

## HOME TURF INSECT CONTROL

Will Hudson, Extension Entomologist

NOTE: There is increasing concern about the health of pollinator populations, especially honeybees and other bees. Flowering plants in the landscape, including flowering weeds and wildflowers, are important sources of food for these very beneficial insects. Care should be taken when using insecticides around any flowering plants when bees are actively foraging. Timing sprays for late afternoon and evening will minimize risks from

broad-spectrum contact insecticides (pyrethroids, carbaryl, etc.). Under some circumstances, systemic insecticides like imidacloprid and dinotefuran may be translocated to the blooms and picked up in nectar and pollen. Avoid spraying turf when flowering weeds or clover are in bloom. Mowing to remove the blooms before treating will greatly reduce risks associated with these materials. Follow all label directions carefully.

PEST	INSECTICIDE AND FORMULATION	AMOUNT PER 1,000 SQ FT*	REMARKS AND PRECAUTIONS
Ants (also see Imported fire ants)	Various pyrethroids		See note below.
Armyworms, cutworms, sod webworms	<i>Bacillus thuringiensis</i> Dipel WP	¾ 1 ½ oz	Apply as a coarse spray in sufficient water for good coverage. Repeat as needed. See note below.
	Various pyrethroids		
	<i>spinosad</i> Conserve, other brands	1 tsp	
	<i>chlorantraniliprole</i> Scott's GrubEX	2.87 lb.	
Chinch bugs	<i>bifenthrin</i>	See label	Apply as a coarse spray in 4–5 gal water/1000 sq ft. Irrigation of lawn prior to application will give better control.
	<i>cyfluthrin</i> Bayer Advanced Lawn and Garden	3 fl oz/gal	
	Various pyrethroids		
Digger wasps, earwigs, sowbugs	Various pyrethroids	See label	
Ground pearls	All suggested practices regarding fertilization, watering, mowing, etc., should be carried out to keep grass growing ahead of damage. At the present time, there is no practical or effective pesticide treatment.		

NOTE: A number of pyrethroid materials are available in a variety of home formulations for use as broad-spectrum contact insecticides. Active ingredients include *bifenthrin*, *cyfluthrin*, *cypermethrin*, *deltamethrin*, *lambda-cyhalothin*, *permethrin*, and *tralomethrin*. Active ingredients are listed on the label.

Most of the materials listed in the Commercial Landscape Insect Control section of this handbook are not Restricted Use Pesticides, and so are available for home use. They are not marketed for homes, in small quantities at retail garden centers, but they could provide options for some homes. Consult your county Cooperative Extension Agent for advice on alternatives.

\* Unless otherwise specified, mix with 6 gal of water/1000 sq ft.

PEST	INSECTICIDE AND FORMULATION	AMOUNT PER 1,000 SQ FT*	REMARKS AND PRECAUTIONS
Imported fire ants	<b>INDIVIDUAL MOUND TREATMENTS</b>		
	<i>acephate</i> Orthene TTO, other brands	See label	Mix with 2 gal water. Pour the entire amount on and around one mound. Do not disturb mound before treatment. Powder may be dusted over the surface according to label directions.
	Various pyrethroids		
	<i>acephate</i> Orthene TTO, other brands	See label 2 tsp/mound	Dust evenly over top of mound. Do not water in.
	<b>BAIT TREATMENTS</b>		
	Amdro B Ascend or Varsity Distance Fire Ant Bait Extinguish Spectracide One Shot		Fire ant bait should be used at 1–1 ½ lb/A. Bait should be used as soon as possible after opening package. Apply baits when ants are actively foraging for food. Follow label directions.  Baits containing indoxacarb give faster control than other
	<b>BROADCAST TREATMENTS</b>		
<i>bifenthrin</i> Talstar, others	Follow label	See note below.	
Various pyrethroids			
Millipedes	Various pyrethroids		Apply to turf 6–10 ft around building to provide a barrier treatment. Water thoroughly after application of granules. See note below.
Mole crickets	<i>bifenthrin</i>	See label.	
	<i>imidacloprid</i> Bio Advanced Lawn Product	2.87 lb	
Spittlebugs	Various pyrethroids		Cut grass to its recommended height and remove clippings prior to application. Imidacloprid may also provide some control. See note below.
White grubs (such as Japanese beetle larva, European chafer, Southern chafer, Billbugs)	Various pyrethroids	See label	For Green June beetle only. Apply as directed on label.
	<i>halofenozide</i> Grub-B-Gon	4–6 oz	Apply as directed on label. Identification of pest grub species is important for effective control recommendations. Consult your local County Extension Agent.
	<i>imidacloprid</i>		Many brands and formulations are available.
	<i>trichlorfon</i> BioAdvanced 24 Hour Grub Killer Plus		Water lawn before application of any control material. Water thoroughly following insecticide application.

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Proper management is of utmost importance in preventing turf disease. Culture and environment are the key reasons diseases develop since potential turf pathogens are virtually always present. Disease problems are encouraged by improper watering, soil compaction, drainage problems, improper fertilization, nutrient deficiencies, excessive thatch, and improper mowing. Effective disease management centers on avoiding these problems through prevention of plant stress. In most cases, pres-

ence of a disease indicates an underlying cultural and/or environmental problem that needs to be addressed. Fungicides are not always necessary and when used should be part of a total management program. Obtain a disease diagnosis and recommendation from your Extension office before applying chemicals. Follow label recommendations for rates and safety precautions when using all pesticides.

## **BROWN/LARGE PATCH (*Rhizoctonia solani*) DOLLAR SPOT (*Sclerotinia homeocarpa*)**

### Management Tips:

- Use low to moderate amounts of nitrogen, moderate amounts of phosphorous and moderate to high amounts of potash.
- Avoid nitrogen applications when the disease is active. Apply nitrogen to warm season grasses only between May and August.
- Increase the height of cut.
- Increase air circulation.
- Minimize the amount of shade.
- Irrigate turf early in the day. Water deeply but infrequently based on soil moisture levels.
- Reduce compaction and improve the drainage of the turf with core aeration as needed.
- Reduce thatch.
- Remove dew from the turf early in the day (drag a hose over the turf).
- Warm season grasses—Fall preventative applications are BEST/MOST EFFECTIVE (Sept.–Oct.), with a follow-up spring application.

ACTIVE INGREDIENT	BRAND NAMES	REMARKS AND PRECAUTIONS
<i>azoxystrobin</i>	DiseaseEx	Preventative 2 lbs per 1000 sq ft Curative 4 lbs per sq ft
<i>propiconazole</i>	Banner Maxx Bioadvanced Advanced	Local systemic; provides some control, best used in rotation or tank mixed with other chemistries.
<i>myclobutanol</i>	Immunox Lawn Disease Control—RTU, Concentrate, and Granules Ferti-Lome F-Stop	Apply every 14–28 days as needed. Rotate with other chemicals to avoid resistance problems.
PCNB	Terraclor 75WP, Hi-Yield Terraclor Granular Fungicide Hi-Yield PCNB Granular Fungicide	Treated areas should be watered following application to move material to soil. Caution on cool season turfs for phytotoxicity. Re-treat in 3–4 weeks if disease reappears.
<i>thiophanate methyl</i>	Cleary's 3336 Scotts Lawn Fungus Control	Apply every 7–14 days as needed.

## **FADING OUT (*Curvularia* sp.) MELTING OUT (*Helminthosporium* sp.) LEAF SPOTS, RUST, ANTHRACNOSE**

### Management Tips:

- Increase the height of cut.
- Reduce turf stress by using lightweight equipment.
- Increase air circulation to speed turf's drying process.
- Apply recommended amounts of nitrogen in small amounts between May and August. Avoid application of high rates of water-soluble nitrogen in the spring. Provide adequate amounts of potassium during growing season.

- Minimize the amount of shade.
- Irrigate turf deeply and as infrequently as possible.
- Reduce thatch in the early spring or fall for cool-season turfgrass and in the summer for warm-season turfgrass.

ACTIVE INGREDIENT	BRAND NAMES	REMARKS AND PRECAUTIONS
<i>azoxystrobin</i>	DiseaseEx	Preventative 2 lbs per 1000 sq ft Curative 4 lbs per sq ft
<i>myclobutanol</i>	Spectracide Immunox	Apply every 14–28 days as needed. Rotate with other chemicals to avoid resistance problems.
PCNB	Ferti-Lome F-Stop	Treated areas should be watered following application to move material into soil. Caution on cool season turfs for phytotoxicity. Re-treat in 3–4 weeks if disease reappears.
<i>thiophanate methyl</i>	Cleary's 3336 Scotts Lawn Fungus Control	Apply 10–14 days as needed.

### FUSARIUM (*Fusarium* sp.)

#### Management Tips:

- Maintain fertility balance.
- Avoid using lime. Alkaline soils enhance disease development.
- Increase air circulation to speed turf's drying process.
- Minimize the amount of shade.
- Reduce thatch.

ACTIVE INGREDIENT	BRAND NAMES	REMARKS AND PRECAUTIONS
<i>azoxystrobin</i>	DiseaseEx	Preventative 2 lbs per 1000 sq ft Curative 4 lbs per sq ft
<i>myclobutanol</i>	Spectracide Immunox Ferti-Lome F-Stop	Apply 14–21 days, when conditions are favorable for disease development. Rotate with other chemicals to avoid resistance problems.
<i>thiophanate methyl</i>	Cleary's 3336 Scotts Lawn Fungus Control	Apply every 7–14 days as needed.

### FAIRY RING (various fungi)

#### Management Tips:

- Avoid using root zone mixes with high levels of undecomposed organic materials.
- Reduce thatch.
- Irrigate deeply.
- Use recommended levels of nitrogen fertilizer to mask symptoms on some types of fairy ring.
- Use soil wetting agents to help penetrate hydrophobic areas.

ACTIVE INGREDIENT	BRAND NAMES	REMARKS AND PRECAUTIONS
<i>azoxystrobin</i>	DiseaseEx	Preventative 2 lbs per 1000 sq ft Curative 4 lbs per 1000 sq t

### GRAY LEAF SPOT (*Pyricularia grisea*)

#### Management Tips:

- Avoid medium-to-high nitrogen levels during mid-summer.
- Irrigate turf deeply and as infrequently as possible to avoid water stress.

## HOME TURF DISEASE CONTROL

### GRAY LEAF SPOT (*Pyricularia grisea*)—(continued)

- Allow water to remain on leaves for only a short period of time.
- Reduce thatch.
- When possible, plant turfgrass that is resistant to gray leaf spot.
- Avoid using herbicides or plant growth regulators when disease is active

ACTIVE INGREDIENT	BRAND NAMES	REMARKS AND PRECAUTIONS
<i>azoxystrobin</i>	DiseaseEx	Preventative 2 lbs per sq ft Curative 4 lbs per sq ft
<i>propiconazole</i>	Banner Maxx Bioadvanced Advanced	Local systemic; provides some control, best used in rotation or tank mixed with other chemistries.
<i>thiophanate methyl</i>	Cleary's 3336	Local systemic; provides some control, best used in rotation or tank mixed with other chemistries.

### PYTHIUM BLIGHTS PYTHIUM ROOT ROT (*Pythium* sp.)

Management Tips for Pythium Blight:

- Avoid mowing wet turf when temperature is over 70°F to minimize spreading the disease.
- Reduce thatch.
- Apply less than ½ pound of nitrogen per 1000 square feet per month during hot weather.
- Increase air circulation to speed the drying process of the turf.
- Minimize the amount of shade.
- Irrigate turf early in the day. Water deeply but infrequently based on soil moisture levels.
- Improve the drainage of the turf as needed with core aeration.

Management Tips for Pythium Root Rot:

- Increase the height of cut.
- Apply optimum amounts of nitrogen, phosphorous and potash.
- Reduce mowing frequency and use lightweight mowers.
- Avoid prolonged periods of leaf and soil wetness. Water deeply but infrequently only as needed based on soil moisture.
- Apply low amounts of nitrogen in the spring when roots are forming.
- Minimize the amount of shade.
- Improve the drainage of the turf.
- Reduce soil compaction by using lightweight equipment.

ACTIVE INGREDIENT	BRAND NAMES	REMARKS AND PRECAUTIONS
<i>azoxystrobin</i>	DiseaseEx	Preventative 2 lbs per sq ft Curative 4 lbs per sq ft
<i>phosphorous acid</i>	Monterey Agri-Fos Helena ProPhyt	Every 14–21 days as needed.

**SPRING DEAD SPOT ON BERMUDAGRASS (*Ophiosphaeralla* spp.)**

## Management Tips:

- Avoid late-summer or fall applications of nitrogen fertilizers which may enhance disease severity.
- Use ammonium sources of nitrogen for fertilizer from spring through early August.
- Control weeds in affected turf to enhance recovery from spring dead spot.
- Apply moderate to high levels of phosphorous, potash, and minor elements.
- Improve drainage of turf as needed with core aeration.
- Reduce thatch.
- Use preventive fungicide applications in late September and October.

**SPRING DEAD SPOT ON BERMUDAGRASS (*Ophiosphaeralla* spp.)—(continued)**

ACTIVE INGREDIENT	BRAND NAMES	REMARKS AND PRECAUTIONS
<i>azoxystrobin</i>	DiseaseEx	Preventative 2 lbs per 1000 sq ft Curative 4 lbs per 1000 sq ft
<i>myclobutanil</i>	Spectracide Immunox	Preventative treatments are best applied in the fall based on a history of the disease. Symptoms of the disease are most apparent in the spring. If grass is symptomatic, treat when grass has greened up in the spring.

**TAKE-ALL PATCH (*Gauemannomyces graminis*)****TAKE-ALL ROOT ROT****BERMUDAGRASS DECLINE**

## Management Tips:

- Maintain soil pH below 6.5, preferably between 5.5 and 6.0.
- Manganese deficiency enhances development of take-all patch. Supplemental applications of this in fall or spring should reduce disease severity (rate of 2 lb/A).
- Avoid excessive irrigation and nitrogen applications.
- Improve surface and subsurface drainage.
- Reduce thatch.
- Aerate the soil.
- Application of sphagnum peat moss (3.8 cu ft/1000 sq ft).
- Use preventive fungicides (in fall, prior to dormancy, and early spring). FALL FUNGICIDES (Sept.–Oct. for warm-season grasses) and follow-up with early spring application—most effective. Summer applications NOT effective.

ACTIVE INGREDIENT	BRAND NAMES	REMARKS AND PRECAUTIONS
<i>azoxystrobin</i>	DiseaseEx	Preventative 2 lbs per sq ft Curative 4 lbs per sq ft
<i>myclobutanil</i>	Spectracide Immunox	Spring/Fall: 28 day intervals. Optimum disease control is achieved when the product is applied preventively. To reduce the severity of take-all, make 1–2 applications in Sept/Oct when night temperatures drop below 55°F and 1–2 applications in the spring.
<i>propiconazole</i>	Banner Maxx Bioadvanced (Bayer) Advanced	Local systemic; provides some control, best used in rotation or tank mixed with other chemistries.

■ HOME TURF DISEASE CONTROL

**NEMATODES**

Management tips:

- Optimize growing conditions (pH, nutrient levels, water).
- If practical, top dress with high quality compost (¼ inch depth)
- If a nematode problem is suspected, contact your Cooperative Extension office to have a soil sample sent to the UGA nematode lab.

ACTIVE INGREDIENT	BRAND NAMES	REMARKS AND PRECAUTIONS
<i>chitin</i>	ClandoSan, Shrimp shell meal	Start treating when grass begins to turn green in spring. A single annual application is usually sufficient. Chitin is a non-chemical soil amendment made from crustacean shells that promotes growth of beneficial soil microorganisms, which in turn feed on nematodes, whose bodies are made of chitin. This may not be practical for large turf areas.

# TURFGRASS WEED CONTROL FOR HOMES

Patrick McCullough, Extension Agronomist—Weed Science

The herbicides recommended in this section are available in small containers at most lawn and garden, hardware and discount stores. The herbicides listed in the section titled “TURFGRASS WEED CONTROL RECOMMENDATIONS FOR PROFESSIONAL MAN-

AGERS” are not usually available in small containers at stores where homeowners purchase lawn and garden pesticides. For more information, see *Weed Control in Home Lawns* (UGA Extension Bulletin #978) at [extension.uga.edu/publications](http://extension.uga.edu/publications).

TURFGRASSES	HERBICIDE	AMOUNT OF PRODUCT PER 1,000 SQ FT	REMARKS AND PRECAUTIONS
<b>Pre-emergence HERBICIDES: Applications must be made prior to weed emergence or poor control will result. Recommended dates of application for crabgrass and other annual grasses are February 15–March 5 in South Georgia and March 1–20 in North Georgia. Recommended dates for annual weeds are September 1–15 in North Georgia and October 1–15 in South Georgia.</b>			
<b>PRE-EMERGENCE (Established Grasses)</b>			
Carpetgrass, centipede grass, St. Augustine, zoysiagrass	<i>atrazine</i> Bonus S Southern Lawn Fertilizer plus Weed Control	4.3 lb <sup>1</sup> 5 lb <sup>1</sup>	Atrazine controls annual bluegrass and a wide range of broadleaf weeds. These products are formulated on a dry fertilizer carrier. <b>DO NOT</b> apply to newly seeded carpetgrass or centipede grass until after two mowings. <b>DO NOT</b> sprig for one month or seed for six months after application. Atrazine will provide pre-emergence and post-emergence control of many annual weeds. These products are not Restricted Use Herbicides.
Centipede grass, St. Augustine	<i>atrazine</i> Hi-Yield Atrazine 4% Image for St. Augustine & Centipede grass 4%	8 fl oz 8 fl oz	Controls a wide range of broadleaf weeds, sandspur (sandbur) and suppresses crabgrass. May be applied in all 12 months for post-emergence control of various weeds. Use in the fall or spring for the pre-emergence control of a wide range of annual grass and broadleaf weeds. Delay application to newly sodded or sprigged lawns until the sprigs have rooted and are actively growing. May be applied up to 2 times per year.
Kentucky Bluegrass, bermudagrass, centipede grass, tall fescue, zoysiagrass, St. Augustine	<i>benfenin</i> Balan 2.5G Crabgrass Preventer 2.5G Crabgrass Preventer 1.72G	1.5–3 lb <sup>1</sup> 1.8–2.8 lb <sup>1</sup> 2–2.7 lb <sup>1</sup>	Controls annual grasses and certain annual broadleaf weeds. An additional application may be made 8 weeks after the initial treatment for continued weed control. <b>DO NOT</b> apply to newly sprigged grass until well established. <b>DO NOT</b> make a spring application to fall planted turfgrass. Delay reseeding for 6 weeks after application for the low rate, and for 12–16 weeks at the high rate. Benfenin is available on a dry fertilizer carrier under various trade names.
Bermudagrass, centipede grass, tall fescue, St. Augustine, zoysiagrass,	<i>benfenin + oryzalin</i> XL 2G	2.5–5 lb <sup>1</sup>	Controls annual grasses and certain annual broadleaf weeds. <b>DO NOT</b> apply to newly sprigged grasses until well established. <b>DO NOT</b> make a spring application to fall planted Augustine turfgrasses. Delay reseeding for 6 weeks (low rate) and for 12–16 weeks (high rate).
Kentucky Bluegrass, bermudagrass, centipede grass, tall fescue, St. Augustine, zoysiagrass	<i>benfenin + trifluralin</i> Team 2G	2.5–3.5 lb <sup>1</sup>	Controls annual grasses and certain annual broadleaf weeds. <b>DO NOT</b> make a spring application to fall planted turfgrasses. <b>DO NOT</b> apply to newly sprigged grasses until full soil coverage is achieved. Under conditions of heavy goosegrass or annual bluegrass infestations, a second application should be made 10 weeks after the initial application. Delay reseeding for 8 weeks (low rate) to 12 weeks (high rate) after application.
Kentucky Bluegrass, bermudagrass, centipede grass, tall fescue, St. Augustine, zoysiagrass	<i>dithiopyr</i> Hi-Yield Turf & Ornamental Weed & Grass Stopper 0.125GR Others	4.6–9.2 lb <sup>1</sup>	Controls annual grasses and certain annual broadleaf weeds. A sequential application of 4.6 lb followed by a second application of 4.6 lb may improve control of annual grasses. Apply the second treatment 8 weeks after the first application. <b>DO NOT</b> apply to newly sprigged grasses until full soil coverage is achieved. Delay reseeding for 10 weeks (low rate) to 16 weeks (high rate) after application.

1 Apply granules directly to the soil surface.



## HOME TURF DISEASE CONTROL

TURFGRASSES	HERBICIDE	AMOUNT OF PRODUCT PER 1,000 SQ FT	REMARKS AND PRECAUTIONS
<b>PRE-EMERGENCE (Established Grasses)</b> <i>(continued)</i>			
Bermudagrass centipedegrass, tall, fescue, zoysiagrass, St. Augustine	<i>oryzalin</i> Surflan 4AS	1–1.5 fl oz	Controls annual grasses and certain annual broadleaf weeds. Apply 1.5 oz/1,000 sq ft for summer annual grass control, or apply 1 oz/1,000 sq ft and apply an additional 1 oz/1,000 sq ft 8–10 weeks after the initial application. Split applications are recommended for improved goosegrass control. Use the low rate for annual bluegrass control. <b>DO NOT</b> apply to newly sprigged grasses until well established. <b>DO NOT</b> make a spring application to fall planted turfgrasses. Surflan is recommended for use on healthy, established turf. Delay reseeding for 3–4 months after applications.
Kentucky Bluegrass, bermudagrass, centipedegrass, tall fescue, zoysiagrass, St. Augustine	<i>pendimethalin</i> Halts 1.71G Others	2 lb <sup>1</sup>	Controls annual grasses and certain annual broadleaf weeds. <b>DO NOT</b> use on newly sprigged grasses. On newly seeded lawns, delay the application until after the fourth mowing. An additional application may be made 8 weeks after the first application to improve control of crabgrass and goosegrass. NOT recommend for turfgrass that has been severely thinned due to winter stress. <b>DO NOT</b> reseed within 4 months of application. Pendimethalin is available on a dry fertilizer carrier under various trade names.
Kentucky Bluegrass, bermudagrass, centipedegrass, tall fescue, zoysiagrass, St. Augustine	<i>2,4-D + MCPP + dicamba + dithiopyr</i> Spectracide Weed Stop for Lawns	3.6 lb	Controls emerged broadleaf weeds and provides residual control of grasses and broadleaf weeds. <b>DO NOT</b> use on newly sprigged grasses. An additional application may be made 8 weeks after the first application to improve control of crabgrass and goosegrass. NOT recommend for turfgrass that has been severely thinned due to winter stress. Do not apply to “Floritam” St. Augustinegrass.
<b>POST-EMERGENCE (ESTABLISHED GRASSES)</b>			
Kentucky Bluegrass, tall fescue, zoysiagrass, bermudagrass	<i>2,4-D + MCPP + dicamba</i> 33 Plus Ace Lawn Weed Killer Wipe-out Trimec Southern Weed Killer for Lawns, Others	2.67 fl oz 4 fl oz 5 fl oz 4 fl oz 4 fl oz	Controls a broader spectrum of weeds than <i>2,4-D</i> alone. Newly seeded lawns may be treated after a minimum of 3 mowings. Use one-half rates and spot treatments to minimize injury on centipedegrass and St. Augustinegrass. Applications during spring transition (green-up) should be avoided unless temporary (2–4 weeks) delays in green-up are acceptable. <b>DO NOT</b> apply at air temperatures >90°F.
Kentucky Bluegrass, bermudagrass, tall fescue, zoysiagrass	<i>2,4-D + quinclorac + dicamba</i> All-in-One Lawn Weed and Crabgrass Killer Weed-B-Gon Max Plus Crabgrass Control Concentrate	Product is designed to be applied by connecting bottle to garden hose. One quart will treat 5,000 sq ft.  6 fl oz	Controls both annual broadleaf weeds and crabgrass. Apply 1–3 days after mowing. <b>DO NOT</b> mow for 1–2 days after spraying. <b>DO NOT</b> apply at air temperatures >85°F. Not recommended for use on centipedegrass, carpetgrass and St. Augustinegrass. A repeat application at 14 days after the first application may be necessary to control certain perennial broadleaf weeds and annual grasses. Newly seeded lawns may be treated after a minimum of 4 mowings. <b>DO NOT</b> reseed for 4 weeks after application.
Kentucky Bluegrass, bermudagrass, ryegrass, tall fescue, zoysiagrass	<i>2,4-D + quinclorac + dicamba + sulfentrazone</i> Spectracide Weed Stop Plus Crabgrass Killer	See product label	Controls numerous crabgrass, sedges, and broadleaf weeds. Applications are most effective when crabgrass is one-tiller or smaller. Apply when daytime temperatures are between 45°F and 90°F. Do not apply to Bermudagrass when daytime temperatures exceed 85°F. Do not apply to St. Augustinegrass or centipedegrass lawns. Do not allow people or pets to enter treated area until spray has dried.
Kentucky Bluegrass, bermudagrass, centipedegrass, tall fescue, St. Augustinegrass zoysiagrass	<i>bentazon</i> Basagran T/O 4 lbs/gal Hi-Yield Basagran 4 lbs/gal.	0.75–0.5 fl oz	Apply bentazon to emerged yellow nutsedge that is actively growing and under good soil moisture conditions. Follow 10–14 days later with an additional application. Crop oil concentrate at 0.75 fl oz/1,000 sq ft should be added to the spray mix. <b>DO NOT</b> mow 3 days before or after application. <b>DO NOT</b> apply to newly seeded or newly sprigged turfgrass until the seedlings or sprigs are well established.

1 Apply granules directly to the soil surface.

TURFGRASSES	HERBICIDE	AMOUNT OF PRODUCT PER 1,000 SQ FT	REMARKS AND PRECAUTIONS
<b>POST-EMERGENCE (Established Grasses)</b> <i>(continued)</i>			
Centipede grass, St. Augustine	<i>atrazine</i> Hi-Yield Atrazine 4% Image for St. Augustine & Centipede grass 4% Weed-B-Gon Spot Weed Killer for St. Augustine 0.6% GR	8 fl oz 8 fl oz  Spot treatment.	Controls a wide range of broadleaf weeds and sandspur (sandbur) and suppresses crabgrass. May be applied in all 12 months for post-emergence control of various weeds. Use in the fall or spring for the pre-emergence control of a wide range of annual grass and broadleaf weeds. Delay application to newly sodded or sprigged lawns until the sprigs have rooted and are actively growing. May be applied up to two times per year. Weed-B-Gon Spot Weed Killer for St. Augustine grass is a granular product used as a spot treatment (1 Tbsp/4 sq ft) to control broadleaf weeds in centipede grass, carpet grass, St. Augustine grass and zoysia. <b>DO NOT</b> overseed 4 months before or 6 months after treatment. <b>DO NOT</b> apply within the active zone of azaleas, ammelias, boxwoods, etc. <b>DO NOT</b> apply to any cool-season turfgrass or severe injury will occur.
Kentucky Bluegrass, tall fescue, bermudagrass, zoysiagrass	<i>carfentrazone + 2,4-D + MCPP + dicamba</i> SpeedZone Lawn Weed Killer	0.75–1 fl oz	Controls a wide range of broadleaf weeds, including spotted spurge. May be applied after the second mowing in newly established cool-season turfgrasses, or 4 weeks after sprigging or sodding warm-season turfgrasses. <b>DO NOT</b> reseed until 2 weeks after application. <b>DO NOT</b> apply at air temperatures > 90°F.
Kentucky Bluegrass, tall fescue, zoysiagrass	<i>fenoxaprop</i> Bermudagrass Control for Lawns		Controls bermudagrass, crabgrass, Japanese stiltgrass, sandbur and numerous other grass weeds. <b>DO NOT</b> apply to bermudagrass, centipede grass or St. Augustine grass lawns. Apply at monthly intervals during the summer months to suppress/control bermudagrass. Plan on doing this program annually for at least two years. Annual grass weeds are usually controlled with a single application.
bermudagrass, centipede grass, St. Augustine, zoysiagrass	<i>imazaquin</i> Image Consumer Concentrate 0.3 lb/gal	3.75 fl oz	Controls nutsedges, wild garlic and selected broadleaf weeds. <b>DO NOT</b> apply when turfgrass is emerging from winter dormancy. <b>DO NOT</b> apply to newly planted or sprigged turfgrasses. This product is not recommended for use on St. Augustine grass during the winter months.
Kentucky Bluegrass, bermudagrass, centipede grass, tall fescue, St. Augustine, zoysiagrass,	<i>iron sulfate</i> Scotts Turf Builder Fertilizer with Moss Control	See product label.	This product contains iron sulfate formulated on a 22-2-2 fertilizer carrier. One bag will treat up 5,000 sq ft. Apply in winter or spring months to moist turf when moss is actively growing. This product may cause turfgrass foliage to temporarily blacken. Subsequent mowing will alleviate this condition. <b>DO NOT</b> apply to a newly seeded or sodded lawn until it has been mowed four times. Brush or rinse particles from cement, stone, clothing, or shoes to prevent staining.
Bermudagrass Kentucky Bluegrass, Ryegrass, tall fescue, zoysiagrass	<i>MCPA + quinclorac + dicamba + sulfentrazone</i> Roundup for Lawns	See product label.	Controls numerous crabgrass, sedges, and broadleaf weeds. Apply when grassy weeds are no greater than four inches tall with two or fewer tillers. Repeat applications are recommended after 14 days for grassy weeds and sedges. Apply when daytime temperatures are between 45 and 90 degrees F. Do not apply to St. Augustine grass or centipede grass lawns. Do not allow people or pets to enter treated area until spray has dried.
Kentucky Bluegrass, bermudagrass, centipede grass, tall fescue, St. Augustine, zoysiagrass	<i>potassium soap of fatty acids</i> Bayer 2-in-1 Moss & Algae Killer	Product is designed to be applied by connecting bottle to garden hose.	Controls moss and algae in established lawns. Rinse treated areas with water 15–30 minutes after treatment to lower risk of turfgrass injury. <b>DO NOT</b> heavily irrigate turf for 6 hours after treatment. For best results apply in spring or fall months. This product should not be applied at air temperatures > 85° F. Treated areas can be reseeded 5 days after treatment.
centipede grass, fine fescue	<i>sethoxydim</i> Segment 1 lb/gal	0.5–0.75 fl oz	Apply only to centipede grass and fine fescues (creeping red, chewing, hard fescue). Other turfgrasses will be severely injured by this herbicide. Controls annual grasses and suppresses bahiagrass growth. Apply no sooner than 3 weeks after spring green-up. May be applied at the low rate to seedling centipede grass. <b>DO NOT</b> mow 7 days prior to or after application. Two applications per season may be used in established centipede. For bahiagrass suppression, repeat treatment 10–14 days after the first application.
Kentucky Bluegrass, tall fescue, zoysiagrass	<i>triclopyr</i> Weed-B-Gon Chickweed, Clover and Oxalis Killer 8%	2.5 fl oz	Controls numerous broadleaf weeds. Particularly effective for control of violets and ground ivy. Apply twice, at an interval of 3–4 weeks for improved control. <b>NOT</b> recommended for use on bermudagrass, centipede grass and St. Augustine grass. Newly seeded lawns may be treated after a minimum of 3 mowings. <b>DO NOT</b> reseed for 3 weeks after application.

1 Apply granules directly to the soil surface.

# TURFGRASS HERBICIDES COMMONLY FOUND IN RETAIL LAWN AND GARDEN STORES/CENTERS

Patrick E. McCullough, Extension Agronomist—Weed Science

TRADE NAME	ACTIVE INGREDIENT
<b>PRE-EMERGENCE HERBICIDES</b>	
Balan	<i>benefin</i>
Bonus S	<i>atrazine</i>
Southern Lawn Fertilizer plus Weed Control	<i>atrazine</i>
Gallery	<i>isoxaben</i>
Green Light Amaze	<i>benefin + oryzalin</i>
Green Light Betasan	<i>bensulide</i>
Halts	<i>pendimethalin</i>
Hi-Yield Crabgrass Preventer	<i>benefin + trifluralin</i>
Preen Extended Control	<i>trifluralin + isoxaben</i>
Spectracide Weed Stop for Lawns	<i>2,4-D + MCPP + dicamba + dithiopyr</i>
Surflan	<i>oryzalin</i>
StaGreen CrabEx, Preen Crabgrass Control	<i>dithiopyr</i>
Hi-Yield Turf & Ornamental Weed & Grass Stopper	<i>dithiopyr</i>
StaGreen Crabgrass Preventer	<i>prodiamine</i>
Lawn Fertilizer plus Weed Control	<i>prodiamine</i>
StaGreen Crabgrass Preventer with Fertilizer	<i>benefin + trifluralin</i>
Team	<i>benefin + trifluralin</i>
XL	<i>benefin + oryzalin</i>
<b>POST-EMERGENCE HERBICIDES</b>	
Ace Lawn Weed Killer	<i>2,4-D + MCPP + dicamba</i>
Acme Super Chickweed Killer	<i>2,4-D + MCPP + dicamba</i>
All-in-One Weed and Feed	<i>2,4-D + quinclorac + dicamba</i>
Basagran T&O	<i>bentazon</i>
Bayer Advanced Southern Lawn Weed Killer	<i>2,4-D + MCPP + dicamba</i>
Dragon Lawn Weed Killer	<i>2,4-D + MCPP + dicamba</i>
Enforcer Weed Stop	<i>2,4-D + MCPP + dicamba</i>
Ferti-Lome Weed Out Lawn Weed Killer	<i>2,4-D + MCPP + dicamba</i>
Green Light Wipe Out	<i>2,4-D + MCPP + dicamba</i>
Green Light Spot Weed Killer	<i>MCPA + MCPP + dicamba</i>
Hi-Yield Basagran	<i>bentazon</i>
Hi-Yield Atrazine	<i>atrazine</i>
Ortho Nutsedge Killer	<i>sulfentrazone</i>
Ortho Spot Weed Killer for St. Augustine Lawns	<i>atrazine</i>
Image	<i>imazaquin</i>

TRADE NAME	ACTIVE INGREDIENT
<b>POST-EMERGENCE HERBICIDES</b> <i>(continued)</i>	
Image for St. Augustine and Centipede	<i>atrazine</i>
Rigo Super Lawn Weed Killer	<i>2,4-D + MCPP + dicamba</i>
Roundup for Lawns	<i>MCPA + quinclorac + dicamba + sulfentrazone</i>
Safer Weed Away	<i>2,4-D + MCPP + dicamba</i>
Sethoxydim G-Pro	<i>sethoxydim</i>
Spectrum Lawn Weed Killer 33 Plus	<i>2,4-D + MCPP + dicamba</i>
Speed Zone Lawn Weed Killer	<i>2,4-D + MCPP + dicamba + carfentrazone</i>
Spectracide Weed Stop	<i>2,4-D + MCPP + dicamba</i>
Spectracide Weed Stop plus Crabgrass Killer	<i>2,4-D + quinclorac + dicamba + sulfentrazone</i>
Trimec Classic	<i>2,4-D + MCPP + dicamba</i>
Trimec Southern	<i>MCPP + 2,4-D + dicamba</i>
Weed-B-Gon Chickweed, Clover & Oxalis Killer	<i>triclopyr</i>
Weed-B-Gon Max	<i>MCPA + triclopyr + dicamba</i>
Weed-B-Gon Max Plus Crabgrass Control	<i>quinclorac + MCPP + dicamba</i>

E—Excellent Control (>90%) G—Good Control (70–90%) F—Fair Control (50–70%) P—Poor Control (<50%) If no symbol is given, weed response is unknown.

# TURFGRASS WEED RESPONSE TO HERBICIDES: HOME PRODUCTS

Patrick E. McCullough, Extension Agronomist—Weed Science

	<i>atrazine</i>	<i>benefin</i>	<i>dithiopyr</i>	<i>oryzalin</i>	<i>pendimethalin</i>	<i>proflumicafone</i>
TIME OF APPLICATION	PRE-EMERGENCE					
PERENNIAL GRASSES AND GRASS-LIKE WEEDS						
bahiagrass	P	P	P	P	P	P
bermudagrass	P	P	P	P	P	P
dallisgrass	P	P	P	P	P	P
nutsedge, purple	P	P	P	P	P	P
nutsedge, yellow	P-F	P	P	P	P	P
tall fescue	P	P	P	P	P	P
wild garlic/onion	P	P	P	P	P	P
ANNUAL GRASSES						
annual bluegrass	E	E	G	G	G	E
crabgrass	F	E	G-E	E	E	E
crowfootgrass	P	G		G	G	
goosegrass	P	F	F	F-G	F-G	G
sandbur	F	F		G	G	
BROADLEAF WEEDS						
chamberbitter (niruri)	G		G			P
common chick weed	E	G	G	G	G	G
corn speedwell	E	E	G		E	P
cudweed	E	G			G	P
dandelion	F	P	P	P	P	P
dichondra	G	P	P	P	P	P
docks	G	P	P	P	P	P
Florida betony	E	P		P	P	P
ground ivy		P	P	P	P	P
henbit	E	G	G	G	G	G
hop clovers	E	P				P
knotweed	E			F	G	P
lespedeza	E		E		P	P
mallow		P	P	P	P	P
mock strawberry		P	P	P	P	P
mouseear chickweed		E		P	G	P
mugwort		P	P	P	P	P
mustards	E					P
parsley piert	E	P			P	P
pennywort	E	P		P	P	P
plantains	G	P	P	P	P	P
spurges	E	P	G		F	P
spurweed (burweed)	E	P				P
VA buttonweed		P	P	P	P	P
violets			P	P	P	P
white clover	F	P	P	P	P	P
yellow woodsorrel	E	P	P	F	F	P

E—Excellent Control (>90%) G—Good Control (70–90%) F—Fair Control (50–70%) P—Poor Control (<50%) If no symbol is given, weed response is unknown.

TURFGRASS WEED RESPONSE TO HERBICIDES: HOME PRODUCTS

	2,4-D	2,4-D + MCPP + dicamba	atrazine	bentazon	imazaquin	sulfentrazone	sethoxydim	triclopyr
TIME OF APPLICATION	POST-EMERGENCE							
PERENNIAL GRASSES AND GRASS-LIKE WEEDS								
bahiagrass	P	P	P	P	P-F	P	F	P
bermudagrass	P	P	P	P	P	P	F	P
dallisgrass	P	P	P	P	P	P	P-F	P
nutsedge, purple	F	P	P	P	G	P	P	P
nutsedge, yellow	F	P	P	G	F-G	G	P	P
tall fescue	P	P	P-F	P	P-F	P	F	P
wild garlic/onion	G	G	P	P	E		P	P
ANNUAL GRASSES								
annual bluegrass	P	P	E	P	F-G	P	P	P
crabgrass	P	P	F	P	P	P	E	P
crowfootgrass	P	P		P	P			P
goosegrass	P	P	P	P	P	F	G	P
sandbur	P	P		P	F-G		G	P
BROADLEAF WEEDS								
chamberbitter (niruri)	P		G	P	P		P	G-E
common chick weed	P	G	E	G	E	G	P	E
corn speedwell	F	F	E	P	P	G	P	G
cudweed	G-E	E	G				P	F
dandelion	E	G	F	P		P	P	G
dichondra	G	G	E	P			P	F-G
docks	F	G	G	P			P	F-G
Florida betony	F	G	E	P			P	G
ground ivy	P-F	G		P		F	P	G
henbit	P	G	E	P		G	P	E
hop clovers	F	E	E			G	P	E
knotweed	P	G	E			G	P	F
lespedeza	P-F	G	E			P	P	G
mallow	F	G		P			P	G
mock strawberry	P	G		P			P	
mouseear chickweed	P-F	G	G	P	G		P	G
mugwort	P	F		P		G	P	P-F
mustards	E	G	E	G			P	F
parsley piert	P	G	E	G	G		P	E
pennywort	G	E	E	P			P	F
plantains	E	E	F	P		G	P	F
spurges	F	G	E	P		F	P	F
spurweed (burweed)	G	G	E	E		G	P	F
VA buttonweed	P	F		P		P	P	P
violets	P	F	P	P			P	F-G
white clover	F	G	F-G	P	F	P	P	F-G
yellow woodsorrel	P	F	G	P		G	P	F

E—Excellent Control (>90%) G—Good Control (70–90%) F—Fair Control (50–70%) P—Poor Control (<50%) If no symbol is given, weed response is unknown.