



# Turfgrass Pesticide Suggestions 1999



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Recommendations in this publication are based upon information on manufacturer's labels and performance in a limited number of trials. Because environmental conditions, species variety response, methods of application and manufacturing methods may vary, the performance of any one chemical may not always conform to the safety and pest control standards indicated by experimental data.

The information given herein is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Texas Agricultural Extension Service or Texas A&M University is implied. Individuals involved in the application of agricultural chemicals are solely responsible for compliance of label recommendations for use and application. Applicators are urged to carefully read the label of all pesticides they use and follow the directions carefully. For further information or assistance contact your county Texas Agricultural Extension Service agent.

# Turfgrass Diseases

## Disease Control

Disease	Product	Rate (oz / 1000 ft <sup>2</sup> )	Application Interval (days)
<b>Algae</b>	Algaen-X (Scott)	3200.0	10 to 14
	Chlorothalonil 4L (Terra)	2.0 to 7.5	7 to 14
	Daconil 2787 Flowable (Zeneca)	3.0 to 11.0	7 to 14
	Daconil Ultrex (Zeneca)	1.6 to 7.3	
	Daconil Weather Stik (Zeneca)	2.2 to 7.6	
	Dithane T/O (Rohm and Haas)	6.0	7 to 14
	Dithane WF (Rohm and Haas)	9.6	
	Flowable Mancozeb, 4 (Lesco)	9.6	7 to 14
	Fore (Rohm and Haas)	6.0	7 to 14
	Fore FloXL (Rohm and Haas)	9.6	
	Fore WSP T&O (Rohm and Haas)	6.0	
	Mancozeb DG (Lesco)	6.0	7 to 14
	Manicure 6F (Lesco)	2.2 to 7.6	7 to 14
	Manicure Ultex Turf Care (Lesco)	1.6 to 3.6	
	Nu-Cop 3L (Micro Flo)	10.7	-
	Nu-Cop 50DF (Micro Flo)	64.0	-
	Protect T/O (Cleary)	6.0	7 to 14
Thalonil 4L (Terra)	3.0 to 11.0	7 to 14	
Thalonil 90DF (Terra)	3.5 to 6.5	14 to 28	
Thalonil 90DF WSP (Terra)	3.5 to 6.5	14 to 28	
<b>Fairy Ring</b>	ProStar 70 WP (AgroEvo)	2.2 to 4.5	14 to 21
<b>Gray Leaf Spot</b>	Banner Maxx (Novartis)	1.0 to 2.0	14
	Chlorothalonil 4L (Terra)	2.0 to 7.5	7 to 10
	Daconil 2787 Flowable (Zeneca)	3.0 to 11.0	7 to 10
	Daconil Ultrex (Zeneca)	5.0 to 20.0	
	Daconil Weather Stik (Zeneca)	2.1 to 7.6	
	Duosan WP (Scotts)	4.0 to 6.0	5 to 14
	Duosan WSB (Scotts)	4.0 to 6.0	
	Heritage (Zeneca)	0.2 to 0.4	14 to 28
	Manicure 6F (Lesco)	2.1 to 7.6	7 to 10
	Manicure T/O F (Lesco)	8.0 to 12.0	10 to 14
	Manicure Ultrex Turf Care (Lesco)	1.9 to 7.3	7 to 10
	Sentinel 40WG (Novartis)	0.33	21 to 28
	Spectro 90WDG (Cleary)	8.0 to 12.0	7 to 21
	Thalonil 4L (Terra)	3.0 to 11.0	7 to 10
	Thalonil 90DF (Terra)	1.75 to 6.5	
Thalonil 90DF WSP (Terra)	1.9 to 6.6		
Twosome Flowable (Lesco)	3.0 to 9.0	7 to 10	
<b>Leaf Spot (Helminthosporium)</b>	26019, Chipco (Rhone-Poulenc)	1.0 to 2.0	14 to 28
	26GT Flo, Chipco (Rhone-Poulenc)	3.0 to 4.0	
	Banner Maxx (Novartis)	1.0 to 4.0	14
	Chlorothalonil 4L (Terra)	2.0 to 7.5	7 to 10

<b>Disease</b>	<b>Product</b>	<b>Rate (oz / 1000 ft<sup>2</sup>)</b>	<b>Application Interval (days)</b>
<b>Leaf Spot (Helminthosporium) (continued)</b>	Curalan DF (BASF)	1.0 to 2.0	14 to 28
	Daconil 2787 Flowable (Zeneca)	3.0 to 11.0	7 to 10
	Daconil Ultrex (Zeneca)	1.8 to 7.3	
	Daconil Weather Stik (Zeneca)	2.2 to 7.6	
	Heritage (Zeneca)	0.2 to 0.4	14 to 21
	Manicure 6F (Lesco)	2.2 to 7.6	7 to 10
	Manicure T/O F (Lesco)	8.0 to 12.0	7 to 14
	Manicure Ultrex Turf Care (Lesco)	1.9 to 7.3	7 to 10
	Protect T/O (Cleary)	4.0	7 to 14
	Proturf Fluid Fungicide (Scotts)	1.1 to 2.1	7 to 14
	Spectro 90WDG (Cleary)	3.0 to 8.0	7 to 21
	Thalonil 4L (Terra)	3.0 to 11.0	7 to 10
	Thalonil 90DF (Terra)	1.75 to 6.5	
	Thalonil 90DF WSP (Terra)	1.75 to 6.5	
Twosome Flowable (Lesco)	3.0 to 5.25	14 to 21	
<b>Powdery Mildew</b>	Accost 1G (UHS)	1.5 to 3.0	14 to 30
	Banner Maxx (Novartis)	1.0 to 2.0	14 to 28
	Rubigan A.S. (Dow AgroSciences)	2.0 to 4.0	-
	Sentinel 40WG (Novartis)	0.16 to 0.33	21 to 28
	Twosome Flowable (Lesco)	8.0 to 16.0	30
<b>Pythium Diseases</b>	Aliette Signature, Chipco (Rhone-Poulenc)	4.0 to 8.0	14 to 21
	Aliette T&O (Terra)		
	Aliette WDG, Chipco (Rhone-Poulenc)		
	Banol (AgroEvo)	1.3 to 4.0	7 to 21
	Heritage (Zeneca)	0.4	10 to 14
	Koban 1.3G (Scotts)	48.0	5 to 10
	Koban 30 (Scotts)	2.0 to 4.5	
	Prodigy 80DG (Lesco)	4.0 to 8.0	14 to 21
	Proturf Pythium Control (Scotts)	20.5 to 41.0	7 to 21
	Subdue 2X WSP (Novartis)	0.11 to 0.56	7 to 21
Subdue GR Granular (Novartis)	5.0 to 25.0	7 to 14	
Subdue Maxx (Novartis)	0.5 to 1.0	7 to 21	
<b>Rhizoctonia Brown Patch</b>	26019, Chipco (Rhone-Poulenc)	1.0 to 2.0	14 to 28
	26GT Flo, Chipco (Rhone-Poulenc)	2.0 to 4.0	
	3336 F (Cleary)	1.0 to 2.0	5 to 14
	3336 G (Cleary)	24.0 to 48.0	7 to 14
	3336 WP (Cleary)	2.0	7 to 14
	Accost 1G (UHS)	24.0 to 48.0	14 to 30
	Banner Maxx (Novartis)	1.0 to 2.0	14 to 21
	Bayleton 0.5% + 17-0-17 Elite (Lesco)	48.0 to 96.0	15 to 30
	Cavalier 2G (Lesco)	24.0 to 48.0	7 to 14
	Cavalier 4.5 F (Lesco)	1.0 to 2.0	5 to 14
	Cavalier 50 WSB (Lesco)	2.0	7 to 14
	Chlorothalonil 4L (Terra)	2.0 to 7.5	7 to 10
	Curalan (BASF)	1.0 to 2.0	14 to 28
	Curalan DF (BASF)		
	Curalan EG (BASF)		
	Daconil 2787 Flowable (Zeneca)	3.0 to 11.0	7 to 14
Daconil Ultrex (Zeneca)	1.9 to 7.3		

<b>Disease</b>	<b>Product</b>	<b>Rate (oz / 1000 ft<sup>2</sup>)</b>	<b>Application Interval (days)</b>
<b>Rhizoctonia Brown Patch (continued)</b>	Daconil Weather Stik (Zeneca)	2.2 to 7.6	7 to 14
	Defend 10G (Cleary)	120.0	21 to 28
	Defend 4F (Cleary)	16.0 to 24.0	
	Duosan WP (Scotts)	4.0 to 6.0	5 to 14
	Duosan WSB (Scotts)		
	Eagle WSP (Rohm and Haas)	0.6	14
	Engage 10G (UHS)	120.0	21 to 28
	Engage 75W (UHS)	16.0	
	Fore FloXL (Rohm and Haas)	2.0	5 to 14
	Fore WSP T&O (Rohm and Haas)	1.0 to 2.0	
	Granular Turf Fungicide (Lesco)	24.0 to 48.0	15 to 30
	Heritage (Zeneca)	0.2 to 0.4	14 to 28
	Manicure 6F (Lesco)	2.2 to 7.6	7 to 14
	Manicure T/O F (Lesco)	8.0 to 12.0	
	Manicure Ultrex Turf Care (Lesco)	1.9 to 7.3	
	Penstar 10G PCNB (Scotts)	120.0	21 to 28
	Penstar 75WP PCNB (Scotts)	16.0	
	Penstar Flo (Scotts)	24.0	
	ProStar 70WP (AgroEvo)	1.5 to 2.2	14 to 21
	Protect T/O (Cleary)	4.0	7 to 14
	Proturf Fluid Fungicide (Scotts)	1.1 to 2.1	7 to 14
	Revere 40000 (Lesco)	16.0 to 24.0	21 to 28
	Revere WSP T&O (Lesco)	16	
	Rubigan A.S. (Dow AgroSciences)	1.5	7 to 14
	Sentinel 40WG (Novartis)	0.25 to 0.33	21 to 28
	Spectro 90WDG (Cleary)	3.0 to 8.0	7 to 21
	Terraclor 75WP T&O (Uniroyal Chemical)	16.0	21 to 28
	Thalonil 4L (Terra)	3.0 to 11.0	7 to 14
	Thalonil 90DF (Terra)	1.75 to 6.5	
	Thalonil 90DF WSP (Terra)	1.75 to 6.5	
	Touche Flowable (Lesco)	1.0 to 2.0	14 to 28
	Turfcide 10% Granular (Uniroyal Chemical)	32.0 to 120.0	7 to 28
Turfcide 400 (Uniroyal Chemical)	4.5 to 24.0		
Twosome Flowable (Lesco)	3.0 to 6.0	7 to 10	
Vorlan DF (Scotts)	2.0	14 to 28	
Vorlan Flo (Scotts)	1.0 to 2.0		
<b>Rust</b>	Accost 1G (UHS)	24.0 to 48.0	14 to 30
	Banner Maxx (Novartis)	1.0 to 2.0	7 to 14
	Bayleton 0.5% + 17-0-17 Elite (Lesco)	48.0 to 96.0	15 to 30
	Chlorothalonil 4L (Terra)	4.0 to 7.5	7 to 14
	Daconil 2787 Flowable (Zeneca)	6.0 to 11.0	7 to 14
	Daconil Ultrex (Zeneca)	4.0 to 7.5	
	Daconil Weather Stik (Zeneca)	4.0 to 7.5	
	Daconil Zn (Zeneca)	6.0 to 11.0	
	Dithane T/O (Rohm and Haas)	4.0	7 to 14
	Dithane WF (Rohm and Haas)	6.4	
	Duosan WP (Scotts)	4.0 to 6.0	5 to 14
	Duosan WSB (Scotts)		
	Flowable Mancozeb 4 (Lesco)	6.4	7 to 14
	Fore (Rohm and Haas)	4.0	7 to 14
	Fore FloXL (Rohm and Haas)	6.4	

<b>Disease</b>	<b>Product</b>	<b>Rate (oz / 1000 ft<sup>2</sup>)</b>	<b>Application Interval (days)</b>
<b>Rust (continued)</b>	Fore WSP T&O (Rohm and Haas)	4.0	7 to 14
	Mancozeb DG (Lesco)	4.0	7 to 14
	Manicure 6 Flowable (Lesco)	4.2 to 7.6	7 to 14
	Manicure T/O Flowable (Lesco)	8.0 to 12.0	
	Manicure Ultex Turf Care (Lesco)	3.7 to 7.3	
	Protect T/O (Cleary)	4.0	7 to 14
	Sentinel 40WG (Novartis)	0.16	28
	Spectro 90WDG (Cleary)	3.0 to 8.0	7 to 21
	Thalonil 4L (Terra)	6.0 to 11.0	7 to 14
	Thalonil 90DF (Terra)	3.5 to 6.5	
	Thalonil 90DF WSP (Terra)	3.5 to 6.5	
Twosome Flowable (Lesco)	6.0 to 9.0	7 to 14	
<b>Sclerotinia Dollar Spot</b>	26019, Chipco (Rhône-Poulenc)	1.0 to 2.0	14 to 28
	26GT Flo, Chipco (Rhône-Poulenc)	2.0 to 4.0	
	3336 WP (Cleary)	2.0	7 to 14
	Banner Maxx (Novartis)	0.5 to 2.0	7 to 28
	Bayleton 0.5% + 17-0-17 Elite (Lesco)	24.0 to 96.0	14 to 30
	Chlorothalonil 4L (Terra)	2.0 to 7.5	7 to 14
	Curalan DF (BASF)	1.0 to 2.0	21 to 28
	Curalan EG (BASF)	1.0 to 2.0	
	Daconil Ultrex (Zeneca)	1 to 7.4	7 to 21
	Daconil Weather Stik (Zeneca)	2.2 to 7.6	7 to 14
	Defend 10G (Cleary)	80.0 to 120.0	21 to 28
	Defend 4F (Cleary)	11.0 to 16.0	
	Eagle WSP (Rohm and Haas)	0.5 to 1.2	14 to 28
	Engage 75W (UHS)	7.0 to 10.0	21 to 28
	Fore WSP T&O (Rohm and Haas)	1.1 to 2.1	7 to 14
	Manicure 6F (Lesco)	2.2 to 7.6	7 to 14
	Manicure T/O F (Lesco)	8.0 to 12.0	
	Manicure Ultrex Turf Care (Lesco)	1.9 to 7.3	
	Proturf Fluid Fungicide (Scotts)	1.1 to 2.1	7 to 14
	Revere 40000 (Lesco)	11.0 to 16.0	21 to 28
	Revere WSP T&O (Lesco)	7.0 to 10.0	
	Rubigan A.S. (Dow AgroSciences)	0.75	10 to 21
	Sentinel 40WG (Novartis)	0.25 to 0.33	21 to 28
	Spectro 90WDG (Cleary)	3.0 to 8.0	7 to 21
	Terraclor 75WP T&O (Uniroyal Chemical)	7.0 to 10.0	21 to 28
	Turficide 400 (Uniroyal Chemical)	10.5 to 15.0	21 to 28
	<b>Slime Mold</b>	Dithane T/O (Rohm and Haas)	4.0 to 8.0
Dithane WF (Rohm and Haas)		6.4 to 12.8	7 to 14
Flowable Mancozeb 4 (Lesco)		6.4 to 12.8	7 to 14
Fore (Rohm and Haas)		4.0 to 8.0	7 to 14
Fore FloXL (Rohm and Haas)		6.4 to 12.8	
Fore WSP T&O (Rohm and Haas)		4.0 to 8.0	
Mancozeb DG (Lesco)		4.0 to 8.0	7 to 14
Protect T/O (Cleary)	4.0 to 8.0	7 to 14	
<b>Southern Blight</b>	Accost 1G (UHS)	48.0 to 96.0	60 to 90
	Bayleton 0.5% + 17-0-17 Elite (Lesco)	48.0 to 96.0	60 to 90
	Granular Turf Fungicide (Lesco)	48.0 to 96.0	60 to 90
	Heritage (Zeneca)	0.2 to 0.4	14 to 28
	ProStar 70WP (AgroEvo)	1.5	21 to 28
	Sentinel 40WG (Novartis)	0.16 to 0.25	14 to 28

Disease	Product	Rate (oz / 1000 ft <sup>2</sup> )	Application Interval (days)
<b>Spring Dead Spot</b>	Banner Maxx (Novartis)	4.0	30
	Eagle WSP (Rohm and Haas)	0.6 to 1.2	28
	Heritage (Zeneca)	0.4	28
	Patchwork (Riverdale)	64.0 to 96.0	-
	Rubigan A.S. (Dow AgroSciences)	4.0 to 6.0	Sept. to Nov.
	Twosome Flowable (Lesco)	18.0	-
<b>Stripe Smut</b>	3336 F (Cleary)	5.0 to 10.0	14 to 21
	3336 G (Cleary)	96.0 to 192.0	7 to 14
	3336 WP (Cleary)	4.0 to 8.0	7 to 14
	Accost 1G (UHS)	48.0	Spring
	Banner Maxx (Novartis)	1.0 to 2.0	Fall or Spring
	Bayleton 0.5% + 17-0-17 Elite (Lesco)	96.0	Spring
	Cavalier 2G (Lesco)	96.0 to 192.0	7 to 14
	Cavalier 4.5 F (Lesco)	5.0 to 10.0	14 to 21
	Cavalier 50 WSB (Lesco)	4.0 to 8.0	7 to 14
	Fungo 50WSB (Scotts)	4.0 to 8.0	Oct. or Spring
	Fungo Flo (Scotts)	5.0 to 10.0	14 to 21
	Granular Turf Fungicide (Lesco)	48.0	Spring
	Rubigan A.S. (Dow AgroSciences)	15.0	Oct. or Spring
	Sentinel 40WG (Novartis)	0.33	Fall or Spring
<b>Take-all Patch</b>	Banner Maxx (Novartis)	2.0 to 4.0	Fall or Spring
	Heritage (Zeneca)	0.4	28
	Patchwork (Riverdale)	64.0 to 128.0	30
	Rubigan A.S. (Dow AgroSciences)	4.0 to 8.0	30
	Twosome Flowable (Lesco)	18.0	2 applications

Disease	Nematicide and Formulation	Amount of Formulation Per 1,000 sq ft	Precautions and Remarks
<b>NEMATODES*</b>	Nemacur (fenamiphos) 10 G 3 EC	2.3 lb 9.7 fl oz	Distribute evenly over area. Irrigate area immediately using a minimum of 0.5 in. of water. Do not treat newly seeded areas. Do not use on residential lawns or public recreation areas other than golf courses. Do not apply granular nematicides with hand-held spreaders that might allow the dust to be inhaled. Do not apply where water runoff is likely to occur. See label directions. 3 EC is not recommended for use on tees and greens.
	Mocap 10 G (ethoprop) (For use golf courses)	4.6 lb (2.3 lb for multiple applications)	Irrigate immediately after application with at least 0.1 in. of water. Always wear protective clothing and use appropriate equipment during application and handling. Avoid contact with granules or breathing dust. To prevent turfgrass injury, avoid application to wet foliage and exceeding recommended rates or overlapping. Do not use on newly seeded areas. Bentgrass and ryegrass are more sensitive to Mocap than other grasses. Do not use more than 400 lb of Mocap 10 G per acre per year.

\* Sting nematodes can cause severe damage in sandy soils, and nematicides may be needed to grow high-quality turf if these nematodes are present. Other nematodes are difficult to control in turf, and good management may help the turf tolerate these nematodes.

# Turfgrass Insects

# Insect Control

Pest	Insecticide and Formulation*	Amounts per 1,000 Sq. Ft.	Precautions and Remarks
<b>ANT</b> (Also see IMPORTED FIRE ANT)	bendiocarb (Turcam) 76 WP** 2.5 G	1 oz 0.9 to 1.9 lb	Treat mounds and surrounding areas or apply broadcast to entire area. Water after application
	chlorpyrifos (Dursban)** 4 E 2 E 2 CG 50 WP Pro	.75 oz 1.5 oz 1.25 lb 0.75 oz 1.5 oz	
	cyfluthrin (Tempo 2)	0.135 to .204 fl oz	Home lawns only.
	diazinon** 4 E AG 600 5 G	2 to 3 fl oz 1.5 to 2.5 fl oz 2 lb	Not for use on golf courses or sod farms
	carbaryl (Sevin) 80 WSP	1 to 1.5 oz	
	lambda-cyhalothrin Scimitar WP Scimitar CS Scimitar GC	3 to 6 g 3.4 to 7 ml 3.4 to 7 ml	Do not make applications within 20 ft of any body of water. No reentry until spray has dried. GC formulation restricted use for golf courses.
	bifenthrin (Talstar) flowable	0.23 to 0.46 fl oz	Use GC formulation for golf course.
<b>BEE and WASP</b> (Burrowing)	bendiocarb (Turcam) 76 WP** carbaryl (Sevin) 80 WSP**	0.5 to 1 oz  1.5 oz	Most burrowing wasps and bees are parasitic on other insects. Treatment is seldom needed. Water in thoroughly. Apply in late afternoon. Bee, wasp, and hornet sprays in pressurized cans are also effective. Granules are also effective as broadcast treatments.
<b>BILLBUG</b>	diazinon** 4 E AG 600 chlorpyrifos (Dursban)** 50 WSP Pro	2.0 to 3.0 oz 4 oz  0.75 to 1.5 oz 1.5 to 3 oz	Treat area thoroughly. Use at least 15 gal water per 1,000 sq. ft. Do not allow spray mixture to stand overnight. Mow grass before treatment.
	isofenphos (Oftanol) 1.5 G** 2 L	3 lbs 3 oz	Not for use on commercial sod, commercial seed production. Water in immediately. For control of larvae only.  Apply in spring when adults first appear.
	imidacloprid (Merit) 75 WSP	1.6 oz packet/ 8,250 to 11,000 sq ft	Make application prior to egg hatch. Do not use on sod farms.
	bifenthrin (Talstar) flowable GC	0.23 to 0.46 fl oz  .25 to .5 fl oz/1,000 sq ft	Use GC formulation for golf course.
<b>CHINCH BUG</b>	bendiocarb (Turcam) 76 WP ** 2.5 G	0.5 to 1 oz 0.9 to 1.9 lb	For golf course use only.
	ethoprop (Mocap 10G)	1.15 lb	
	cyfluthrin (Tempo 2)	0.2 fl oz	Home lawns only.

Pest	Insecticides and Formulation*	Amounts per 1,000 Sq. Ft	Precautions and Remarks
<b>CHINCH BUG (continued)</b>	permethrin (Astro) 3.2 E diazinon** 4 EC AG 600 Carbaryl (Sevin) 80 WSP** chlorpyrifos (Dursban)** 50 WP Pro Isafenphos (Oftanol)** 1.5G 2 L	0.4 to 0.8 fl oz  2 to 3 oz 4.0 oz  2.8 to 3.7 oz  0.75 oz 1.5 oz  1.5 to 3 lbs 1.5 to 3 fl oz	Residential and commercial use. Irrigate turf before application. Apply in at least 15 gal water per 1,000 sq ft. Repeat as needed. Granules can be used and watered in thoroughly.       Irrigate immediately with at least 0.5 in. water. Allow grass to dry before reentry. Do not exceed 2 applications per year.
	Lambda-cyhalothrin Scimitar WP Scimitar CS Scimitar GC  Acephate (Orthene, T, T&O)** 75 S	6g .23 oz .23 oz  1.2 to 2.4 oz	Do not make applications within 20 ft of any body of water. No reentry until spray has dried. GC formulation restricted use for golf courses only.   Commercial and residential turf only.
	bifenthrin (Talstar) flowable GC	0.23 to 0.46 fl oz  .25 to .5 fl oz	Use GC formulation for golf course applications
	<b>CUTWORM, ARMYWORM</b>	Carbaryl (Sevin) 80 WSP** and baits cyfluthrin (Tempo 2) diazinon 4 EC AG 600 Acephate (Orthene, T, T&O) 75 S isofenphos (Oftanol)** 2 L chlorpyrifos (Dursban) 50 WP Pro	0.92 to 1.8 oz 0.135 to .204 fl oz  2 to 3 oz 4 oz  0.5 to 2.4 oz  1.5 to 3 fl oz  0.75 oz 1.5 oz
Trichlorfon (Proxol or Dylox) 80 Sp**		2.5 to 3.75 oz	
Lambda-cyhalothrin Scimitar WP Scimitar CS Scimitar GC Acephate (Orthene, T, T&O)** 75 S		3 to 6 g 0.11 to 0.22 oz 0.11 to 0.22 oz  1.2 to 2.4 oz	Do not make applications within 20 ft of any body of water. No reentry until spray has dried. GC formulation restricted use for golf courses only.
bifenthrin (Talstar) flowable GC		0.23 to 0.46 fl oz  0.25 fl oz	Use GC formulation for golf courses applications.
halofenozide (Mach 2) 2 L 1.5 G		1.5 fl oz 1.55 lb	Can be used 2 times per season at these rates.
spinosyn A or D (Conserve) SC		0.25 TO 1.25 fl oz (rate varies with size and species)	
<b>EARTHWORM</b>		NONE	

Pest	Insecticides and Formulation	Amounts Per 1,000 Sq Ft	Precautions and Remarks
<b>FALL ARMYWORM</b>	chlorpyrifos (Dursban) 50 WP Pro Isofenphos (Oftanol) 2L acephate (Orthene, T, T&O) 75 S	0.75 oz 1.5 oz  1.5 to 3 fl oz  0.5 to 1.2 oz	Treat in late afternoon. Use adequate water for good coverage but do not flood. Do not cut grass for 1 to 3 days after treatment.  Water in immediately after application.
	bifenthrin (Talstar) flowable GC	0.23 to 0.46 fl oz 0.25 to 0.5 fl oz	Use GC formulation for golf course applications.
	Halofenozide (Mach 2) 2 L 1.5 G	1.5 fl oz 1.55 lb	Can be used 2 times per season at these rates.
<b>GRASSHOPPER</b>	Chlorpyrifos (Dursban)** Pro	1.5 oz	Spray grass and surrounding weeds.
	Acephate (Orthene, T, T&O)** 75 S	0.5 oz	Do not mow turfgrass for at least 24 hr after application
<b>GROUND PEARL</b>	None		No effective control - practice good management
<b>GRUB (white, May beetle, chafers, green June beetle, and others)</b>	Bendiocarb (Turcam) 76 WP** 2.5 G diazinon** 4 E AG 600 WBC 5 G trichlorfon (Proxol or Dylox) 80 SP**	1 to 1.5 oz 1.9 to 2.8 lb  3 oz 2.5 oz 2 lb  3.75 oz	Apply in 15 to 30 gal water. Thoroughly irrigate following treatment.
	Carbaryl (Sevin) 80 WSP**	3.7 oz	
	Isofenphos (Oftanol) 1.5 G 2L	3 lb 3 oz	Broadcast spray early. Water in immediately.
	Ethoprop (Mocap) 10 G	1.15 lb	For golf course use only. Do not apply to bentgrass. Do not apply to newly seeded stands. Water in immediately after application,
	Imidacloprid (Merit) 75 WSP	1.6 oz packet/8,250 to 11,000 sq ft	Make application prior to eggs hatch. Do not use on sod farms.
	Halofenozide (Mach 2) 2 L 1.5 G	2.2 fl oz 2.31 lb	Apply during egg hatch or early instar grub development.
<b>GRUB, GREEN JUNE BEETLE (only)</b>	Carbaryl (Sevin) 80 WSP** diazinon AG 600 WBC 5 G chlorpyrifos (Dursban)** 50 WSP Pro	.92 to 1.84 oz  2.5 oz 2 lb  0.75 oz 1.5 oz	

Pest	Insecticides and Formulation	Amounts Per 1,000 Sq Ft	Precautions and Remarks
<b>GRUB (Japanese beetle)</b>	Bendiocarb (Turcam) 76 WP** 2.5 G diazinon** 4EC AG 600 WBC 5 G	1 to 1.5 oz 1.9 to 2.8 lb  3 fl oz 2.5 oz 2 lb	Water in but do not flood.  Do not use diazinon on golf course or sod farms.
	Isofenphos (Oftanol)** 1.5G 2 L	3 lb 3 oz	Broadcast spray early. Water in immediately.
	Carbaryl (Sevin) 80 WSP**	3.7 oz	
	Trichlorfon (Proxol or Dylox) 80 SP**	3.75 oz	
<b>GRUB (Japanese beetle)</b>	ethoprop (Mocap) 10 G	1.15 lb	For golf course use only. Do not apply to bentgrass. Do not apply to newly seeded stands. Water in immediately after application.
	Imidacloprid (Merit) 75 WSP	1.6 oz packet/8,250 to 11,000 sq ft	Make application prior to eggs hatch. Do not use on sod farms.
	Halofonozide (Mach 2) 2 L 1.5 G	2.2 fl oz 2.3 lb	Apply during egg hatch or early instar grub development.
<b>IMPORTED FIRE ANT</b>	Amdro 0.73%	0.37 to 0.55 oz	Uniformly broadcast 1 to 1.5 lb of bait per acre with ground equipment on pastures, range grasses, lawns, and nonagricultural lands. Or distribute uniformly 5 level tbsp of bait 3 to 4 ft around base of each mound. Do not exceed 1.5 lb per acre.
	Diazinon 4 E	1 tbsp/gal 2 to 3 oz/ 3 gal	Apply 1 gal per mound with sprinkler can. Thoroughly wet 4 ft diameter area around mound.
	Isofenphos (Oftanol)** 1.5 G 2 L	3 lb 3 oz 1 ml per 3 gal water	Apply 0.5 to 1 in. of water immediately after application.  For established mounds. Drench mound and surrounding area with 3 gals of mixture.
	Acephate (Orthene, T, T&O)** 75 S	1 to 2 tsp/mound	Distribute uniformly over mound. For best results apply in early morning or late afternoon.
	Fenoxycarb (Award) 1 B	1 to 3 level tbsp 1 to 1.5 lb/A	Single mound treatment. Apply uniformly with ground equipment.
	Lambda-cyhalothrin (Scimitar) GC	0.5 fl oz/mound trt in 2.5 gal	
<b>LEAFHOPPER and SPITTLEBUG</b>	Acephate (Orthene, T, T&O)** 75 S	1 oz	
	Bendiocarb (Turcam) 76 WP** 2.5 G	0.5 to 1 oz 0.9 to 1.9 lb	
	Chlorpyrifos (Dursban) 50 WSP Pro	0.75 oz 1.5 oz	Treat infested areas.

Pest	Insecticide and Formulation*	Amount Per 1,000 Sq Ft	Precautions and Remarks
<b>LEAFHOPPER and SPITTLEBUG</b> (Continued)	Diazinon AG 600WSP 4 E	1.5 to 2.5 oz 2 to 3 oz	Do not use diazinon on golf courses or sod farms.
	Carbaryl (Sevin) 80 WSP**	0.92 to 1.84 oz	Commercial and residential turf only.
	Bifenthrin (Talstar) Flowable GC	0.23 to 0.5 fl oz  0.25 to 0.5 fl oz	Use GC formulation for golf course applications
<b>MILLIPEDE</b>	Carbaryl (Sevimol) (Sevin) 80 WSP diazinon 4 E chlorpyrifos (Dursban) Pro	1.5 to 3 oz 0.92 to 1.84 oz  3 oz  1.5 oz	
	Bifenthrin (Talstar) Flowable GC	0.23 to 0.46 fl oz 0.25 to 0.5 fl oz	Use GC formulation for golf course applications.
<b>MOLE CRICKET</b>	Chlorpyrifos (Dursban) B	See label	Apply as soon as damage occurs. Soil should be moist at time of treatment. Do not irrigate over baits within 24 hr of application.
	Carbaryl (Sevin) baits	See label	
	Bendiocarb (Turcam) 2.5 G**	1.1 to 1.8 lb	Irrigate with 0.5 in. of water after application.
	Chlorpyrifos (Dursban) 50 WSP Pro	1.5 to 2.2 oz 3.0 to 4.5 oz	
	Cyfluthrin (Tempo 2)	0.2 fl oz	Home lawn use only.
	Isofanphos (Oftanol) 1.5 G** 2 L	3 lb 3 oz	
	Acephate (Orthene, T, T&O) 75 S	1 to 1.9 oz	Water soil before application. Do not water in.
	Ethoprop (Mocap) 10 G	1.7 to 2.3 lb	For golf course use only. Irrigate immediately after application. Do not apply to newly seeded stands or bentgrass.
	Lambda-syhalothrin Scimitar GC	0.46 fl oz	
	Imidacloprid (Merit) 75 WSP	1.6 oz packet per 8250 sq ft	
Bifenthrin (Talstar) Flowable	0.23 to 0.46 fl oz		

<b>Pest</b>	<b>Insecticide and Formulation*</b>	<b>Amount Per 1,000 Sq Ft</b>	<b>Precautions and Remarks</b>
<b>SOWBUG, PILLBUG</b>	Bendiocarb (Turcam) 76 WP	0.5 to 1.0 oz	Commercial and residential turf only.
	Carbaryl (Sevin) 80 WSP diazinon 4 E AG 600 WBC	0.92 to 1.84 oz  2 to 3 oz 1.5 to 2.5 fl oz	
	Bifenthrin (Talstar) Flowable GC	0.23 to 0.46 fl oz 0.25 to 0.5 fl oz	Use GC formulation for golf course.
<b>SOD WEBWORM</b>	Bendiocarb (Turcam) 76 WP** 2.5 G carbaryl (Sevin) 80 WSP** diazinon 4 E AG 600 Chlorpyrifos (Dursban) Pro Ethoprop (Mocap) 10 G trichlorfon (Proxol, Dylox)** 80 SP acephate (Orthene, T, T&O)** 75 S cyfluthrin (Tempo 2)	0.5 to 1 oz 0.9 to 1.9 lb  2.75 to 3.67 oz  2 to 3 oz 1.5 to 2.5 fl oz  1.5 oz  1.15 lb  2.5 to 3.75 oz  0.5 to 1 oz  0.135 to 0.204 fl oz	Treat in late afternoon. Repeat as needed. Apply in adequate water for good coverage. Do not cut grass for 1 to 3 days after application.  Do not use diazinon on sod farms or golf courses.  Mocap is restricted to golf course use only. Water in granular formulations immediately after application.  Irrigate immediately after application. Do not apply to newly seeded stands or bentgrass.  Home lawns only.
	Isofenphos (Oftanol) 1.5 G 2 L	1.5 to 3 lb 1.5 to 3 fl oz	Water in thoroughly.
	Lambda-cyhalothrin Scimitar WP Scimitar CS Scimitar GC	3 to 6 g 0.11 to 0.22 fl oz 0.11 to 0.22 fl oz	Do not make applications within 20 ft of any body of water. No reentry until spray had dried. GC formulation restricted use for golf courses.
	Permethrin (Astro) 3.2 E	0.4 to 0.8 fl oz	Residential and commercial use .
	Bifenthrin (Talstar) flowable GC	0.23 to 0.46 fl oz 1.15 lb	Use GC formulation for golf course applications.
	Halofenozide (Mach 2) 2 L 1.5 G	1.5 fl oz 1.55 lb	Can be used 2 times per season at these rates.
	Spinosyn A or D (Conserve) SC	0.25 to 1.25 fl oz	Rate varies with size and species.

Only a few formulations of recommended insecticides are listed to serve as examples. No endorsement of listed products is intended, nor is criticism of unnamed products implied. Read and follow all label directions carefully for use, application, and precautions. This guide does not substitute for a thorough understanding of the label. Be sure to consider drainage, slope, type of soil, and general use to avoid contamination of water sources. Avoid using treated areas immediately after application.

\*\*May be available for homeowner use, but in a different, lower concentration formula.

# Turfgrass Weed Control

## Weed Control

Weed	Preemergence Control		
	Herbicide and Formulation	Amount of Formulation Per 1,000 ft <sup>2</sup>	Precautions and Remarks
<b>Smooth and Large Crabgrass, Foxtails, and other annual grasses</b>	bensulfide + oxadiazon (Goosegrass/Crabgrass Control) 6.56G	2.6 lb	Controls Crabgrass and goosegrass. Use on established bermudagrass, zoysiagrass, tall fescue, bentgrass, Kentucky bluegrass, or perennial ryegrass, fairways, and tees. <b>Use also on bermudagrass and bentgrass greens.</b>
	dithiopyr (Dimension) 1EC	1.5 fl oz	See label for injury precautions regarding certain varieties.
	pendimethalin (Weedgrass Control) 60 WP (Pre-M) 60 WP (Pendulum) 60 WDG (Pendulum) 3.3 EC	1.8 oz 1.8 oz 1.8 oz 2.7 fl oz	Use on established bahiagrass, bermudagrass, centipedegrass, fine fescue, Kentucky bluegrass, perennial ryegrass, St. Augustinegrass, tall fescue, and zoysiagrass. <b>Do not use on winter-overseeded grasses.</b>
	prodiamine (Barricade) 65 WG	0.28 to 0.4 oz	May be used on established bermudagrass, centipedegrass, St. Augustinegrass, zoysia, tall fescue, creeping red fescue, perennial bluegrass and ryegrass, and creeping bentgrass. <b>Do not apply to greens.</b>
<b>Annual Bluegrass</b>	benefin (Balan) 2.5G	2.75 lb	Apply during late summer or early fall before germination of <i>Poa annua</i> . Perennial ryegrass can be overseeded 6 weeks after Balan 2.5G application.
	dithiopyr (Dimension) 1EC	1.5 fl oz	Apply during late summer or early fall before the germination of <i>Poa annua</i> . <b>Do not apply to turf areas that are to be overseeded.</b>
	oryzalin (Surflan) 4AS	1.1 fl oz	
	oxadiazon (Ronstar G) 2G	2.25 lb	
prodiamine (Barricade) 65WG	0.28 oz		
<b>Annual Bluegrass</b> in overseeded bermudagrass greens and tees	fenarimol (Rubigan) 50 WSP (Rubigan) 1AS	1 to 1.5 oz 4 to 6 oz	Use as a preemergence program in bermudagrass greens and tees to be overseeded. Use two or three applications to reach a total of 3 oz per 1000 ft <sup>2</sup> for the 50 WSP or 12 oz per 1000 ft <sup>2</sup> for the 1AS. Rubigan should be applied before the germination of <i>Poa annua</i> and the last application 14 days before overseeding with perennial ryegrass or 30 days prior to overseeding with <i>Poa trivialis</i> or bentgrass. <b>See label for other precautions.</b>
<b>Winter Annual Weeds</b> preemergence and postemergence	atrazine (Purge) 2L (AAtrex) 4L	3 fl oz 0.75 to 1.5 fl oz	Use on centipedegrass, St. Augustinegrass, and dormant bermudagrass. Follow label directions
	simazine (Princep Liquid) 4L (Princep DF) 90DF (Regal Wynstar) 90DF	0.75 to 1.5 fl oz 0.4 to 0.8 oz	Use on bermudagrass, centipedegrass, St. Augustinegrass, and zoysiagrass. See label for instructions on newly sprigged turfgrass or on hybrid bermudagrass. Follow label directions.
<b>Certain Broadleaf Weeds</b>	isoxaben (Gallery) 75 DF	0.25 to 0.5 oz	All established turfgrasses are tolerant. Check label for specific weeds controlled.

Weed	Postemergence Control		
	Herbicide and Formulation	Amount of Formulation Per 1,000 ft <sup>2</sup>	Precautions and Remarks
<b>Crabgrass, Goosegrass</b>	metribuzin (Sencor)75DF	0.12 to 0.24 oz	Recommended for application by commercial applicators only on established bermudagrass turf that has a mowing height of 0.5 in or greater. Apply when turf is vigorously growing and not under stress. Repeat if necessary in 7 to 10 days. <b>Do not make more than two applications per season. Do not apply to greens, tees, or aprons.</b>
<b>Goosegrass</b>	diclofop-methyl (Illoxan) 3EC	0.75 to 1 fl oz	Apply in established bermudagrass. Rate depends upon number of goosegrass leaves from one to four leaves. <b>Check label for specific rates.</b>
<b>Bahiagrass, Crabgrass, Dallisgrass, Goosegrass, Nutsedge, Annual Sedges, and Sandbur</b>	DSMA (Various brands)	Several concentrations	Kentucky bluegrass, bermudagrass, and zoysia are tolerant. Bentgrasses and fescues slightly sensitive. <b>Do not use on carpetgrass, centipedegrass, or St. Augustinegrass.</b> Begin treatment when weedy grasses are young (three to four leaf stage). Use two applications 7 to 10 days apart. More mature plants may require additional application. Three to four applications may be necessary for nutsedge and sandbur control. Spray when soil moisture is good and air temperature is 80°F or above. <b>On new turf, do not treat until after three mowings. Grasses may show temporary discoloration.</b>
	MSMA (Various brands)	Several concentrations	Use on bermudagrass, Kentucky bluegrass, fescues, perennial ryegrass, and zoysiagrass. Also controls broadleaf weeds. A second application may be necessary 10 to 14 days later for heavy infestations of dallisgrass or goosegrass.
<b>Crabgrass, Goosegrass, Sandbur, Dallisgrass</b>	MSMA + 2,4-D + MCPP + dicamba (Trimec Plus)	3 to 5 fl oz	Use on bermudagrass, Kentucky bluegrass, fescues, perennial ryegrass, and zoysiagrass. Also controls broadleaf weeds. A second application may be necessary 10 to 14 days later for heavy infestations of dallisgrass or goosegrass.
<b>Yellow Nutsedge, Annual Sedge</b>	bentazon (Basagran T/O) 4S (Lescogran) 4SL	0.75 to 1.5 fl oz	For control of yellow nutsedge in established Kentucky bluegrass, fescues, bentgrass, ryegrass, bermudagrass, bahiagrass, St. Augustinegrass, centipedegrass, and zoysiagrass. Apply to yellow nutsedge when actively growing under good soil moisture conditions. Additional applications may be made at intervals of 10 to 14 days until nutsedge is controlled.

Weed	Postemergence Control		
	Herbicide and Formulation	Amount of Formulation Per 1,000 ft <sup>2</sup>	Precautions and Remarks
Purple Nutsedge, Yellow Nutsedge, Green Kyllinga	imaquin (Image) 1.5LC	0.5 to 1 fl oz	Use on bermudagrass, centipedegrass, St. Augustinegrass, and zoysiagrass. <b>Do not apply during spring greenup.</b> Temporary yellowing may occur. Add a nonionic surfactant at 2 pt per 100 gal of spray solution. Addition of MSMA at 1.5-lb ai/acre will improve sedge control in MSMA tolerant turfgrasses.
	halosulfuron (Manage) 75DF	0.9g	May be applied to bermudagrass, bahiagrass, zoysiagrass, centipedegrass, St. Augustinegrass, creeping bentgrass, Kentucky bluegrass, perennial ryegrass, tall fescue, and fine fescue. Apply broadcast when sedges have reached the three to eight-leaf stage. Use lower rate for light infestation and higher rate for heavy infestations. A second treatment will usually be required 6 to 10 weeks after the initial treatment. Use an 80% active nonionic surfactant at 2 qt per 100 gal of spray solution. <b>Do not exceed 1 to 2 pt of surfactant per acre. Do not apply to putting greens.</b> Manage only suppresses green kyllinga.

Weed	Postemergence Control		
	Herbicide and Formulation	Amount of Formulation per 1000 ft <sup>2</sup>	Precautions and Remarks
Dandelion, Carpetweed, Carolina Cranesbill, Curly Dock, Plantain, Dichondra, Shepherdspurse, and Yellow Rocket	2,4-D amine (Various brands) 4L	3 to 4 tsp	Cut rate one-half for bentgrass, carpetgrass, centipedegrass, and St. Augustinegrass. Spray when weeds are young and are actively growing. <b>To reduce danger of injury to flowers and ornamentals by spray drift, use low pressure and do not spray on windy days.</b>
Chickweeds, Creeping Charlie or Ground ivy, Dandelion, Lespedeza, Black Medic, Spotted Spurge, Hop Clover, and White Clover	dicamba (Banvel) 4S	1 to 2 tsp	Apply as foliar spray to growing weeds. Prevent injury to ornamentals. Avoid rooting zone of shallow-rooted trees and shrubs.

Weed	Postemergence Control		
	Herbicide and Formulation	Amount of Formulation per 1000 ft <sup>2</sup>	Precautions and Remarks
<b>Most Broadleaf Turf Weeds</b>	2,4-D + MCPP 2,4-D + dichlorprop 2,4-D + dicamba 2,4-D + triclopyr triclopyr + clopyralid 2,4-D + MCPP + dicamba 2,4-D + MCPP + dichlorprop MCPA + MCPP + dicamba MCPA + MCPP + dichlorprop (Various brands)	Varies	Check product labels for rates, precautions, and other use suggestions. These combination products are very effective on most broadleaf weeds.
<b>Chickweed, Corn Speedwell, Henbit, Parsley-Piert, Spurweed</b>	metribuzin (Sencor) 75DF	0.25 oz	For application by commercial applicators to <i>dormant</i> bermudagrass turf. Broadcast spray before greenup of turf. <b>Do not apply to greens, tees, or aprons.</b>
<b>Winter and Summer Annual Broadleaf Weeds</b>	bentazon + atrazine (Prompt) 3.32F (Prompt) 5L	0.9 to 1.3 fl oz 0.7 to 0.9 fl oz	Apply to bermudagrass, centipedegrass, St. Augustinegrass, and zoysiagrass. Check label for weeds controlled and weed size for proper application.
<b>Black Medic, white, Hop Clover, Buckhorn Plantain, Common Chickweed, Mouseear Chickweed, Henbit, Spurweed (Lawn Burweed), Broadleaf Plantain, Dandelion, False Dandelion, Lespedeza, Prostrate Spurge, Wild Violet</b>	triclopyr + clopyralid (Confront) 3L	0.4 to 0.74 fl oz	May be used on centipedegrass, bermudagrass, zoysiagrass, tall fescue, creeping red fescue, chewing fescue, Kentucky bluegrass, perennial ryegrass.  *Repeat treatment may be necessary.
<b>Wild Garlic or Wild Onion</b>	2,4-D amine (Various brands) 4L	2.2 fl oz	Apply late February or early March. Add a wetting agent to keep spray from bouncing off garlic leaves. Repeat treatment for 2 years. Avoid spray drift, which can injure susceptible plants. Use on Kentucky bluegrass, fescue, common bermudagrass, or zoysia. For more susceptible grasses, use spot treatment below.

Weed	Postemergence Control		
	Herbicide and Formulation	Amount of Formulation per 1000 ft <sup>2</sup>	Precautions and Remarks
<b>Wild Garlic or Wild Onion (continued)</b>	Spot treatment		One tbsp of 1-% 2,4-D solution per garlic clump or use pressurized applicator. Apply December to April. <b>This treatment will kill grasses in an area about 4 in. across.</b> Turfgrasses fill in bare spots with a season's growth.
	imazaquin (Image) 1.5LC	0.5 to 1.0 fl oz	Use on bermudagrass, centipedegrass, St. Augustinegrass, and zoysiagrass. <b>Do not apply during spring greenup.</b> Temporary yellowing may occur. Add a nonionic surfactant at 2 pt per 100 gal of spray solution.
<b>Bermudagrass Suppression</b>	fenoxaprop (Acclaim Extra) 0.57EC	0.46 fl oz	Use on Kentucky bluegrass, perennial ryegrass, fine and tall fescue, and zoysiagrass. Apply as soon as common bermudagrass begins to grow in the spring. Reapply every 28 to 35 days as needed.
	fluazifop (Fusilade II) 2EC	0.05 to 0.14 oz	Use on tall fescue or zoysia. For fescue, apply 5 to 6 oz per acre during warm weather in early spring when bermudagrass is breaking dormancy and repeated in fall when bermudagrass is preparing for dormancy. For zoysia, apply 3 to 4 oz per acre beginning in late spring and repeat every 20 to 30 days. Late summer applications should be made at 2 to 3 oz per acre. Zoysia or tall fescue may show slight discoloration but should recover in 10 to 14 days. Use a minimum of 30 gal or water per acre.