP)	see label	
	chlorantraniliprole (Acelepryn)	0.184-0.367 fl oz	Optimal control when applied at egg hatch. Use higher rates later in summer.
	chlorpyrifos* (Nufarm Chlorpyrifos)	see label	See label. For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. <b>Restricted Use Pesticide.</b>
	clothianidin (Arena) 0.5 G 50 WDG	14-22 oz 0.15-0.22 oz	Mole cricket suppression
	clothianidin + bifenthrin (Aloft)	see label	

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<b>Pest</b>	<b>Insecticide and Formulation</b>	<b>Amount Per 1,000 Square Feet</b>	<b>Comments/Precautions</b>
<b>Grub</b> (cont.) (white, May beetle, chafers, green June beetle and others)	dinotefuran (Zylam) 20 SG	1 oz	Apply at egg hatch.
	imidacloprid* (Merit) 75 WP	3-4 level tsp	Make application prior to egg hatch. (Offers some suppression of caterpillars.)
	imidacloprid + bifenthrin (Allectus)	see label	Rate varies with pest. Different formulations for different sites.
	thiamethoxam (Meridian) 0.33 G 25 WG	60-80 lb/acre 12.7-17 oz/acre	Optimum control when applied from peak flight of adults to peak of egg hatch. Also suppresses mole crickets and chinch bugs.
	trichlorfon (Dylox 80 SP)	3.75 oz	Can be used with some success as a rescue treatment in August and September.
<b>Grub, Green June Beetle (only)</b>	bifenthrin 0.058% + carbaryl 2.3% (Duocide)	4-8 lb	<b>Not for use on golf courses and sod farms.</b> 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.
	carbaryl* (Sevin 80 WSP)	see label	
	chlorantraniliprole (Acelepryn)	0.184-0.367 fl oz	Optimal control when applied at egg hatch. Use higher rates later in summer.
	chlorpyrifos* (Nufarm Chlorpyrifos)	see label	See label. For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. <b>Restricted Use Pesticide.</b>
	clothianidin (Arena) 0.5 G 50 WDG	14-22 oz 0.15-0.22 oz	Mole cricket suppression
	clothianidin + bifenthrin (Aloft)	see label	
	dinotefuran (Zylam) 20 SG	1 oz	Apply at egg hatch.
	imidacloprid* (Merit) 75 WP	3-4 level tsp	Make application prior to egg hatch. DO NOT use on sod farms. (Offers some suppression of caterpillars.)
	imidacloprid + bifenthrin (Allectus)	see label	Rate varies with pest. Different formulations for different sites.
	thiamethoxam (Meridian) 0.33 G 25 WG	60-80 lb/acre 12.7-17 oz/acre	Optimum control when applied from peak flight of adults to peak of egg hatch. Also suppresses mole crickets and chinch bugs.
<b>Grub</b> (Japanese beetle)	<i>B.t.</i> (various products)	see label	
	bifenthrin 0.058% + carbaryl 2.3% (Duocide)	4-8 lb	<b>Not for use on golf courses and sod farms.</b> 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.
	carbaryl* (Sevin 80 WSP)	see label	
	chlorantraniliprole (Acelepryn)	0.184-0.367 fl oz	Optimal control when applied at egg hatch. Use higher rates later in summer.
	chlorpyrifos* (Nufarm Chlorpyrifos)	see label	See label. For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. <b>Restricted Use Pesticide.</b>

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

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<b>Pest</b>	<b>Insecticide and Formulation</b>	<b>Amount Per 1,000 Square Feet</b>	<b>Comments/Precautions</b>
<b>Grub</b> (cont.) (Japanese beetle)	clothianidin (Arena) 0.5 G 50 WDG	14-22 oz 0.15-0.22 oz	Mole cricket suppression
	clothianidin + bifenthrin (Aloft)	see label	
	dinotefuran (Zylam) 20 SG	1 oz	Apply at egg hatch.
	imidacloprid* (Merit) 75 WP	3-4 level tsp	Make application prior to egg hatch. (Offers some suppression of caterpillars.)
	imidacloprid + bifenthrin (Allectus)	see label	Rate varies with pest. Different formulations for different sites.
	thiamethoxam (Meridian) 0.33 G 25 WG	60-80 lb/acre 12.7-17 oz/acre	Optimum control when applied from peak flight of adults to peak of egg hatch. Also suppresses mole crickets and chinch bugs.
	trichlorfon* (Dylox 80 SP)	3.75 oz	Can be used with some success as a rescue treatment in August and September.
<b>Leafhopper, Spittlebug</b>	acephate* (Orthene T, T&O) 75 S	1 oz	
	bifenthrin* (Menace, Talstar, others) F, GC and G forms also available	0.25-0.5 fl oz	Use GC formulation for golf courses.
	bifenthrin 0.058% + carbaryl 2.3% (Duocide)	2-4 lb	<b>Not for use on golf courses and sod farms.</b> 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.
	carbaryl* (Sevin 80 WSP)	see label	
	chlorpyrifos* (Nufarm Chlorpyrifos)	see label	See label. For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. <b>Restricted Use Pesticide.</b>
	deltamethrin (DeltaGard) G	2-3 lb	
	zeta-cypermethrin + bifenthrin + imidacloprid (Triple Crown T&O, Triple Crown Golf)	10-20 fl oz/acre	Triple Crown Golf is a <b>Restricted Use Pesticide.</b>
<b>Millipede</b>	bifenthrin* (Menace, Talstar, others) F, GC and G forms also available	0.25-0.5 fl oz	Use GC formulation for golf courses.
	bifenthrin 0.058% + carbaryl 2.3% (Duocide)	4-8 lb	<b>Not for use on golf courses and sod farms.</b> 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.
	carbaryl* (Sevin 80 WSP)	see label	
	chlorpyrifos* (Nufarm Chlorpyrifos)	see label	See label. For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. <b>Restricted Use Pesticide.</b>
	cypermethrin (Demon) TC	see label	For use on golf courses. See new label.
	lambda-cyhalothrin* (Scimitar, Cyonara)	see label	DO NOT make applications within 20 ft of any body of water. No reentry until spray has dried.
	zeta-cypermethrin + bifenthrin + imidacloprid (Triple Crown T&O, Triple Crown Golf)	10-20 fl oz/acre	Triple Crown Golf is a <b>Restricted Use Pesticide.</b>



**COMMERCIAL TURF AND GOLF COURSE INSECT CONTROL**

<b>Pest</b>	<b>Insecticide and Formulation</b>	<b>Amount Per 1,000 Square Feet</b>	<b>Comments/Precautions</b>
<b>Mole Cricket</b>	acephate* (Orthene T, T&O, Lesco-Fate)	1.0-1.9 oz	Water soil before application. DO NOT water into soil.
	bifenthrin* (Menace, Talstar, others) F, GC and G forms also available	0.5-1.0 fl oz	Use GC formulation for golf course.
	bifenthrin 0.058% + carbaryl 2.3% (Duocide)	4-8 lb	<b>Not for use on golf courses and sod farms.</b> 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.
	carbaryl* baits	see label	
	chlorpyrifos* (Nufarm Chlorpyrifos)	see label	See label. For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. <b>Restricted Use Pesticide.</b>
	cyfluthrin* (Tempo 2, Tempo Ultra)	0.2 fl oz	Home lawn use only.
	deltamethrin (DeltaGard) G	2-3 lb	
	dinotefuran (Zylam) 20 SG	1 oz	Apply at egg hatch.
	entomogenous nematodes*	see label	Various formulations now available. Adequate soil moisture critical for good control.
	fipronil (Chipco Choice) 0.1 G (Top Choice) 0.0143	12.5-25 lb/acre 2 lb	Use slit placement equipment. Apply as a broadcast.
	imidacloprid (Merit) 75 WP 0.5G	4 level tsp 1.8 lb	Apply while crickets are less than 1/2 inch long (June, early July).
	imidacloprid + bifenthrin (Allectus)	see label	Rate varies with pest. Different formulations for different sites.
	indoxacarb (Advion) mole cricket bait 0.22%	1.15-4.6 lb 50-200 lb/acre	Not for use on sod farms.
indoxacarb (Provaunt)	0.275 oz	Must be in possession of a supplemental label for this use at the time of application.	
lambda-cyhalothrin* (Scimitar, Cyonara)	see label	DO NOT make applications within 20 ft of any body of water. No reentry until spray has dried.	
zeta-cypermethrin + bifenthrin + imidacloprid (Triple Crown T&O, Triple Crown Golf)	20-35 fl oz/acre	Triple Crown Golf is a <b>Restricted Use Pesticide.</b>	
<b>Slug, Snail</b>	Mesuro 2 B	1 lb	Apply late in afternoon.
	metaldehyde	see label	
<b>Sod Webworm</b>	acephate* (Lesco-Fate, Orthene T, T&O) (Precise 4G)	0.5-1.0 oz 2.8 lb	Home lawns only. Irrigate immediately.
	azadirachtin* (Azatrol, Neemix, Turplex)	0.5 fl oz	
	<i>Bacillus thuringiensis</i> (various brands)	1-2 lb/acre	
	bifenthrin* (Menace, Talstar, others) F, GC and G formulations also available	0.18-0.25 fl oz	Use GC formulation for golf courses.
	bifenthrin 0.058% + carbaryl 2.3% (Duocide)	2 lb	<b>Not for use on golf courses and sod farms.</b> 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.

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

**COMMERCIAL TURF AND GOLF COURSE INSECT CONTROL**

<b>Pest</b>	<b>Insecticide and Formulation</b>	<b>Amount Per 1,000 Square Feet</b>	<b>Comments/Precautions</b>	
<b>Sod Webworm</b> (cont.)	carbaryl* (Sevin 80 WSP)	see label	See label. For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. <b>Restricted Use Pesticide.</b>	
	chlorantraniliprole (Acelepryn)	0.046-0.092 fl oz		
	chlorpyrifos* (Nufarm Chlorpyrifos)	see label		
	clothianidin (Arena) 0.5 G	14-22 oz		
	50 WDG	0.15-0.22 oz		
	clothianidin + bifenthrin (Aloft)	see label		
	cyfluthrin* (Tempo 2, Tempo Ultra)	0.143 fl oz		Irrigate immediately after application. DO NOT apply to newly seeded stands of bentgrass.
	deltamethrin (DeltaGard) G	2-3 lb		
	dinotefuran (Zylam) 20 SG	1 oz		
	imidacloprid + bifenthrin (Allectus)	see label		Rate varies with pest. Different formulations for different sites.
	indoxacarb (Provaunt) SC	0.0625-0.25 fl oz		Not labeled for use on sod farms.
	lambda-cyhalothrin* (Scimitar, Cyonara)	see label		DO NOT make applications within 20 ft of any body of water. No reentry until spray has dried.
	methomyl (Lannate) 90 SP	1 lb/acre 3 pt/acre		<b>Restricted Use Pesticide.</b> For use on sod farms only. After application, sprinkle irrigate for 15 minutes. 48 hr. REI. Do not make more than 4 applications/crop/year.
	permethrin* (Astro) LV	0.4-0.8 fl oz		Do not graze or feed.
spinosad A and D (Conserve) SC	0.25-1.25 fl oz	Rate varies with size and species.		
trichlorfon* (Dylox 80 SP)	1.5-3.0 oz	Triple Crown Golf is a <b>Restricted Use Pesticide.</b>		
zeta-cypermethrin + bifenthrin + imidacloprid (Triple Crown T&O, Triple Crown Golf)	10-15 fl oz/acre			
<b>Sowbug, Pillbug</b>	bifenthrin* (Talstar) F, GC and G forms also available	0.25-0.5 fl oz	Use GC formulation for golf courses.	
	bifenthrin 0.058% + carbaryl 2.3% (Duocide)	8 lb	<b>Not for use on golf courses and sod farms.</b> 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.	
	carbaryl* (Carbaryl 4L, Sevin SL) (Sevin 80 WSP)	1.5-3 fl oz 2.5-5 lb/acre	See label. For use on golf course turf, turf and ornamentals around industrial buildings and turf and ornamentals in road medians. <b>Restricted Use Pesticide.</b>	
	chlorpyrifos* (Nufarm Chlorpyrifos)	see label		
	cypermethrin* (Demon) TC	see label		
	deltamethrin (DeltaGard) G	2-3 lb/1,000 ft		
	lambda-cyhalothrin* (Scimitar, Cyonara)	see label		
	zeta-cypermethrin + bifenthrin + imidacloprid (Triple Crown T&O, Triple Crown Golf)	10-20 fl oz/acre		
		DO NOT make applications within 20 ft of any body of water. No reentry until spray has dried.		
		Triple Crown Golf is a <b>Restricted Use Pesticide.</b>		

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