Transition Enhancement
Using Post-Emergence Herbicides

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Many turfed areas in the southwestern and southeast United States overseed bermudagrass turfs in early fall in order to provide year-round cover as functional turfs. Transition to bermudagrass in the spring is due to many factors which include irrigation, mechanical cultivation and bermudagrass condition shortly before or at the time of overseeding.

Persistency under close mowing and improved heat tolerance of perennial ryegrass germplasm can negatively affect transition, maintaining a prolonged and sporadic ryegrass cover that minimizes a normal bermudagrass growing season before the next overseeding.

This study deals with the use of select herbicides applied to overseeded bermudagrass in order to eliminate perennial ryegrass when bermudagrass is actively growing in the spring.

Materials and Methods

A two-year-old Tifgreen bermudagrass turf that was maintained at 7/32 inch height was overseeded in October at a rate of 22 pounds per 1,000 square feet on a sand-based rootzone at the Desert Turfgrass Research Facility, University of Arizona, Tucson. A perennial blend of VIP II was used. Plots were irrigated to prevent stress and were mowed three times a week. A total of six pounds of nitrogen per 1,000 square feet was applied to the turf between November 2 and May 13 as water soluble carriers or companion chelated iron complexes.

The first of two applications of herbicide were made on May 5. A CO_2 backpack sprayer with 8004 nozzles was used for a final spray volume of 66 gallons per acre. The second application was made on May 20. Single applications of Image were made at 0.25 pounds ai/acre and 0.38 pounds ai/acre. A group of plots received two applications of Image at 0.25 pounds ai/acre. Kerb was applied only in single applications at 0.5 and 1.0 pounds ai/acre.

The degree of transition was determined by counting the amount of perennial ryegrass tillers within the plots. Tillers were then tweezed apart to distinguish positive identification of the *Lolium perenne*. Plot sizes were 6 x 6 ft.

There was only a slight advantage to a second application of Image at the 0.25 pounds ai/acre rate.

Injury was rated by percent injury, degree of plot injury (1= least to 6 = most dense) and overall turf visual quality (1= dead grass to 9 = best). Verdure dry weights and shoot densities were taken as well from two four-inch cup cutter samples after mowing on June 10.

Test Results and Discussion

Based on measurements taken on May 19 and June 2, herbicide treatment was highly effective. On May 19, mean ryegrass density for untreated plots was 12.8 tillers per ring. This fell to 9.3 tillers per ring by June 2.

The Kerb plots ranged from 4.6 to 7.5 tillers per ring. The Kerb plots treated once at 1.0 pounds ai/acre had an average of 4.6 tillers per ring. Kerb plots treated once at 0.5 pounds ai/acre had a mean ryegrass density of 6.3 tillers per ring.

Image treated turf at 0.38 pounds ai/acre had 7.5 ryegrass tillers per ring. The turf treated once with 0.25 pounds ai/acre had 7.5 tillers per ring.

Ratings were performed again on June 2. This was after a second application of Image to some plots on May 15. Nevertheless, the plots receiving a single application

of Kerb had the lowest amount of ryegrass. Both the 0.5 and 1.0 pounds of ai/acre Kerb plots did well, having had only 2.3 to 2.6 tillers per ring respectively.

There was only a slight advantage to a second application of Image at the 0.25 pounds ai/acre rate. The single application from May 5 had a mean ryegrass density of 5.9 tillers per ring, while the repeat treatment was 4.6 tillers per ring. The one-time treatment of Image at 0.38 pounds ai/acre had a mean ryegrass density of 4.1.

Agronomic Responses

Percent injury scores were taken on May 19, May 26 and June 2. On May 19, the scores ranged from 1 to 4.8. Kerb at the 1.0 pounds ai/acre rate had the highest injury on a percent plot basis. Kerb treated plots had the most noticeable injury symptoms of straw colored leaf tips and slight leaf cupping. It should be noted that the cupping and straw tipped leaves occurred on the underlying bermudagrass.

By June 2, the Kerb treatments showed an accelerated response, exhibiting increased turf injury. While the 1.0 pound ai/acre Kerb had a 42% mean turf injury, the 0.5 rate of Kerb had a 13% mean injury rate. The repeat application of Image at 0.25 pounds ai/acre had a 5% mean ploy injury.

At 28 DAT, the Kerb plots had poorer turf color scores, mainly from leaf tip burn and twisting and cupping of the bermudagrass.

Turfgrass color scores on May 19 ranged from 5.8 for treated turf to 7.2 for the untreated control. All treatments, except Kerb at the 1.0 rate, had color scores of 7.0. The higher rate of Kerb caused leaf tip burn and slight cupping.

Mean color scores for June 2 ranged from 4.0 for the high Kerb rate to 7.5 for the 0.38 pound ai/acre rate of Image. The mean of the control was 6.9. Kerb at the low rate had a mean color score of 5.0, due to straw colored lead tips, which predominated in the canopy. The repeat application of Image had a slightly lower color score compared to the single application at the same rate.

Shoot Density and Verdure: Visual estimates of turf densities were assigned to plots on May 19 and June 2. On May 19, Kerb treated plots had a slight decrease in visual density (5.8) at the 0.5 pounds ai/acre rate, followed by a more noticeable density loss at the higher rate. On June 2, the latent effects of the Kerb treatments were evident, with visual density scores at 4.3 and 3.0 for the lower and higher treatments respectively. Image treated turfs had density scores of 5.3, 5.5 and 6.0 for the single lower rate, double low rate, and higher rate respectively.

Shoot density counts were made of June 16 by harvesting two 4-in. cups per plot. Kerb treated plots had the lowest number of shoots at 83, while Image plots had between 100 and 104. The control plots averaged 104 shoots.

Verdure was taken immediately after plots were double-mowed on June 10. Verdure was removed with sharp clipping shears and oven dried. Verdure dry weight was not affected by herbicide applications.

Overall turf quality scores were assigned on May 19 andf June 2. Fourteen days after treatment (DAT), all treated turfs had slightly darker color that the control. At 28 DAT, the Kerb plots had poorer turf color scores, mainly from leaf tip burn and twisting and cupping of the bermudagrass.

Conclusions

- A repeat application of Image was more effective than a single application at the same rate, but not significantly better than the single application at the high rate.
- Kerb treated plots had greater injury and lower color scores, especially at the high rate.
- Kerb plots had decreased shoot density.

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