

Weeds

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Weedy Grasses

There are several preemergence crabgrass killers available which will do an excellent job of controlling crabgrass and other annual grasses. Goosegrass is more difficult to control than most of the other annual grasses. Higher rates are suggested for goosegrass control and repeating herbicide application in May or June is suggested for best results with certain compounds.

Preemergence crabgrass killers kill seedlings as they germinate. Thus, it is necessary that they be applied in advance of crabgrass germination. Crabgrass usually germinates after April 15 in the mountains and March 15 in the Piedmont areas.

Midseason to late postemergent applications for annual grasses is considered to be less desirable than preemergent or early postemergent control. Late postemergent treatments will usually result in turfgrass discoloration and browning of crabgrass foliage, and later bare areas in a lawn. However, early postemergent treatments will provide excellent crabgrass control and allow turfgrass to begin to cover during the Summer and Fall. Goosegrass is very difficult to control with postemergent arsenical treatments. It is possible to control crabgrass and allow a more difficult problem with goosegrass to develop without competition for the space left by the dying crabgrass. In addition to arsenicals, fenoxaprop, dithiopyr, quinclorac, and metribuzin are used to control annual grasses in certain turfgrasses during late spring and summer.

Most perennial grasses are controlled by physical removal or by non-selective chemicals. Dallisgrass may be selectively controlled with arsenical herbicides.

Table 6.3 - Annual Grass Control¹

In Bluegrass, Tall Fescue, Perennial Ryegrass, and Common Bermudagrass

Herbicide	Crabgrass	Goosegrass	Annual Bluegrass	Foxtail	Sandbur	Annual treatments ²
Preemergent						
Benefin	S	I	I	S	I	2
Bensulide	S	R	S	S	—	1-2
Bensulide + Oxadiazon	S	S	S	S	I	2
DCPA	S	I	I	S	I	2
Dithiopyr	S	I	I	S	—	1
Ethofumesate	—	—	S	—	—	2-3
Oryzalin	S	I	S-I	S	S-I	2
Oxadiazon	S	S	I	S	I	1
Pendimethalin	S	I	I	S	I	2
Prodiamine	S	I	I	S	—	1
Siduron	S	R	R	S	—	2
Benefin + Oryzalin	S	S-I	S-I	S	S-I	1
Benefin + Trifluralin	S	I	S-I	S	S-I	2
Postemergent						
Dithiopyr	S	I	I-R	S	—	1
DSMA, MSMA	S	I-R	R	S	S-I	2-6
Fenoxaprop	S	I	I-R	S	—	2
Dithiopyr + MSMA	S	I	I-R	S	S-I	1
Dithiopyr + fenoxaprop	S	S-I	I-R	S	—	1
Mesotrione	S	S-I	I-R	S	—	2-4
Quinclorac	S	I-R	R	S	—	1-2

¹The relative effectiveness of commonly used herbicides for selected weeds is using S = weed susceptible; I = intermediate, good control at times with high rates, sometimes poor, may require more than one treatment; R = resistant weeds in most instances.

²Lower label rates may require additional applications.

Table 6.4 - Preemergent

Application	Weed Problems	Chemical Rate/ 1000 sq ft	Remarks
New seeding bluegrass, tall fescue, perennial ryegrass	Annual grasses: barn- yardgrass, crabgrass, foxtails	siduron (Tupersan 3.7oz of 50% WP)	Apply at time of seeding. Kills annual weedy grasses, but not annual bluegrass. For use on bluegrass, tall fescue, or perennial ryegrass. Do not use on bermudagrass.
New seeding tall fescue, perennial ryegrass, bluegrass, bentgrass	Annual grasses: crabgrass, foxtails, barnyardgrass	Quinclorac (Drive 0.28 oz of 75% DF)	Apply at time of seeding for fescue and ryegrass. Must use 7 days before or 28 days after bentgrass and bluegrass. Controls annual grasses and some broadleaf weeds, but not goosegrass or annual bluegrass.
Preemergent bermudagrass (during establishment from sprigs)	Annual grasses: crab- grass, goosegrass, foxtails	oxadiazon (Ronstar G 3.4 lb of 2% gran or Ronstar 2.2 oz of 50WP)	Apply at the time of sprigging and do not dis- turb soil surface after application. Provides preemergence control of the annual grasses and allows good establishment of bermuda- grass sprigs. For use by commercial and land- scape personnel only. Ronstar is not for home lawns.
Preemergent bermudagrass, zoysia- grass (during establish- ment from seed)	Annual grasses: crabgrass, foxtails, barnyardgrass	Quinclorac (Drive 0.19 oz of 75% DF)	Apply at time of seeding. Controls annual grasses and some broadleaf weeds, but not goosegrass or annual bluegrass.
Established turf bluegrass, tall fescue, perennial ryegrass, bermudagrass	Annual grasses: barn- yardgrass, crabgrass, foxtails	benefin (Balan 3.0 lb of 2.5% gran or 1.8 oz of 60 DF)	Apply uniformly in late winter or early spring before crabgrass emergence. May be reap- plied after 2 months for continued crabgrass control. Reseeding should not be attempted for 6 weeks after application.
		bensulide (Betasan 7.5- 9.4 oz of 4.0 EC or 1.9- 2.3 lb of 12.5% gran or 3.3 lb of 7% gran)	Same. Do not reseed within 4 months of appli- cation. If for some reason turfgrass must be reseeded, charcoal will inactivate this herbi- cide. Application may be repeated after 3 to 4 months for continued crabgrass control.
		DCPA (Dacthal 1/3 lb of 75% WP or 5.0 lb of 5% gran or 5.1 oz of 6 FL)	Apply in the early spring before crabgrass emer- gence. Flowering of forsythia can be used as a guide for proper timing of application. In areas where late-germinating crabgrass is experienced, a second application of half the regular rate is necessary after 8 weeks. In addition to crabgrass control, the DCPA treatments will provide some preemergence control of sandbur and postemer- gence control of corn speedwell.
		dithiopyr (Dimension 1.5 oz of 1 EC)	Apply prior to or at crabgrass emergence. On fall seeded turfgrasses, delay application to early Postemergence for improved tolerance.
		oxadiazon (Ronstar 3.4 lbs of 2% gran or Ronstar 2.2oz of 50WP)	Apply in the early spring before crabgrass emergence. Oxadiazon is used on blue- grass, bermudagrass, tall fescue, and peren- nial ryegrass. Ronstar is not for use on home lawns.
		pendimethalin (Turf Weedgrass control 2.7 lb of 1.71 gran or Weedgrass control 1.2 oz of 60 WDG or PreM 1.2 oz of 60 WDG)	Apply in the early spring before crabgrass emergence. Professional applicators may also use PreM 60 WDG. Must be reapplied after 6-8 weeks for continued crabgrass control.

Table 6.4 - Preemergent (cont.)

Application	Weed Problems	Chemical Rate/ 1000 sq ft	Remarks
Established turf bluegrass, tall fescue, perennial ryegrass, bermudagrass (cont.)	Annual grasses: barn- yardgrass, crabgrass, foxtails (cont.)	prodiamine (Barricade 0.40 oz of 65 WG)	Apply in spring before crabgrass germination. Irrigation or rain is desirable within a week to 10 days after application. Wait 6 mo to overseed by broadcasting over the surface. This waiting period may be reduced to 4 mo by drilling seed directly into the soil.
		benfen + trifluralin (Team 2G 3.5 lb of 1.3 + 0.7 gran)	Apply in spring before crabgrass germination and repeat application to maintain late season control.
		bensulide + oxadiazon (Goosegrass/ Crabgrass Control 2.6 lb of 5.25 + 1.31 gran)	Apply in spring before crabgrass germination.
	Goosegrass	oxadiazon (Ronstar 3.4 lb of 2% gran or Ronstar 2.2 oz of 50 WP)	Apply uniformly in early spring before goosegrass germination. This treatment will also give crabgrass control. Oxadiazon provides a high level of goosegrass control from early spring application. Ronstar is not for use on home lawns.
		pendimethalin (PreM 1.8 oz of 60% WDG or Turf Weedgrass Control 2.7 lb of 1.71 gran)	Apply in early spring and repeat after 6 weeks to improve late season goosegrass and crabgrass control.
prodiamine (Barricade 0.40 oz of 65 WG)		Apply in spring before goosegrass germination. Irrigation or rain is desirable within a week to 10 days after application. Wait 6 mo to overseed by broadcasting over the surface. This waiting period may be reduced to 4 mo by drilling seed directly into the soil. Repeat application according to label directions for goosegrass control.	
oxadiazon + bensulide (Goosegrass/ Crabgrass Control 2.6 lb of 1.31 + 5.25 gran)		Apply in early spring before goosegrass germination. This treatment also controls crabgrass when applied as a preemergence. This product may be allowed on golf greens for goosegrass control; however injury must be acceptable.	
Established bermudagrass	Goosegrass, crabgrass	benfen + oryzalin (XL Herbicide 3.0 lb of 1% + 1% gran and repeat after 8 weeks)	Apply in spring before annual grass germination. Reseeding turfgrass areas should be delayed at least 6 weeks after application.
		oxadiazon (Ronstar 1.8 to 2.2 oz of 50 WP or 3.4 lb of 2% gran)	Apply in early spring to dormant bermudagrass and irrigate to wash into soil surface. It is suggested for fairways, parks, golf courses and lawns. Ronstar is not for use on home lawns, putting greens or tees.

Table 6.4 - Preemergent (cont.)

Application	Weed Problems	Chemical Rate/ 1000 sq ft	Remarks
Established turf, bluegrass, tall fescue, bermudagrass, perennial ryegrass	Annual bluegrass	bensulide (Betasan 0.6 pt of 4 EC or 2.25 lb of 12.5% gran or 4.1 lb of 7% gran)	Apply in late August before annual bluegrass germination. Do not overseed or reseed for 4 or more months. Application of activated charcoal will inactivate bensulide and allow reseeding of desirable grass. Spring treatments for crabgrass control do not provide sufficient residual activity for any appreciable annual bluegrass control in the Fall.
		Bensulide (Betasan 9.6 fl oz of 4 EC) Dithiopyr (Dimension 1.84 fl oz of 1 EC) Prodiamine (Barricade 0.5-1.0 fl oz of 4 EC)	Apply in late August before annual bluegrass germination. Do not overseed or reseed for 4 months or as specified on label. Application of activated charcoal will inactivate herbicide and allow for reseeding of desirable grasses.
		ethofumesate (Prograss 1.5-2.0 oz of 1.5 EC and repeat after 30 to 60 days)	Preemergence and early postemergence annual bluegrass control is obtained with this treatment. Apply to dormant bermudagrass and bluegrass in the fall and repeat the treatment at 30 to 60 days. First application may be made at 15 to 30 days after overseeding bermudagrass with perennial ryegrass. Do not apply after January 1 on bluegrass and bermudagrass turf. Initial treatments before bermudagrass goes dormant or treatments made after February 1 are likely to cause bermudagrass injury. These treatments may be made for annual bluegrass control during establishment and on established perennial ryegrass. With perennial ryegrass, application can be made in spring if annual bluegrass is emerging.
Established bermudagrass	Annual bluegrass	simazine (Princep DF 0.4 oz of 90 DF or 0.75 oz of 4L)	Apply before annual bluegrass germinates. Do not overseed or seed for 4 months before or 6 months after treatment. May be used only in coastal plain area of Virginia. For control of a few broadleaf weeds, read label. Hybrid bermudagrasses are slightly more sensitive to simazine.

Table 6.5 - Postemergent

Application	Weed Problems	Chemical Rate/ 1000 sq ft	Remarks
Established turf, bluegrass, bermudagrass, tall fescue, perennial ryegrass	Annual grasses: crabgrass, foxtails, goosegrass	DSMA (Many formulations available. Must follow directions on label of container.) OR MSMA (Same as DSMA)	Various formulations are available. Start in June when annual grass is in the 1 to 3 leaf stage and less than 1 inch tall. At least 3 applications at 7-day intervals are necessary for goosegrass control. Timing of application is critical. Apply when soil moisture is adequate for rapid growth of crabgrass and turf. Some discoloration of turfgrass is to be expected. Follow label instructions for use of individual formulations. Use lower rate when mid-day temperatures are 80°F or higher.
Established turf, bluegrass, tall fescue, perennial ryegrass, fine fescue	Annual grasses: crabgrass, foxtail, goosegrass	fenoxaprop (Acclaim 1 EC at 0.345 to 0.73 oz)	Turfgrasses should be more than one year old. The low rate is used early in year (about June 15) when crabgrass is in seedling stage (not tillered). As tillering becomes evident (1 to 3/ plant), the high rate is used for adequate control. The turfgrasses also become more tolerant in July as growth pattern begins to slow. Tank mixing with broadleaf herbicides tends to reduce effectiveness on crabgrass.
		dithiopyr (Dimension at 1.5 oz of 1 EC)	Apply at emergence and up until tillering of crabgrass. Excellent control of crabgrass but only suppression of goosegrass is expected.
		Mesotrione (0.09-0.18 oz of 4 EC)	Apply at emergence through tillering. Tillering plants require two applications at 3-week intervals. Plants exceeding 10 tillers often require 3 applications at 3-week intervals, especially if the lower rate must be used. Also controls goosegrass, nimblewill, creeping bentgrass, foxtail, barnyardgrass, and several other grass and broadleaf species. Suppresses bermudagrass. Do not use more than 0.5 lb ai/A in a single season.
		quinclorac (Drive 0.37 oz of 75 DF)	Apply at emergence through tillering. Two applications may be needed on tillering crabgrass but do not exceed 2 lb ai/A during a season. Also controls several broadleaf weeds, especially clover. Does not control goosegrass. Read and follow label instructions. Avoid drift to desirable ornamental plants.
Established bermudagrass only	Goosegrass	fenoxaprop or DSMA, MSMA + Preemergence	Use label rates of pendimethalin, dithiopyr, bensulide, DCPA, or siduron.
		metribuzin (0.125-0.25 oz of Sencor 75 TH)	Metribuzin should be tank-mixed with DSMA or MSMA where labels do not prohibit this treatment, at the user's discretion. Apply to actively growing bermudagrass and goosegrass in 40 gallons of water/A (1 gal/1000 sq ft). Repeat in 2 to 3 weeks - 2 applications maximum/year. Do not use on golf greens. Expect some discoloration of the bermudagrass. Do not use on bluegrass, fescues, or perennial ryegrasses.
Established bermudagrass, zoysiagrass	Goosegrass	foramsulfuron (Revolver 0.6 fl oz of 0.19 EC)	Apply 2 to 3 times. May mix or apply in sequence with MSMA or metribuzin.

Table 6.5 - Postemergent (cont.)

Application	Weed Problems	Chemical Rate/ 1000 sq ft	Remarks
Established dormant bermudagrass	Annual bluegrass, other winter annual weeds	glyphosate (Roundup 0.28 oz of 4.0 lb/gal LC); add 0.5% nonionic surfactant	Apply with 1/2 gal of water/1000 sq ft to actively growing annual bluegrass and other winter annual weeds in late winter on dormant bermudagrass (must be applied before any bermudagrass greenup.)
Established bermudagrass, zoysiagrass only	Annual bluegrass, roughstalk bluegrass, perennial ryegrass	foramsulfuron (Revolver 0.4 fl oz of 0.19 EC) trifloxysulfuron (Monument 0.007-0.011 oz of 75 WG) rimsulfuron (Tranxit 0.046 oz of 25 DF)	Apply any time after 50 percent bermudagrass greenup or during dormancy, but not within 1 month of greenup. Products may move in watershed or track onto surrounding cool-season grasses. Do not apply to saturated soils and irrigate 4 to 12 hours after treatment with 0.1 inch water.
Established turf	Dallisgrass (<i>Paspalum dilatatum</i>)	MSMA (Follow directions on container label)	Apply June through September when mid-day temperatures do not exceed 90°F. June to early July is best timing and has a better environmental condition for control. Two or three applications at 7 to 10 day intervals will be required for control.
Established turf bluegrass, tall fescue, perennial ryegrass, bermudagrass	Yellow and purple nutsedge as well as other sedges.	halosulfuron (Sedgehammer 0.023 oz of 75 WDG)	Apply when actively growing. Avoid applications when turf and nutsedge are under stress. A nonionic surfactant should be added at a rate of 0.25 - 0.50% V/V. Halosulfuron is not labeled for use on golf greens.
	Yellow nutsedge	bentazon (Basagran T/O 1.0 oz of a 4 lb/gal LC) MSMA (MSMA6 1.0 oz of 6 lb/gal LC)	Apply when actively growing. At least 2 applications at 10 day intervals will be required for control. A third application may be made if needed (no more than three/year). A crop oil should be added at 0.25% V/V. Not effective for purple nutsedge control. Bentazon is not labeled for use on golf greens. Perennial ryegrass has shown considerable injury in some cases.
Established turf bermudagrass	Purple nutsedge, wild onion, wild garlic	imazaquin (Image 0.5 to 1.0 oz of 1.5 lb/gal)	Apply when actively growing. Imazaquin may be tank-mixed with MSMA for control of yellow nutsedge. A nonionic surfactant should be added at 0.25% V/V.
Renovation of established turf	Tall fescue, quackgrass, bermudagrass, orchardgrass, nimblewill	glyphosate (Roundup 2.5 oz 4.0 lb/gal LC)	Allow 2 to 4 weeks without mowing before chemical treatment. See label for desirable plant size to treat. Allow 7 days before clipping the dead sod and vertical mowing to 1/4 inch deep into soil. Seed the desired turfgrass and irrigate as needed. Early fall applications coincide with seeding dates, but application can also be made at other times when undesirable grass is actively growing.

Moss Control

Moss gradually invades lawns in areas where the turfgrasses are growing poorly. The infested site may be described as wet, shady, highly acidic, and under low fertility. A program to control moss involves correcting the turfgrass growing conditions as much as possible. Remove as much moss as possible by raking, vertical mowing and aerifying to prepare a seed bed to reseed thin turfgrass areas. Select a species/cultivar adapted to the area conditions. Maintain optimum growing conditions for the turfgrass as fertility, pH, moisture (not excessive) and mowing height/frequency. The turfgrass density is very important to prevent further moss encroachment. Sometimes a shade tree may be removed to allow enough light for good turfgrass growth.

Chemical formulations for moss control usually contain iron, copper, or potassium salts of fatty acids as active ingredients. Ferrous sulfates and chelated iron products applied as liquid sprays are generally rapid and effective on moss. Dry formulations of ferrous sulfate monohydrate are available such as Moss Control Granules for Lawns containing 5% iron (follow label directions). Carfentrazone (Quicksilver T&O) is an herbicide for broadleaf control that can be used in lawns or putting greens for moss control. Apply 6.7 ounces Quicksilver T&O per acre or 0.15 ounce per 1,000 square feet twice at 3-week intervals. Moss discoloration is a sign of successful treatment and takes longer under cool conditions. Moss control is temporary and treatment may be required annually. Managers should improve conditions for turfgrass growth while minimizing the favorable environment for the moss. Read and follow label directions carefully.

Broadleaf Weeds

The herbicide response table that follows rates the susceptibility of common lawn weeds to weed killers. Annual weeds live only one year and should be treated in the seedling stage. Winter annuals germinate in the fall and should be controlled at that time. Spring germinating annuals, likewise, need to be treated in the spring. Biennial plants live 2 years and perennials live for 3 years or more. In general, broadleaf weeds respond best to weed killers when they are most actively growing and in the seedling stage. This is usually in the spring or fall. When equally effective, we prefer the fall application because of less likelihood of damage to ornamental and garden plants. Application of high rates of weed killer during hot dry conditions may brown desirable grasses. Effectiveness of postemergence broadleaf herbicides is better when rainfall or irrigation does not occur for 24 hours after application.

Most lawns that need treatment contain a variety of weeds which can best be controlled by a combination of ingredients. Many formulations are sold that contain more than one ingredient. It is necessary that label direction on the container be followed to get the proper application rate. When combinations are used, the results are additive and the individual rates are reduced, slightly. A combination of 2,4-D and dicamba (1.0 lb + 0.25 lb) or 2,4-D and mecoprop (1.0 lb + 1.0 lb) is very effective on a wide range of broadleaf weeds. We would consider this to be the best treatment for an average lawn with a variety of weeds. Knotweed, dock, and red sorrel are susceptible to dicamba. **Dicamba is soil-mobile** and should not be used in the root area of shallow-rooted trees or shrubs. The specific herbicide(s) should be selected according to the kinds of weeds present in the turf and the appropriate herbicides may be tank-mixed or purchased as a pre-mixed formulation.

Combinations of 2,4-D + mecoprop + dicamba and other three-way mixtures are on the market. Follow label directions on the containers for proper application rates and directions. The low rate of dicamba in these three-way mixtures reduces the possibility of dicamba injury.

Triclopyr may be purchased as a formulation mixture with 2,4-D (Turflon D, Chaser) or clopyralid (Confront) or may be used as a tank-mixture with these herbicides. Some formulation mixtures are suggested for use by professional personnel in charge of weed control applications. Read the label for rates to use for specific weeds and turfgrass tolerances. Triclopyr should not be used on bermudagrass unless some injury can be tolerated and then lower label rates are suggested.

Newly seeded turf areas should not be treated with broadleaf weed killers until enough growth has occurred to allow two mowings. The broadleaf weed killers recommended for lawns are not particularly toxic to humans, pets, birds, or wildlife. They would create a problem only if ingested in large quantities. They are biodegraded by soil micro-organisms and their persistence in the soil would range from 2 to 4 weeks for 2,4-D, and possibly 6 months for dicamba.

The chemicals noted can be used safely at recommended rates on bluegrass, fescue, or common bermudagrass. The bentgrasses are susceptible to injury from 2,4-D; however, there are formulations containing low rates of 2,4-D in combination with other materials that may be safely used. Avoid application on bentgrasses when temperatures exceed 85° F.

The availability of many formulations of the various broadleaf herbicides which vary in amount of active ingredient makes it difficult to establish a general rate to apply to 1000 sq ft or to add to 1 gal of water. Directions on the container label should be used as a guide to determine the proper amount of formulation to use. With a 4.0 lbs/gal formulation, 1.0 qt contains 1.0 lb of active ingredient and a rate given in lb/A is equal to qt/A. To convert to small areas, 1.0 qt/A = 1-1/2 tbsp/1000 sq ft.

Table 6.6 - Conversion for Small Area Application

Rate Desired	Formulation available					
	1 lb/gal.	2 lb/gal.	4 lb/gal.	1 lb/gal.	2 lb/gal.	4 lb/gal.
	Quarts/Acre ¹			Tablespoons/1000 sp ft		
1/3 lb/A	1-1/2	3/4	3/8	2-1/4	1-1/8	9/16
1/2 lb/A	2	1	1/2	3	1-1/2	3/4
1 lb/A	4	2	1 ¹	6	3	1-1/2 ¹
1-1/2 lb/A	6	3	1-1/2	9	4-1/2	2-1/4
2 lb/A	8	4	2	12	6	3

¹One quart/A is equal to 1-1/2 tablespoons/1000 sq ft.

Two tablespoons is equal to 1.0 fluid ounce or 29.6 cc.

Table 6.7 - Preemergent Broadleaf Weed Control

Application	Weed Problem	Chemical	Remarks
Preemergent (Established turf)	Annual broadleaf weeds	DCPA (Dacthal 1/3 lb of 75% WP or 5.1 oz of 6 FL or 5.0 lb of 5% gran)	DCPA will provide some preemergent control of prostrate and spotted spurge, common chickweed, carpetweed, purslane, and sandbur. Creeping speedwell may be controlled with high rates as a postemergence application in May or June.
		isoxaben (Gallery 3/8-1/2 oz of 75 DF)	Apply uniformly in early spring prior to germination of target weeds such as: white clover, spotted spurge, yellow woodsorrel, or prostrate knotweed. Fall germinating weeds may require applications in late summer (common chickweed, henbit, dandelion, corn speedwell, shepherdspurse, broadleaf and buckhorn plantains). Is safe in and around various trees, shrubs, and groundcovers in May or June.

Table 6.8 - Broadleaf Weed Control in Bluegrass, Tall Fescue, Perennial Ryegrass, and Common Bermudagrass

The relative effectiveness of commonly used herbicides for selected weeds is listed in this table. See (!) for key.

Weeds which are intermediate in response should be given repeat treatment rather than increasing the rate of a single application. It may sometimes be desirable to treat at times other than those listed. When this is necessary, make sure that good growing conditions prevail and contact with desirable plants is prevented. Combination products may be more effective than individual chemicals on a particular weed. The herbicides listed may be purchased as a pre-mixed formulation or separately and tank-mixed as labels allow.

Use caution when applying triclopyr or clopyralid to bermudagrass-see label restrictions.

Weed	Classification	Response to Herbicides (lb/A) ¹								Preferred Time to Treat
		2, 4-D 1.5-2.0	Dicamba 0.33-0.5	2,4-D + Mecoprop 1+1	2, 4-D + Mecoprop + Dicamba	2, 4-D + Dicamba 1.0+0.33	2, 4-D + Dichlorprop + Mecoprop	2, 4-D+ Triclopyr 1.0+0.5	Triclopyr + Clopyralid 0.56+0.19	
Bedstraw	A	I-R	S	I	I-R	S	—	—	—	April & May
Bindweed	P	S	S	S-I	S	S	S	S	—	May & June
Bittercress	WA or B	S	S	S	S	S	S	S	—	Oct & Nov
Blackmedic	A, B, & P	R	S	I	S	S	S	S	S	April & May
Buttercup	WA, B, & P	S-I	I	S	S	S	S	I	S	Oct & Nov
Buttonweed Virginia	P	R	R	R	I-R	I	I	I	I	May & repeat
Carpetweed	SA	S	S	S	S	S	S	S	—	May & June
Catsear Dandelion	P	S-I	S	S	S	S	S	S	S	Oct & Nov
Chickweed Common	WA	R	S	S	S	S	S	S	S	Oct & Nov
Mouseear	P	I-R	S	S-I	S	S	S	S	S-I	Oct & Nov
Chicory	P	S	S	S	S	S	S	S	—	Oct & Nov
Cinquefoil Common	A	S	S	S	S	S	S	S	—	May & June
Clover Crimson	SA	S	S	S	S	S	S	S	S	May & June
Hop	SA	I	S	S	S	S	S	S	S	April & May
White	P	I	S	S	S	S	S	S	S	Oct & Nov
Daisy Oxeye	P	I	I	I	I	I	I	I	—	Oct & Nov or May
Dandelion	P	S	S	S	S	S	S	S	S-I	Oct & Nov
Dock	P	I	S	I	I	S	I	I	I	Feb - April
Dogfennel	P	R	S	I-R	I-R	S	I	I	S-I	Oct & Nov or April
Garlic Wild	P	I	I	I	I	S-I	I	—	—	Oct - Nov. & Feb - March

¹S = weed susceptible; I = intermediate, good control at times with high rates, sometimes poor, may require more than one treatment; R = resistant weeds in most instances; A = annual; SA = summer annual; WA = winter annual; B = biennial; and P = perennial.

Table 6.8 - Broadleaf Weed Control in Bluegrass, Tall Fescue, Perennial Ryegrass, and Common Bermudagrass (cont.)

Weed	Classification	Response to Herbicides (lb/A) ¹								Preferred Time to Treat
		2, 4-D 1.5-2.0	Dicamba 0.33-0.5	2,4-D + Mecoprop 1+1	2, 4-D + Mecoprop + Dicamba	2, 4-D + Dicamba 1.0+0.33	2, 4-D + Dichlorprop + Mecoprop	2, 4-D+ Triclopyr 1.0+0.5	Triclopyr + Clopyralid 0.56+0.19	
Geranium Carolina	WA	S	S	S	S	S	S	S	—	April - May
Ground Ivy	P	I-R	S-I	I	I	S-I	I	S-I	S-I	April - May
Hawkweed	P	S-I	S-I	S-I	S-I	S	S-I	S-I	I	Aug & Sept
Healall	P	S	S-I	S-I	S-I	S	S	—	—	Oct & Nov
Henbit	WA	I	S	I	S-I	S	S	S	S	Oct & Nov
Honeysuckle	P	S-I	S	S-I	S	S	S	S	—	May & June
Horsenettle	P	I-R	I	I-R	I-R	I	I	I	—	May & June
Horseweed	WA, SA	I	S	S-I	S-I	S	—	—	S	Oct or May
Knapweed Spotted	B	I	S	I	I	S	I	S	—	Oct & Nov
Knawel (German Moss)	WA	R	S	I	I	S	S	S-I	—	Oct & Nov
Knotweed	SA	R	S	I	I	S	I	—	—	March - April
Lambsquarters	SA	S	S	S	S	S	S	S	S	April & May
Lespedeza	SA	I-R	S	S-I	S	S	S	S	I	April & May
Mallow Common	SA	I-R	S-I	I	I	S-I	S-I	—	S-I	April & May
Mugwort	P	I-R	S-I	I-R	I-R	S-I	I	—	—	March
Mustards	WA & B	S	S	I	S-I	S	S	—	—	Oct & Nov
Onion Wild	P	I	I	I	I	S-I	I	—	—	Oct - Nov & Feb - March
Ornamental Plants	P	S-I	S	S-I	S-I	S	S	S	—	Most likely to injure April to June
Oxalis	A,P	I-R	R	I-R	I-R	I	S	I	I-R	April - May
Pennycress	A	S	S	S	S	S	—	—	—	Oct & Nov
Pepperweed	WA or B	S	S	S	S	S	S	—	S-I	Oct & Nov
Pigweed	SA	S	S	S	S	S	S	S	—	April & May
Plantains	P	S	I-R	S	S	S	S	S	S-I	Oct & Nov
Poison Ivy	P	I	S-I	I	I	S-I	I	S-I	I	June
Pony Foot	P	S	S-I	S-I	S-I	S	—	—	—	Oct & Nov
Poorjoe (Diodia)	A	S-I	—	S-I	S-I	S	—	—	—	May & June
Prostrate Spurge	SA	I	S	I	S-I	S	S-I	S-I	I	April - May

¹S = weed susceptible; I = intermediate, good control at times with high rates, sometimes poor, may require more than one treatment; R = resistant weeds in most instances; A = annual; SA = summer annual; WA = winter annual; B = biennial; and P = perennial.

Table 6.8 - Broadleaf Weed Control in Bluegrass, Tall Fescue, Perennial Ryegrass, and Common Bermudagrass (cont.)

Weed	Classification	Response to Herbicides (lb/A) ¹								Preferred Time to Treat
		2, 4-D 1.5-2.0	Dicamba 0.33-0.5	2,4-D + Mecoprop 1+1	2, 4-D + Mecoprop + Dicamba	2, 4-D + Dicamba 1.0+0.33	2, 4-D + Dichlorprop + Mecoprop	2, 4-D+ Triclopyr 1.0+0.5	Triclopyr + Clopyralid 0.56+0.19	
Purslane	SA	I	S	I	I	S	I	S-I	—	May & June
Red Sorrel Shepherds'	P	R	S	I	I	S	I	S-I	S-I	Oct & Nov
Purse	WA	S	S	S	S	S	S	S	S-I	Oct & Nov
Smartweed	SA	I-R	S	I-R	I	S	I	I	I	April & May
Sowthistle	WA	S	S	S	S	S	S	S	—	Oct & Nov
Speedwell Corn	SA or WA	R	R	R	R	I-R	I	I	I	April
Spotted Spurge	SA	I-R	S-I	S-I	S-I	S-I	S-I	S-I	I	May & June
Star-of-bethlehem	P	R	I-R	R	R	I-R	R	—	—	April
Teasel (Common)	B	S	S	S	S	S	S	S	-	April & May
Thistle Bull	B	S-I	S	S-I	S-I	S	S-I	S-I	—	Oct & Nov
Canada	P	I	I	I-R	I	I	I	I	S-I	Oct & Nov
Curl	B or P	S	S	S	S	S	S	S	—	April
Musk	B	S	S	S	S	S	S	S	I	April
Vegetables	A	S	S	S	S	S	S	S	S	Most likely to injure April to June
Violet	P	I-R	I	I-R	I-R	I	I	I	I	April
Wild Carrot	B	S	S	S	S	S	S	S	I	Oct & Nov
Wild Strawberry	P	R	S-I	R	I-R	S-I	I	I	—	Oct & Nov
Yarrow	P	I	S	I	I	S	I	I	—	Oct & Nov
Yellow Rocket	B or P	S-I	S-I	S-I	S-I	S	S	S	—	Oct & Nov
Yellow Woodsorrel	A	R	R	I-R	I	I	S	I	I-R	April & May

¹S = weed susceptible; I = intermediate, good control at times with high rates, sometimes poor, may require more than one treatment; R = resistant weeds in most instances; A = annual; SA = summer annual; WA = winter annual; B = biennial; and P = perennial.

Table 6.9 - Golf Course Putting Greens (Bentgrass or Bermudagrass)

Weed Problem	Chemical Rate/1000 sq ft	Remarks
Preemergent control of annual grasses	bensulide 7.0-9.4 oz (4.0 lb/gal formulation) or (6.0-8.0 lb of 3.6% gran) or (1.9-2.4 lb of 12.5% gran or 2.4 to 4.1 lb of 7% gran)	Apply uniformly in the late winter or early spring before crabgrass emergence. August or September application is used for annual bluegrass control. The higher rate is needed for annual bluegrass. For crabgrass, the lower rate is effective and may be repeated after 4 months for better continuous crabgrass control. Goosegrass control is generally poor with bensulide.
	bensulide + oxadiazon (Goosegrass/Crabgrass Control® 2.6 lb of a 5.25% + 1.31% gran)	For use on bermudagrass and bentgrass putting greens, apply with a properly calibrated drop spreader. Use only where goosegrass is heavy on the green during a prior year and the herbicidal side effects are tolerable. Irrigate the green immediately after application. Do not treat greens with less than desirable turf cover and root system.
	dithiopyr (Dimension 1.5 oz of a 1 lb/gal)	For preemergence or early postemergence control of crabgrass on creeping bentgrass cultivars only and bermudagrass golf greens. Use only on amended greens. Use on non-amended greens (high in clay) may result in undesirable injury. Do not apply to putting greens under stress conditions. Goosegrass may be suppressed.
Postemergent control of annual grasses	DSMA (Follow directions on container label).	Follow label directions. Discoloration of grass should be expected. Use only when mid-day temperatures are below 90°F. Goosegrass control will require 2 to 3 applications at 4 to 7-day intervals and is seldom 100% effective. Goosegrass will also require the higher rates. Other label formulations may be equally effective. Follow label directions for rates.
Postemergent control of broadleaf weeds	dicamba 1.0-2.0 tsp (4.0 lb/gal formulation)	Margin to tolerance is narrow. Excessive rates will kill grass. A teaspoon is 1/6 fluid ounce. Do not try to spot-treat on green or excessive rates will occur. Start spraying on apron and move across the green. Best to put on 1/2 rate in one direction and retreat with remaining 1/2 at right angles.
	mecoprop (MCP) 1.5-2.0 oz of 2.0 lb/gal formulation	Seaside, Arlington, and Congressional bents may be injured.
	2, 4-D + MCP + dicamba 1.0 oz of Trex-San Bent OR 1.0 oz of Trimec Broadleaf Herbicide (Bent Formula)	A commercial mixture with a reduced rate of 2, 4-D which gives a good spectrum of weed control and increased margin of safety over dicamba alone. Do not over-apply. Slight yellowing may occur temporarily. Do not irrigate within 24 hours after application.

Golf Course Fairways

Fairway weed control can be accomplished with the same weed killers listed in the first part of the turf section. The same rates and remarks will apply. See Growth Regulation section in this publication for suppression of annual bluegrass in fairway bluegrasses and perennial ryegrasses.

Golf Course Sand Traps

Weeds in sand traps present considerable problems in golf course management. EPTC (Eptam 5G) is used in sand traps. All weed growth must be removed before application. Eptam must be raked into the sand to a 2- to 3-inch depth immediately after application. It will not injure greens when blasted or tracked on the turf by players. Follow directions on the container label for correct rate and method of application.

Nonselective Control of Perennial Grasses

(Bermudagrass, Fescue, Nimblewill, Orchardgrass, Quackgrass)

Undesirable patches or clumps of perennial grasses can be treated with glyphosate (Roundup, Kleenup). Lightly wet the foliage of the undesirable grass in the spring or summer when it is actively growing. Follow label directions for rates of application and proper timing. Glyphosate has no soil residual and reseeding can occur as soon as the foliage has turned brown (7-10 days).

Weed Control in Driveways, Fence Lines, and Parking Areas

There are many good soil sterilants on the market that will give long-term control of weeds. These are discussed in the non-selective section of this guide. These materials are very powerful weed killers and not designed for homegrounds situations. Many trees and shrubs have been killed when application of soil sterilants was made within their root feeding areas. See glyphosate for nonselective weed control above.

Table 6.10 - Woody Plant Control Around Homes, Cabins, Buildings, Fence Lines, Trails, and Vacant Lots

Problem and Application Technique	Chemical and Application Rate	Remarks
Foliage Spray		
Honeysuckle	2, 4-D amine 1.5 oz of 3.8 lb/gal/1.0 gal water	Wet thoroughly all foliage and stems to runoff. Apply during active growth periods after full leaf stage in spring. Turf grasses will survive some drippage.
Honeysuckle, blackberry, poison ivy, Virginia creeper, wild rose, willow, many other shrubs and trees.	triclopyr (Brush-B-Gon 5.7%, mix 4.0 oz with 1.0 gal water)	Same as above.
Blackberry, poison ivy, Virginia creeper, and other woody plants. Also bermudagrass, quackgrass, nimblewill, other grasses.	glyphosate Several formulation, use according to label directions (Kleenup, Roundup, Blot-out and others).	Wet foliage thoroughly. Any contact with desirable foliage will kill those plants. Wick applicators are effective (no drippage).

