

Common Bermudagrass Control in Zoysiagrass

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Common bermudagrass is widely used in home lawns, athletic fields, golf courses, and other turf areas throughout the south. When properly managed, common bermudagrass will usually maintain a fair to medium quality turf. Common bermudagrass is less dense than hybrid bermudagrass and may not maintain a desired level of quality in high traffic areas. Weeds tend to be more of a problem in common bermudagrass than in grasses that form dense turfs. Common bermudagrass is also more susceptible to cold damage in high traffic and shade lines along fairways than several other turfgrasses.

Inter planting Tifway bermudagrass sprigs directly into common bermudagrass turf is successful when it is desirable to upgrade common bermudagrass to a higher quality turf. Tifway bermudagrass will compete with common bermudagrass and gradually increase the quality of the turf area within 2 to 3 years. However, if the desired new grass is zoysiagrass, common bermudagrass must be killed before zoysia establishment. When common bermudagrass is mixed with zoysiagrass, an unacceptable turf often results, especially on golf course fairways. Under high light intensity and good management practices, common bermudagrass is more vigorous and competitive than zoysiagrass during the establishment of zoysia from sprigs. Common bermudagrass may also compete with sodded zoysiagrass.

Modifying a mixed common bermudagrass and zoysiagrass turf to a monostand of zoysiagrass will not be easy. There are two separate approaches. One choice is to treat the whole area with glyphosate (Roundup) and replant with zoysiagrass. The second choice is to treat the mixed grasses with postemergence herbicides that will control common bermudagrass without causing undesirable injury to zoysiagrass. When the latter choice is made, the herbicides must gradually reduce common bermudagrass population while zoysiagrass cover increases. Sethoxydim (Poast) (1,3,4,5), fluazifop (Fusilade) (3,4,5), fenoxaprop (Acclaim) (2), and ethofumesate (Prograss) (6) have demonstrated postemergence activity on bermudagrass. However, the amount of bermudagrass control was related to rate and frequency of application.

An experiment was initiated on a mixed common bermudagrass (35% cover) and Emerald zoysiagrass (65% cover) at Griffin, Georgia, to determine the effects of several postemergence herbicides on bermudagrass control and influence on zoysiagrass during the transition period. The herbicides, rates, and frequency of applications used in this study are given in Table 1. Treatments were applied to the same plots for two consecutive years.

Table 1. Herbicides, rates and frequency of application applied to mixed bermudagrass-zoysiagrass turf.

HERBICIDE	RATE LB AI/A	DATE APPLIED ^a
Untreated	-	-
Poast	0.25	May 15 + Jun 13 + Jul 15 + Aug 14
Prograss	1.5	May 15 + June 13
Acclaim	0.18	May 15 + Jun 13 + Jul 15 + Aug 14
Acclaim	0.25	May 15 + Jun 13 + Jul 15 + Aug 14
Fusilade	0.18 + 0.125	May 15 Jun 13
Fusilade	0.18 + 0.09	May 15 Jun 13
Fusilade	0.09	May 15 + Jun 13 + Jul 15
Fusilade	0.09	May 15 + Jun 13 + Jul 15 + Aug 14

^aHerbicides were applied to the same plots during 1989 and 1990 at the given dates \pm 5 days.

The quality of turf treated with herbicides to suppress common bermudagrass mixed with zoysiagrass should be acceptable (\geq 7.0 ratings based on 1.0 = turf brown and 10 = dark green uniform cover) throughout the transition period. The transition period is the change in turf cover of the different grass species. When the quality of turf is reduced from herbicides, zoysiagrass recovery and growth is important to prevent a long period of undesirable turf quality.

Poast. Poast applied at 0.25 lb ai/A in each of four applications during 1989 and 1990 severely injured the mixed common bermudagrass-zoysiagrass turf. The amount of injury varied slightly with date of application, but in most instances, was too severe to be acceptable. Poast reduced the population of common bermudagrass only slightly, while zoysiagrass cover was the same following treatments for two years. Since zoysiagrass was severely injured following each Poast application and common bermudagrass recovered rapidly, Poast does not have potential to suppress common bermudagrass mixed with zoysiagrass.

Prograss. Prograss applied at 1.5 lb ai/A in each of two applications during 1989 and 1990 to common bermudagrass-zoysiagrass turf severely injured zoysiagrass. The cover of common bermudagrass increased from 35 to 78% and zoysiagrass cover decreased from 65 to 12% when final ratings were made in the spring of 1991. Therefore, Prograss should not be used for common bermudagrass control in zoysiagrass.

Acclaim. When Acclaim was applied at 0.18 lb ai/A in four applications, common bermudagrass population was reduced from 35 to 23% after the first year. When the treatments were repeated on the same plots the second year, the population was reduced

to 3%. During this period, zoysiagrass density increased at the same proportion common bermudagrass was reduced. This data shows the importance in using a program for suppressing common bermudagrass over a 2-year period. Small amounts of common bermudagrass left in plots after treatment for 2 years will grow and expand if left untreated during the third year.

Acclaim caused a maximum injury of 37% to the mixed common bermudagrass-zoysiagrass turf within 1 to 2 weeks after each application. However, the turf fully recovered from Acclaim injury within 3 weeks. Since the population of zoysiagrass increased and common bermudagrass decreased, zoysiagrass recovered from Acclaim treatment at a faster rate than common bermudagrass. There was no difference in common bermudagrass suppression whether Acclaim was applied at 0.18 or 0.25 lb ai/A.

Even though Acclaim effectively suppressed common bermudagrass in this study, Acclaim will not suppress hybrid bermudagrasses (7). Therefore, correctly identifying bermudagrass species before selecting Acclaim to use for bermudagrass control in zoysiagrass is requisite.

Fusilade. When Fusilade was applied to mixed common bermudagrass-zoysiagrass turf, common bermudagrass was significantly suppressed after one year (from 35 to approximately 22% cover) and severely suppressed (3 to 7% cover) after two years. The suppression was similar whether Fusilade was applied initially at 0.18 lb ai/A in May and followed by 0.09 lb ai/A in June or applied at 0.09 lb ai/A in four applications at monthly intervals. Therefore, there was no benefit in applying more than two Fusilade applications for common bermudagrass suppression. The bermudagrass suppression and zoysiagrass growth from Fusilade was similar to that with Acclaim. However, Acclaim caused a maximum of 37% injury to the mixed turf and recovered within 1 to 2 weeks, while Fusilade caused a maximum injury of 78% and required 4 to 5 weeks to recover. Turf injury was similar whether Fusilade was applied initially at 0.18 lb ai/A or 0.09 lb ai/A.

Summary. Poast and Prograss should not be applied for common bermudagrass suppression when mixed with zoysiagrass. However, Acclaim and Fusilade will effectively suppress common bermudagrass. However, multiple applications are needed for at least two consecutive years. Acclaim should be applied at 0.18 lb ai/A at monthly intervals from mid-May until mid-August. Fusilade should be applied at 0.18 lb ai/A mid-May and followed by 0.09 lb ai/A one month later.

Acclaim and Fusilade reduced the quality of mixed turf immediately after treatment, but the injury to zoysiagrass was not enough to prevent optimum growth when common bermudagrass was suppressed or killed. Since Fusilade is not labeled or recommended for use in zoysiagrass and Acclaim injured the mixed common bermudagrass turf less than did Fusilade, Acclaim should be selected for common bermudagrass control.

The success that turf managers may have in using Acclaim as a tool to suppress common bermudagrass mixed with zoysiagrass will depend on several factors. The change to a zoysiagrass turf should be a gradual process and will depend on multiple applications.

Treatments should be applied for two or more years. If common bermudagrass population is >50% in the mixed turf, the transition from a mixed common bermudagrass-zoysiagrass turf may not be as quick and require a longer time period.

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