

PERENNIAL GRASS WEEDS AND THEIR CONTROL IN COOL-SEASON TURF



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Perennial grasses growing out of place in lawns, golf courses, athletic fields, etc. are extremely difficult to control selectively in turfgrasses. Tall fescue clumps in Kentucky bluegrass lawns, as well as clumps or patches of orchardgrass, bermudagrass, nimblewill and quackgrass are among the most common perennial grass weed problems in Maryland.



A typical clump of dallisgrass in a sports turf

Other perennial grass weeds include creeping bentgrass, redtop, timothy, roughstalk bluegrass, smooth paspalum, and dallisgrass. Most so-called dallisgrass in Maryland is actually smooth paspalum. Annual bluegrass may behave as either an annual or a perennial.

Those grasses that spread by aboveground stems or runners (stolons) or belowground stems (rhizomes) include creeping bentgrass, roughstalk bluegrass, bermudagrass, quackgrass and nimblewill. Bunchgrasses generally do not produce either stolons or rhizomes, and therefore tend to grow in clumps (bunches). Although bunchgrasses can be removed by digging, those grasses that spread by stolons and rhizomes are not effectively controlled in this manner. Rototilling living plants that spread by stolons or rhizomes will actually encourage their spread.

Grass	Season*	Seed	Stolons	Rhizomes
Quackgrass	c	X		X
Bermudagrass	w		X	X
Creeping Bentgrass	c	X	X	
Roughstalk Bluegrass	c	X	X	
Nimblewill	w	X	X	
Annual Bluegrass	c	X		
Tall Fescue	c	X		
Redtop	c	X		
Smooth Paspalum (Dallisgrass)	w	X		
Orchardgrass	c	X		
Timothy	c	X		

* c = cool-season weed w = warm-season weed

Creeping bentgrass, bermudagrass and tall fescue are cultivated and considered desirable. Creeping bentgrass is used on golf course greens, fairways, and tees. Bermudagrass, especially the cultivars 'Tufcote', 'Midiron', and 'Vamont', are often used as sports turf. Creeping bentgrass and bermudagrass are typically grown in monostands, and aren't intentionally mixed with other species.

Tall fescue is used in areas ranging from home lawns to highway medians. When tall fescue is mixed with predominantly Kentucky bluegrass stands it will eventually develop a clumpy growth habit. Creeping bentgrass growing in Kentucky bluegrass, tall fescue or perennial ryegrass also gives turf a patchy appearance.

KEY POINTS

Many perennial grass weeds can be controlled by digging, non-selective herbicides, and selective herbicides

Grass weeds with stolons and/or rhizomes are often difficult to control without herbicides.

Weeds are best controlled when they are actively growing: warm season grass weeds should be targeted in summer, and cool season grasses in the fall or spring.

Bermudagrass, quackgrass, smooth paspalum (dallisgrass) and nimblewill are among the most objectionable of all perennial grass weeds. Bermudagrass, nimblewill, and smooth paspalum (dallisgrass) are warm-season grasses that develop a brown or dead appearance during their winter dormancy periods, which range from late October to late May in Maryland. Common bermudagrass grows very rapidly during summer and spreads into flower beds, gardens, patios, driveways, and sidewalks, as well as golf course fairways and putting greens. Quackgrass also spreads rapidly; quackgrass, common bermudagrass and smooth paspalum (dallisgrass) produce coarse-textured and open (i.e. low density) stands. Smooth paspalum (dallisgrass) plants produce conspicuous clumps in all turfgrasses, but are most commonly found in golf course roughs, low maintenance lawns or highway medians.

Orchardgrass is a clumping bunchgrass that is a common contaminant in tall fescue seed, especially the cultivar 'Kentucky-31'. Timothy and redtop are less common in lawns, but they were used as components of highway seed mixes in the past. Roughstalk bluegrass seed is a serious contaminant and cannot be selectively controlled when it is accidentally introduced in new seedings. Annual bluegrass is a prolific seed producer, but tends to be a short-lived weed in lawns, but can persist throughout wet summers. Conversely, annual bluegrass is a persistent weed when grown on intensively managed and well irrigated turf sites such as golf courses, athletic fields and sod farms.

Methods of Perennial Grass Weed Control

As previously noted, bunchgrasses can be removed by digging. However, most bunchgrasses cannot be controlled with herbicides that selectively kill weeds, while leaving the desirable turfgrass uninjured. Exceptions include the use of chlorsulfuron to control tall fescue clumps in Kentucky bluegrass and perennial ryegrass in creeping bentgrass fairways. Arsenical herbicides, such as DSMA and MSMA, are used for selective control of smooth paspalum and dallisgrass.

Common bermudagrass encroachment in perennial ryegrass golf course fairways can be greatly reduced by multiple summer applications of fenoxaprop combined with an early spring and autumn applications of ethofumesate. Complete bermudagrass control is rarely achieved with any selective herbicide. In most situations, a non-selective herbicide such as glyphosate or glufosinate is recommended for perennial grass weed control. Non-selective herbicides kill or injure all green plant tissues contacted, and therefore they should be used with extreme caution near desirable plants.

Perennial weed grasses are not controlled by preemergence herbicides. Never use soil sterilants for weed control in turf. Of the herbicides discussed, chlorsulfuron, ethofumesate and fenoxaprop are not available for homeowner use. Homeowners not familiar with using herbicides, however, should consider having perennial grass weeds controlled by professional applicators. These herbicides may be used safely if they are handled with extreme care. *Be sure to follow all directions given on herbicide labels.* Store all pesticides out of the reach of children and animals, and away from food and feeds. No endorsement of any herbicide listed is implied by the Maryland Cooperative Extension Service. References to trade names does not constitute a guarantee or warranty. No discrimination is intended against products not mentioned.

1. Digging

The creeping-type of weedy grasses such as bermudagrass, roughstalk bluegrass, nimblewill or quackgrass cannot be successfully removed by digging unless they exist in very small, isolated patches. Because bunchgrasses have few, if any, stolons or rhizomes they can be controlled effectively by digging. Using a spade or shovel, cut around clumps of weed grasses. The cut should be outside of all plant parts and at least 3 inches deep. When digging small patches of creeping-type grasses, the outside edge should be 6 to 12 inches outside plant parts and at least 6 inches deep. Creeping-type plants will survive unless all stolon and rhizome tissues are removed. Replace the excavated area with soil and seed or a piece of sod of the desired species present in the rest of the area.

2. Non-Selective Herbicides

As previously noted, non-selective herbicides will injure or kill all green plant tissues that are contacted. Non-selective **contact** herbicides such as diquat (Reward) and pelargonic acid (Scythe) only will kill above ground plant parts and perennial weed grasses will survive treatment. Non-selective **systemic** herbicides, which move internally in plants to kill all stem tissues including stolons, rhizomes and roots, are preferred when controlling perennial grass

weeds. Glyphosate and glufosinate are non-selective systemic herbicides, however, glufosinate does not translocate as effectively as glyphosate in stoloniferous and rhizomatous grasses.

Various salt formulations of glyphosate (trade names = Kleen-up Pro, Round-up Pro, Round-up ProDry and Quick Pro, Prosecutor, Touchdown Pro, and others) are the most commonly used non-selective systemic herbicide for grass control. However, glyphosate may not effectively control rhizomatous grasses such as bermudagrass and quackgrass using a single application. Glufosinate (trade name = Finale) is also systemic, and it is effective against most perennial grass weeds that do not produce stolons and rhizomes.

Glyphosate and glufosinate should be applied only when soil is moist and weeds are growing vigorously. During warm weather, glyphosate will kill vegetation in 7 to 10 days, however, the Quick-Pro formulation will burn-down foliage within 3 days. Glufosinate will kill foliage in about 3 to 5 days. Weeds under drought stress or hardened by cold temperatures are not effectively controlled by non-selective herbicides; it is best to utilize non-selective herbicides in autumn and spring.

After treated areas have turned brown, they may be tilled (if large) and seeded or sodded. Sodding is preferred in spring or summer because new seedlings are slow in establishing; they may fail to survive the heat, drought and disease stresses of summer. Glyphosate and glufosinate are immediately fixed to soil colloids and are rapidly degraded by microorganisms. Hence, treated areas may be disk-seeded within 24 hours of glyphosate or glufosinate treatment. However, it is best to wait at least 14 days before tilling or disk-seeding in order for non-selective herbicides to properly move into underground plant parts and to determine if there have been spray skips. A spray application of glyphosate or glufosinate to stems or trunks of mature trees or shrubs with thick brown bark will not be injured.

Two or more applications of glyphosate are recommended where bermudagrass and quackgrass are well established. Ideally, glyphosate-treated bermudagrass or quackgrass sites should be tilled after all leaves turn brown. These areas should be kept moist for 3 to 4 weeks and then re-treated if necessary with glyphosate to control any grass weeds that have survived. This procedure will help ensure better control as rhizomes of many grass weeds often survive and begin re-growth about 2 to 3 weeks after the first glyphosate application.

A very small number of bermudagrass and quackgrass rhizomes may survive a second glyphosate treatment, and a resurgence of the weed may recur in as little as one year following treatment. Therefore, it is very important to begin spot applications of glyphosate as soon as the first bermudagrass and quackgrass plants are observed. Once large areas become infested with these rhizome forming perennials, they become extremely difficult to eliminate.

3. Selective Herbicides

There are only a few examples of perennial grass weeds that can be suppressed or selectively controlled in cool-season turfgrasses. These examples and recommended herbicides are as follows:

- Chlorsulfuron (trade name = Corsair) for control of tall fescue in mature (>1 year old) Kentucky bluegrass or for control of perennial ryegrass in mature creeping bentgrass;
- MSMA (trade name = Daconate 6, Weed-E-Rad and others) or DSMA (Methar 30, Weed-E-Rad 360 and others) for control of smooth paspalum and dallisgrass;
- Fenoxaprop-ethyl (trade name = Acclaim Extra) for bermudagrass suppression;
- Ethofumesate (trade name = Prograss) for suppression of bermudagrass at spring green-up and in autumn prior to dormancy of bermudagrass. Ethofumesate also controls annual bluegrass, but levels of control are erratic and seldom totally effective.

Chlorsulfuron is for professional use only and it is used in minute quantities. This herbicide will control tall fescue or perennial ryegrass when applied in a spot spray to clumps growing in Kentucky bluegrass lawns. This material is extremely phytotoxic to tall fescue and perennial ryegrass, and should **not** be used where these species are considered desirable. Chlorsulfuron is used at rates ranging from 2.76 to 5.33 ounces of product per acre for tall fescue control in Kentucky bluegrass. These rates also will control numerous broadleaf weed species. For use in a hand-held sprayer, a sensitive analytical scale is needed to weigh-out the herbicide. For spot treatment of tall fescue

clumps, mix 2.5 grams of chlorsulfuron in 1.0 gallon of water. Add a surfactant to the tank to improve efficacy and agitate the sprayer frequently to disperse the granules.

Each tall fescue clump is lightly sprayed to wet the leaf blades. Over spraying **will** injure or kill Kentucky bluegrass. To avoid over spraying, this herbicide should be mixed with a dye or each treated clump should be marked with a stake. Autumn is the best time to use this herbicide although good control can be achieved during the spring. Tall fescue clumps will appear healthy for 3 to 4 weeks after treatment. Gradually, the clumps turn yellow and the tall fescue slowly dies over a 6 to 8 week period. Death of tall fescue is so slow that adjacent Kentucky bluegrass plants will fill-in and no dead spots will appear in the turf. If Kentucky bluegrass is over sprayed and killed the area can be disk-seeded successfully about 60 days after treatment. Seedlings, however, will appear stunted and will be slow to establish.

For perennial ryegrass control in creeping bentgrass fairways only 1.0 to 2.0 ounces of product per acre is needed. Perennial ryegrass also dies out slowly, but not as slowly as tall fescue. For spot treatment use a hand-held sprayer and mix only 1.5 grams of product per gallon of water. Follow the procedures outlined above for spot-treatment of tall fescue. Chlorsulfuron can be phytotoxic to sensitive ornamentals and it has a long soil persistence. Chlor-sulfuron is moderately mobile in soil and should not be applied up-slope of sensitive turf species or ornamentals. Carefully read the label before using this herbicide and be absolutely sure that sprayers are accurately calibrated.

MSMA and DSMA can be used to control smooth paspalum and dallisgrass in turf. These herbicides must be applied in 2 or 3 applications on a 7 to 10 day interval. These treatments will discolor (yellow) turf for 4 to 6 weeks. Using a lot of water (i.e., 100 gallons per acre) will greatly reduce yellowing of the desired turfgrass. Applications should begin when the weed is actively growing, usually late June or early July in Maryland. Over application will cause significant injury to turfgrass. Treatments should be made when soil moisture is favorable to support vigorous weed growth and air temperature is in the range of 85 to 90 F.

Fenoxaprop is primarily used for postemergence control of annual grass weeds such as crabgrass and goosegrass (see TT-43 "Herbicides for Crabgrass and Goosegrass Control in Turf"). Fenoxaprop is phytotoxic to bermudagrass and can be used to significantly reduce its growth and competitiveness. Successful bermudagrass suppression is labor intensive. Fenoxaprop applications should begin at spring green-up of bermudagrass, which is around mid-May in Maryland. Fenoxaprop applied monthly from May to September will reduce bermudagrass colonization by over 90%. Re-growth of bermudagrass also will be greatly reduced the following spring. Multiple applications, however, may be required annually to keep bermudagrass growth in check. Suppression of bermudagrass with fenoxaprop is variable and should only be attempted in tolerant species such as Kentucky bluegrass, tall fescue, perennial ryegrass or zoysiagrass turfs. Fenoxaprop may cause some yellowing in Kentucky bluegrass and zoysiagrass, especially in spring under low mowing. Fenoxaprop can be used in conjunction with ethofumesate to control bermudagrass, but the combination is only safe in perennial ryegrass.

Ethofumesate is primarily used for partial postemergence control of annual bluegrass and bermudagrass in perennial ryegrass, Kentucky bluegrass or tall fescue. Kentucky bluegrass and tall fescue, however, are less tolerant of ethofumesate than perennial ryegrass. Therefore, it should be used with caution in Kentucky bluegrass and tall fescue. A single, spring application of ethofumesate at label use rates can severely damage bermudagrass. Spring and autumn (just before bermudagrass dormancy) use of ethofumesate, followed by summer applications of fenoxaprop, normally eradicates common bermudagrass. Ethofumesate, however, should **not** be applied to creeping bentgrass, fine-leaf fescue (i.e. creeping, Chewings, hard or blue sheep), zoysiagrass or other sensitive turfgrasses. Its use should be restricted to perennial ryegrass, tall fescue or Kentucky bluegrass and only at the rates noted below for annual bluegrass control.

For annual bluegrass control, ethofumesate should be applied in late autumn or early winter. Ethofumesate generally is applied twice on a 21 day interval between October and December. Spring applications do not effectively control annual bluegrass, but they may suppress seedhead production. Total amounts of ethofumesate applied should not exceed 2.0 lb ai per acre for Kentucky bluegrass and tall fescue or 4.0 lb ai per acre for perennial ryegrass. The lower rate of ethofumesate required for tall fescue and Kentucky bluegrass safety can only be expected to provide 30 to 50% annual bluegrass control. If the winter months are mild, little or no annual bluegrass control may occur. Do not apply ethofumesate at the aforementioned rates to creeping bentgrass, or to actively growing bermudagrass and zoysiagrass. Dormant ethofumesate applications will delay the spring green-up of zoysiagrass and bermudagrass.

Summary of Selective Herbicides Used to Control or Suppress Perennial Grass Weeds

Selective Herbicides	Grasses Controlled or Suppressed	Comments
Acclaim Extra	Bermudagrass	Multiple applications beginning early May suppress, but often fail to eliminate bermudagrass.
Daconate 6 or Methar 30	Smooth Paspalum or Dallisgrass	Herbicide must be applied 2 to 3 times on a 7 to 10 interval. Use 100 gallons of water per acre to minimize injury to desirable turf.
Corsair	Tall Fescue Perennial Ryegrass	Clumps should be spot-treated in autumn or spring. Corsair is used in minute quantities and requires careful calibration of spray equipment. For use on mature Kentucky bluegrass lawns and sod farms or creeping bentgrass fairways. Do not apply to zoysiagrass.
Prograss	Annual Bluegrass Bermudagrass	This herbicide is safe to apply to perennial ryegrass. High label rates will stunt and discolor Kentucky bluegrass and tall fescue. It can also severely injure or discolor bentgrass, zoysiagrass, and bermudagrass.

Summary of Non-Selective Herbicides Used to Control or Suppress Perennial Grass Weeds

Non-Selective Herbicides*	Grasses Controlled or Suppressed	Comments
Round-up Pro	All grasses	Will kill or injure all grasses contacted. Two or more applications may be required to control bermudagrass and quackgrass.
Finale	All grasses	Will kill or injure all grasses contacted. May not effectively control rhizomatous grasses such as quackgrass and bermudagrass.
Reward	Annual weeds	Reward is mostly used for non-selective burn-down of foliage around trees, under fences, or adjacent to ornamental beds.
Scythe	Annual weeds	Scythe is mostly used for non-selective burn-down of foliage around trees, under fences, or adjacent to ornamental beds.

*These are non-selective herbicides that will kill or severely injure desirable turfgrasses and other plants.

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