

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.

Pests	Insecticide and Formulation	Amount Per 1000 Square Feet	Comments/Precautions
Ant	bifenthrin* (Menace, Talstar, others) F, GC G form also available	0.5-1 fl oz	Use GC formulation for golf courses.
	carbaryl* (Sevin) 80 WSP	1-1.5 oz	
	chlorpyrifos* (Dursban) 2E, 4E, 2G, 50 WP, Pro	See label	For use on golf courses. See new label.
	chlothianidin + bifenthrin (Aloft)	See label	
	cyfluthrin (Tempo 2)	0.143 fl oz	Home lawns only.
	cypermethrin* (Demon) TC	See label	
	deltamethrin (DeltaGard) G	2-3 lb	
	fipronil (Firestar bait)	See label	
	hydramethylnon* (Maxforce G, Amdro)	See label	
lambda-cyhalothrin* (Battle, Scimitar WP, CS, GC)	See label	Do not make applications within 20' of any body of water. No reentry until spray has dried.	
Ant, Red Imported Fire	Treatment is required to ship sod from quarantined to non-quarantined areas. Consult the Arkansas State Plant Board and USDA Program Aid No. 1822, "Imported Fire Ant 2005: Quarantine Treatments for Nursery Stock and Other Regulated Articles," 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: chlorpyrifos, fipronil.		
	Apply all bait products when ants are active and soil temperature is above 60°F. Do not treat if rain is anticipated within 6 hours.		
	abamectin* (Ascend, Varsity) 0.011% bait	5-7 T/mound 1 lb/A	Individual mound treatment rate. Distribute uniformly 5 to 7 level tbsp of bait 2 to 4 ft around base of each mound. Broadcast rate
	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 T/mound See label	Distribute uniformly over mound. For best results, apply early in morning or late afternoon.
	chlorpyrifos (Dursban) 4E, 50W, Pro	See label	Follow label directions.
	chlothianidin + bifenthrin (Aloft)	See label	
	fenoxycarb (Award, Hi-Yield Fire Ant Bait)	1-3 T/mound 1-1.5 lb/A	Mound-to-mound treatment rate Broadcast rate This is an IGR.

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Ant, Red Imported Fire	fipronil (Chipco Firestar, Ceasefire) fire ant bait	5 T/mound 1.5-15 lb/A	Mound-to-mound treatment rate Broadcast rate
	(Maxforce FC 0.00045%)	See label	Apply as a broadcast. May treat up to 4 times per year.
	(Top Choice 0.0143%, Over-N-Out 0.0103%) granular contact insecticide	87 lb/A	Broadcast only
	(Chipco Choice) 0.1% granular contact insecticide	12.5 lb/A	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 T/mound 1-2 lb/A	Mound-to-mound treatment rate Broadcast rate
	imidacloprid + bifenthrin (Allectus, Atera)	See label	Rate varies with pest. Different formulations for different sites.
	indoxacarb (Advion) fire ant bait 0.045%	4 T/mound 1.5 lb/A	Do not apply to top of mound. Distribute uniformly 3 to 4 feet around mound Broadcast rate
	pyrethroids (various) bifenthrin (Menace, Talstar, others) F G form also available cyfluthrin (Tempo) deltamethrin (Deltagard G) lambda-cyhalothrin (Battle, Scimitar CS, GC) permethrin (various)	See label	
	pyriproxyfen (Distance)	1-4 T/mound 1-1.5 lb/A	Mound-to-mound treatment rate Broadcast rate This is an IGR.
S-methoprene (Extinguish)	3-5 T/mound 1-1.5 lb/A	Mound-to-mound treatment rate Broadcast rate This is an IGR.	
S-methoprene + hydramethylnon (Extinguish Plus)	3-5 T/mound 1-1.5 lb/A	Mound-to-mound treatment rate Broadcast rate This is an IGR plus a toxicant.	
spinosad (Eliminator Fire Ant Bait, Justice Fire Ant Bait, Ortho Fire Ant Bait)	4-6 T/mound 2.5-5 lb/A	Mound-to-mound treatment rate Broadcast rate	
Bee and Wasp (Burrowing)	carbaryl* (Sevin) 80 WSP	1.5 oz	
	pyrethroids (Advanced Garden, Battle, Deltagard, Menace, Scimitar, Talstar, Tempo)	See label	

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Billbug	bifenthrin* (Menace, Talstar, others) F, GC G form also available	0.25-0.5 fl oz	Use GC formulation for golf courses.
	chlorantraniliprole (Acelepryn)	0.184-0.46 fl oz	
	chlorpyrifos* (Dursban) 50 WSP, Pro	See label	For use on golf courses; check new label.
	clothianidin (Arena) 0.25 G, 50 WDG	See label	
	clothianidin + bifenthrin (Aloft)	See label	
	deltamethrin (Deltagard) G	2-3 lb	
	imidacloprid* (Merit) 75 WSP	3-4 level tsp	Make application prior to egg hatch.
	imidacloprid + bifenthrin (Allectus, Atera)	See label	Rate varies with pest. Different formulations for different sites.
	lambda-cyhalothrin* (Battle, Scimitar WP, CS, GC)	See label	Observe restrictions near water.
propoxur (Baygon) 1.5 fl oz	1 pt	Treat area thoroughly. Use at least 15 gallons of water per 1000 square feet. Do not allow spray mixture to stand overnight. Mow grass before treatment.	
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.	
Chinch Bug	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 G form also available	0.25-0.5 fl oz	Use GC formulation for golf courses.
	carbaryl* (Sevin) 80 WSP	2.5-3 oz	
	chlorantraniliprole (Acelepryn)	0.184-0.46 fl oz	Suppression.
	clothianidin (Arena) 0.25 G, 50 WDG	See label	
	clothianidin + bifenthrin (Aloft)	See label	
	cypermethrin (Demon) TC	0.33-0.65 fl oz	
	chlorpyrifos* (Dursban) 2E, 4E, 50 WP, Pro	See label	For use on golf courses; check new label.
	cyfluthrin (Tempo 2)	0.2 fl oz	Home lawns only.
	deltamethrin (Deltagard) G	2-3 lb	
imidacloprid + bifenthrin (Allectus, Atera)	See label	Rate varies with pest. Different formulations for different sites.	
lambda-cyhalothrin* (Battle, Scimitar WP, CS, GC)	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		
Cutworm, Armyworm	acephate* (Orthene T, T&O)	1.2-2.4 oz	Commercial and residential turf only.
	azadirachtin* (Neemix, Turplex)	See label	
	bifenthrin* (Menace, Talstar, others) F, GC G form also available	0.18-0.25 fl oz	Use GC formulation for golf courses.
	<i>Bt</i> products (various labels)	See label	
	carbaryl* (Sevin) 80 WSP and 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 one to three days after treatment.

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Pests	Insecticide and Formulation	Amount Per 1000 Square Feet	Comments/Precautions
Cutworm, Armyworm	chlorantraniliprole (Acelepryn)	0.046-0.092 fl oz	For use on golf courses; check new label.
	chlorpyrifos* (Dursban) 4 E, 2 ES, 50 WP, Pro	See label	
	clothianidin (Arena) 0.25 G, 50 WDG	See label	
	chlothianidin + bifenthrin (Aloft)	See label	Home lawns only.
	cyfluthrin* (Tempo 2)	0.143 fl oz	
	deltamethrin (Deltagard) G	2-3 lb	Read and follow special application instructions. Effective only against small cutworms. Can be used two times per season at these rates.
	entomogenous nematodes*	See label	
	halofenozide* (Mach 2)		
	2 SC	1.5 fl oz	
	1.5 G	1 lb	
	imidacloprid + bifenthrin (Allectus, Atera)	See label	
indoxacarb (Provaunt) WDG	See label	Not labeled for use on sod farms.	
lambda-cyhalothrin* (Battle, Scimitar WP, CS, GC)	See label	Do not make applications within 20 feet of any body of water. No reentry until spray has dried.	
spinosad A or D (Conserve) SC	0.25-1.25 fl oz	Rate varies with size and species.	
trichlorfon (Dylox, Proxol) 80 SP	1.5-3 oz		
Earthworm			Usually not a problem. No effective controls available.
Eriophyid Mites (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 (Chlorpyrifos PRO 4, Dursban, Quali-Pro Chlorpyrifos 4E)	See label	Registered for use on sod farms for eriophyid mite control.
	deltamethrin (DeltaGard T&O 5SC)	See label	Registered for use on eriophyid mites in turfgrass.
	dicofol (Kelthane 50 WSP)	See label	Registered for use on sod farms and golf courses for eriophyid mite control. NOT registered for use on residential turf.
	lambda-cyhalothrin (Quali-Pro Lambda GC-O, Scimitar)	See label	Registered for use on eriophyid mites in turfgrass.
Fall Armyworm	acephate* (Orthene T, T&O)	0.5-1.2 oz	Water in immediately after application.
	chlorantraniliprole (Acelepryn)	0.046-0.092 fl oz	
	chlorpyrifos* (Dursban) 4 E, 2 E, 50 WP, Pro	See label	For use on golf courses; check new label.
	halofenozide* (Mach 2)		Can be used two times per season at these rates.
	2 SC	1.5 fl oz	
	1.5 G	1 lb	
	indoxacarb (Provaunt) WDG	See label	Not labeled for use on sod farms.
pyrethroids* (Advanced Garden, Battle, Deltagard, Menace, Scimitar, Talstar, Tempo)	See label		

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

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Pests	Insecticide and Formulation	Amount Per 1000 Square Feet	Comments/Precautions	
Grasshopper	acephate* (Orthene T, T&O)	0.5 oz	Do not mow turfgrass for at least 24 hours after application.	
	deltamethrin (Deltagard) G	2-3 lb		
	lambda-cyhalothrin* (Battle, Scimitar WP, CS, GC)	See label		
Ground Pearl			No effective control; practice good management.	
Grub (White, May Beetle, Chafers, Green June Beetle, and Others)	carbaryl* (Sevin) 80 WSP	3 oz	Optimal control when applied at egg hatch. Use higher rates later in summer.	
	chlorantraniliprole (Acelepryn)	0.184-0.367 fl oz		
	clothianidin (Arena) 0.25 G, 50 WDG	See label		
	chlothianidin + bifenthrin (Aloft)	See label		
	halofenozide* (Grubex, Mach 2) 2 SC 1.5 G	2.9 fl oz 3 lb		Apply during egg hatch or early instar grub development.
	imidacloprid* (Merit) 75 WP	3-4 level tsp		Make application prior to egg hatch. (Offers some suppression of caterpillars.)
	imidacloprid + bifenthrin (Allectus, Atera)	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, Proxol) 80 SP	3.75 oz		
Grub, Green June Beetle (only)	carbaryl* (Sevin) 80 WSP	1-1.5 oz	Optimal control when applied at egg hatch. Use higher rates later in summer.	
	chlorantraniliprole (Acelepryn)	0.184-0.367 fl oz		
	chlorpyrifos* (Dursban) 50 WSP, Pro	See label		For use on golf courses; see new label.
	clothianidin (Arena) 0.25 G, 50 WDG	See label		
	chlothianidin + bifenthrin (Aloft)	See label		
	halofenozide* (Grubex, Mach 2) 2 SC 1.5 G	2.9 fl oz 3 lb		Apply during egg hatch or early instar grub development.
	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, Atera)	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.

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Grub, Japanese Beetle	<i>Bt</i> (various products)	See label	
	carbaryl* (Sevin) 80 WSP	3 oz	
	chlorantraniliprole (Acelepryn)	0.184-0.367 fl oz	Optimal control when applied at egg hatch. Use higher rates later in summer.
	clothianidin (Arena) 0.25 G, 50 WDG	See label	
	chlothianidin + bifenthrin (Aloft)	See label	
	halofenozide* (Grubex, Mach 2) 2 SC 1.5 G	2.9 fl oz 3 lb	Apply during egg hatch or early instar grub development.
	imidacloprid* (Merit) 75 WP	3-4 level tsp	Make application prior to egg hatch. (Offers some suppression of caterpillars.)
	imidacloprid + bifenthrin (Allectus, Atera)	See label	Rate varies with pest. Different formulations for different sites.
	milky disease spore*	See label	
	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, Proxol) 80 SP	3.75 oz		
Leafhopper, Spittlebug	acephate* (Orthene T, T&O) 75 S	1 oz	
	bifenthrin* (Menace, Talstar, others) F, GC G form also available	0.25-0.5 fl oz	Use GC formulation for golf courses.
	carbaryl* (Sevin) 80 WSP	0.75-1.5 oz	
	chlorpyrifos* (Dursban) 4 E 50 WSP Pro	See label	For use on golf courses; check new label.
	deltamethrin (Deltagard) G	2-3 lb	
	Millipede	bifenthrin* (Menace, Talstar, others) F, GC G form also available	0.25-0.5 fl oz
carbaryl* (Sevimol) (Sevin) 80 WSP		1.5-3 oz 0.75-1.5 oz	
chlorpyrifos* (Dursban) 2 E, Pro		See label	For use on golf courses; check new label.
cypermethrin (Demon) TC		See label	
lambda-cyhalothrin* (Battle, Scimitar WP, CS, GC)		See label	Do not make applications within 20 feet of any body of water. No reentry until spray has dried.
Mole Cricket	acephate* (Orthene T, T&O, Lesco-Fate) (Precise 4G)	1-1.9 oz 2.8 lb	Water soil before application. Do not water in. Apply within two weeks of egg hatch for prevention. Irrigate immediately.
	bifenthrin* (Menace, Talstar, others) F, GC G form also available	0.5-1 fl oz	Use GC formulation for golf course.

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Pests	Insecticide and Formulation	Amount Per 1000 Square Feet	Comments/Precautions
Mole Cricket (cont.)	carbaryl* (Sevin) baits	See label	
	chlorpyrifos* (Dursban) B		
	cyfluthrin* (Tempo 2, Tempo Ultra)	0.2 fl oz	Home lawn use only.
	deltamethrin (Deltagard) G	2-3 lb	
	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	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, Atera)	See label	Rate varies with pest. Different formulations for different sites.
	indoxacarb (Advion) mole cricket bait 0.22%	1.15-4.6 lb	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* (Battle, Scimitar WP, CS, GC)	See label	Do not make applications within 20 feet of any body of water. No reentry until spray has dried.
	propoxur (Baygon) B	See label	
	Slug, Snail	Mesuroil 2 B	1 lb
metaldehyde		See label	
Sod Webworm	acephate* (Lesco-Fate, Orthene T, T&O) (Precise 4G)	0.5-1 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 G form also available	0.18-0.25 fl oz	Use GC formulation for golf courses.
	carbaryl* (Sevin) 80 WSP	2.5-3 oz	
	chlorantraniliprole (Acelepryn)	0.046-0.092 fl oz	
	chlorpyrifos* (Dursban) 4 E, 2 E, 5 G, Pro	See label	For use on golf courses; check new label.
	clothianidin (Arena) 0.25 G, 50 WDG	See label	
	chlothianidin + bifenthrin (Aloft)	See label	
	cyfluthrin* (Tempo 2, Tempo Ultra)	0.143 fl oz	Irrigate immediately after application. Do not apply to newly seeded stands or bentgrass.
	deltamethrin (Deltagard) G	2-3 lb	
	halofenozide (Mach 2) 2 SC 1.5 G	1.5 fl oz 1.0 lb	Can be used two times per season at these rates.

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Pests	Insecticide and Formulation	Amount Per 1000 Square Feet	Comments/Precautions
Sod Webworm	imidacloprid + bifenthrin (Allectus, Atera)	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* (Battle, Scimitar WP, CS, GC)	See label	Do not make applications within 20 feet of any body of water. No reentry until spray has dried.
	methomyl (Lannate) 90 SP	0.4-0.8 oz	
	permethrin* (Astro)	0.4-0.8 fl oz	
	spinosad A and D (Conserve) SC	0.25-1.25 fl oz	Rate varies with size and species.
	trichlorfon* (Dylox, Proxol) 80 SP	1.5-3 oz	
Sowbug, Pillbug	bifenthrin* (Talstar) F, GC G form also available	0.25-0.5 fl oz	Use GC formulation for golf courses.
	carbaryl* (Sevin) 80 WSP	0.75-1.5 oz	
	cypermethrin* (Demon) TC	See label	
	deltamethrin (Deltagard) G	2-3 lb	
	lambda-cyhalothrin* (Battle, Scimitar WP, CS, GC)	See label	Do not make applications within 20 feet of any body of water. No reentry until spray has dried.

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