

TURFGRASS SCIENCE

at the UT Institute of Agriculture

Annual Bluegrass (*Poa annua*) Control in Non-overseeded Bermudagrass

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Introduction

Annual bluegrass (*Poa annua*) infestations are a common problem in bermudagrass (*Cynodon* spp.) turfs across Tennessee. Dormant conditions during the fall and winter months render bermudagrass stands non-competitive against annual bluegrass infestation that reduce overall turf quality.

Annual Bluegrass Life Cycle in Tennessee

Annual bluegrass is a winter annual grassy weed that germinates in the late summer, grows throughout the winter and produces seeds in the spring. Once soil temperatures fall below 70 degrees F, germination of annual bluegrass seeds will begin and continue for the next 2-3 months. In upper East Tennessee, germination may begin as early as August (Figure 1). An individual annual bluegrass plant can produce thousands of seeds. Failure to control annual bluegrass can lead to the development of an annual bluegrass seedbank in the soil profile.

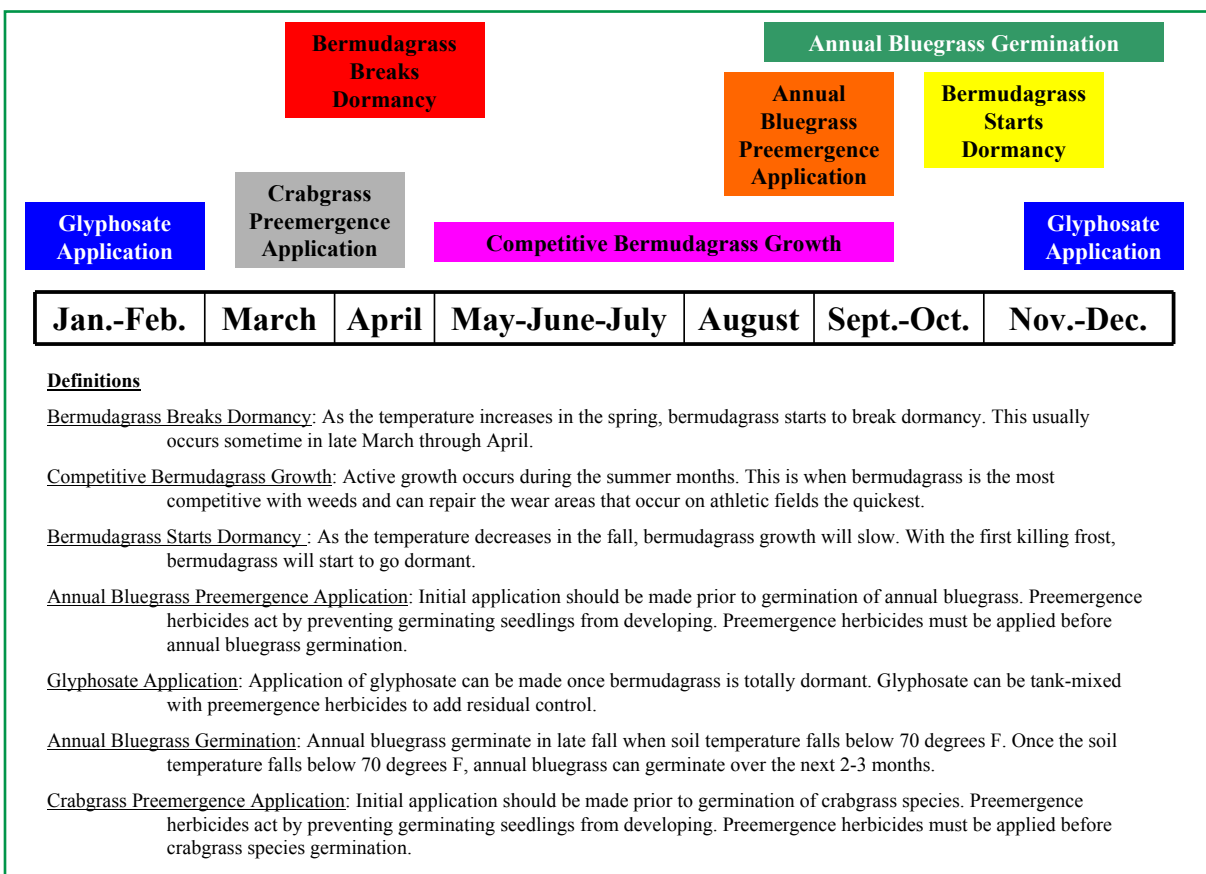


Figure 1. Timeline for annual bluegrass

Annual Bluegrass Identification

Annual bluegrass has a bunch-type growth habit (Figure 2) and plants often form distinct patches or clumps. The leaf blade is folded and has a boat-shaped tip (Figure 3). Blades can also be rippled or slightly wrinkled. Annual bluegrass has a long, membranous, slightly pointed ligule. It produces a panicle-type seedhead that is triangular in shape with spikelets bunched toward the ends (Figure 4). Seedheads start to emerge in the spring and viable seed can be produced in just a few days after pollination. This feature allows for the production of viable seed, even in frequently mowed turf.

Bermudagrass Growth Cycle in Tennessee

In Tennessee, bermudagrass green-up usually begins in late March, and by late April most turf areas exhibit 100 percent green color. Bermudagrass grows rapidly throughout the summer months, allowing the species to recuperate quickly from the stresses of foot traffic that come with field use. Growth continues until the first killing frost, at which point the leaves start to turn brown and plants begin to enter winter dormancy.

On athletic fields, football and soccer schedules in fall are often still ongoing when bermudagrass is entering dormancy. Excessive field use and reduced bermudagrass growth during this time can lead to the development of bare-soil areas for annual bluegrass plants to invade. If bermudagrass athletic fields are not overseeded with a cool-season grass like perennial ryegrass (*Lolium perenne* L.), there is little competition against winter weeds like annual bluegrass from the dormant or semi-dormant turf (Figure 5).

Annual Bluegrass Control Options on Non-overseeded Bermudagrass

Preemergence Control

Numerous preemergence herbicides are available for annual bluegrass control (Table 1). In Tennessee, annual bluegrass generally begins to germinate in early September. Keep in mind that preemergence herbicides act by preventing germinating seedlings from developing into mature plants. These herbicides must be applied prior to seed germination. For preemergence control of annual bluegrass, target applications for late August. Preemergence herbicides should not be applied if there is any consideration of overseeding bermudagrass with a cool-season turfgrass species (unless otherwise stated on the label).



Figure 2. Annual bluegrass (*Poa annua*)



Figure 3. Annual bluegrass (*Poa annua*) leaf blade



Figure 4. Annual bluegrass (*Poa annua*) seedhead

Postemergence Control

Postemergence herbicides options also exist for annual bluegrass control (Table 1). Postemergence applications can be made any time after germination of annual bluegrass seed. However, certain environmental conditions will even allow additional germination of annual bluegrass to occur after a postemergence herbicide application. Tank-mixing a preemergence herbicide with a postemergence product will extend the length of control provided by a single herbicide application.

See product labels for available tank mixes. Caution should be used when applying postemergence herbicides close to the end of bermudagrass winter dormancy.

Dormant Applications of Non-Selective Herbicides

Non-selective herbicides such as glyphosate, glufosinate, and diquat can be applied to dormant bermudagrass to provide postemergence control of annual bluegrass (Table 1). These products can be tank-mixed with a preemergence herbicide to extend control. If a non-selective + preemergence herbicide tank mix is applied in late winter, it can also provide preemergence control of crabgrass (*Digitaria* spp.) the following spring.

Herbicide Resistant Annual Bluegrass

Herbicide resistance occurs when a weed can survive a dose of a herbicide that was normally lethal. More than 230 species of weeds have become resistant to herbicides, and that number continues to increase throughout all areas of agriculture, including turfgrass. Annual bluegrass has been the most common weed to develop resistance in managed turfgrass systems such as golf courses, sod production fields, sports fields, as well as residential and commercial lawns. Repeated use of pre- or postemergence herbicides without any other diversification in management has selected for annual bluegrass populations with resistance to all modes of action labeled for control. It is critically important that diversified weed management practices be used to control annual bluegrass to preserve effective herbicide options. More information on herbicide resistance can be found [online](#).

The University of Tennessee Weed Diagnostics Center can aid turfgrass managers and producers in combating annual bluegrass resistance to herbicides. This Center provides several diagnostic types to determine if annual bluegrass is resistant to either pre or postemergence herbicides. Results of these diagnostic tests are essential in making evidence-based management decisions in the field. Tests also offer the potential to confirm that annual bluegrass will be susceptible to a given herbicide before resources are allocated to purchase and apply the product. For more information on resistance testing, please visit weeddiagnostics.org.

Final Thoughts

Multiple preemergence and postemergence options are available for controlling annual bluegrass on non-overseeded bermudagrass athletic fields. Applying tank mixes of both preemergence and postemergence herbicides can help extend control throughout the winter and potentially into the spring. Regardless of product selected, turf managers should rotate among the pre- and postemergence herbicides listed in Table 1 to prevent the onset of annual bluegrass populations evolving resistance to different herbicide chemistries. Annual bluegrass resistance to many of the herbicides listed in Table 1 has been confirmed at locations where a single herbicide was applied over multiple years without rotation or implementation of any other weed management measure.

Herbicides listed in this publication have provided good to excellent control in research trials conducted at the University of Tennessee; however, other herbicides may also have activity on these weeds. For more information on herbicide selection, please visit University of Tennessee Mobile Weed Manual (MWM) at mobileweedmanual.com. MWM was developed by UT Extension professionals to assist green industry professionals in selecting herbicides for use in turf and ornamentals. MWM is a web-based platform optimized for use on mobile devices such as smartphones and tablets, but it will function on desktop and laptop computers as well. The site provides users with weed control efficacy information for 90 different herbicides, tolerance information for over 2,300 turf and ornamental species, as well as direct links to label and material safety data sheet information on herbicides used for turf and ornamental weed management. For more information on annual bluegrass control visit tennesseeturfgrassweeds.org.

Table 1. Preemergence and postemergence herbicides for annual bluegrass (*Poa annua*) control

<i>Herbicide</i>	<i>Formulations</i>	<i>Active Ingredient</i>	<i>Ratela</i>
<i>Preemergence Herbicides</i>			
Barricade, others	65WG, 4FL, others	prodiamine	0.5 - 1 lb ai
Dimension, Dimension Ultra	1EC, 40WP, 2EW, others	dithiopyr	0.5 lb ai
Pendulum Aquacap, others	3.8L, others	pendimethalin	1.5 - 3 lb ai
Ronstar	2G, (50WSP and FLO Dormant Turf Only)	oxadiazon	1 - 2 lb ai
Specticle Flo	0.622SC	indaziflam	0.016 - 0.05 lb ai
FreeHand	1.75G	pendimethalin + dimethenamid-P	1.75 to 3.5 lb ai
Echelon	4SC	prodiamine + sulfentrazone	0.25 to 1.125 lb ai
Princep	4L	simazine	1 to 2 lb ai
<i>Postemergence Herbicides</i>			
Finale**	F	glufosinate	0.75 to 1.5 lb ai
Katana*	25WG	flazasulfuron	0.25 - 0.37 oz ai
Kerb	SC	pronamide	1 to 1.5 lb ai
Monument	75WG	trifloxysulfuron	0.25 - 0.42 oz ai
Negate	37WG	metsulfuron + rimsulfuron	0.555 oz ai
Princep	4L	simazine	1 to 2 lb ai
Revolver	0.19SC	foramsulfuron	0.013-0.038 lb ai
Roundup Pro, others **	4L	glyphosate	0.5 lb ai
Tranxit	25DF	rimsulfuron	0.125 - 0.5 oz ai
Tribute Total	60.5WG	thiencarbazon + foramsulfuron + halosulfuron	0.605 - 1.9 oz ai
Xonerate	70 WG	amicarbazone	0.04 to 0.44 lb ai

* For use on professionally managed college and professional sports fields. Must be applied with 0.25-0.75 lb nitrogen per 1,000 sq. ft. Repeat applications may be needed for complete control.

** DORMANT BERMUDAGRASS ONLY.



Disclaimer

This publication contains herbicide recommendations that are subject to change at any time. The recommendations in this publication are provided only as a guide. It is always the herbicide applicator's responsibility, by law, to read and follow all current label directions for the specific herbicide being used. The label always takes precedence over the recommendations found in this publication.

Use of trade or brand names in this publication is for clarity and information; it does not imply approval of the product to the exclusion of others that may be of similar, suitable composition, nor does it guarantee or warrant the standard of the product. The author(s), the University of Tennessee Institute of Agriculture and University of Tennessee Extension assume no liability resulting from the use of these recommendations.

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