

# TURFGRASS TRENDS

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WEED CONTROL

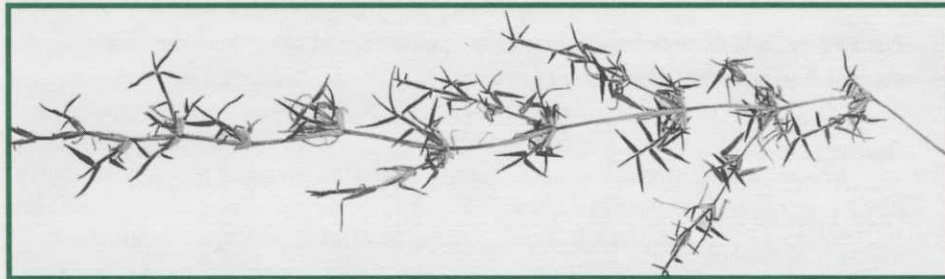
## Suppression of Bermudagrass In Perennial Ryegrass Turf Using Selective Herbicides

By D.M. Kopec and J.J. Gilbert

**B**ermudagrass, when not the primary desired turf, is a problematic ground cover. Elimination of bermudagrass by cultural means in a mixed polystand is virtually impossible. Usually, the only effective remedy is a full renovation of the area, which includes loss of all vegetation, using a non-selective herbicide (glyphosate) or a sterilization treatment. Repeated use of a selective herbicide would be beneficial if activity against bermuda is demonstrated and tolerance to ryegrass is acceptable.

A three-year-old stand of turf-type perennial ryegrass was used to test the efficacy of two herbicides for bermudagrass suppression at the University of Arizona's Desert Turfgrass Research Facility in Tucson during the summer of 1994. Treatments included Turflon Ester applied at 1.0 AI/A, Acclaim applied at 0.38 lbs. AI/A, a tank mix of the two herbicides at the above rates and an untreated control (check plot).

Each plot received two four-inch plugs of the cultivar 'Midiron' as transplants on June 6. The plugs received a solution of water soluble nitrogen on June 17. An additional 0.25 lb. of nitrogen per 1,000 square feet was applied to the entire field the day after transplanting. The turf site was mowed regularly to 2.5 inches with a rotary push mower and irrigated at 100 percent reference ET, derived from the on-site weather station (Penman based model). The soil was a Gila sandy loam with a pH of 7.6.



The aggressive spreading ability of bermudagrass makes it difficult to control in cool-season turfgrasses with selective herbicides.

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Treatments were applied every 30 days for four months beginning in June 1994. The sprayer for all treatments utilized 8004 nozzles at 30 psi to deliver 66 gallons per acre. No irrigation was performed for the first 16 hours after application.

The spread of bermudagrass was measured in two perpendicular directions from each plug to gauge plant growth/suppression on July 22, August 18, September 6 and October 6. Results were expressed as percent control based on the mean of the check plots.

Injury scores from the treatments were assigned on July 22 and October 6 using a subjective scale of 1 to 6, where 1 represented no injury, 2 meant slight injury and 6 meant all turf dead. Percent live bermuda was estimated on a per plug basis on September 9 and October 6.

**Injury to Bermuda**

Visual injury among treated plots was significant on both July 22 and September 6. Turflon Ester and the Turflon Ester/Acclaim tank mix produced the greatest amount of injury. The Acclaim applied alone produced only slight injury to the bermudagrass.

On September 6, mean injury scores ranged from 1.0 (none) to 4.4 (moderate-severe). The tank mix, after three applications, was showing the most injury, followed by Turflon Ester alone. Turflon Ester alone was slightly more active than Acclaim alone.

**Percent Live Bermuda**

Percent live bermuda was a visual estimate of the percentage of the entire bermudagrass foliage, that was green and healthy. It was not an assessment of plant size. Estimates were made on September 9 and October 6. Data was expressed as percent control of check plot means. For both dates, the treatment effect was significant. The tank mix provided 37 percent control of bermuda, followed by Turflon Ester alone at 13 percent and Acclaim alone at four percent on September 6.

On October 6, a greater level of control was achieved. The tank mix had 56 percent mean control and Turflon Ester alone had 51 percent control. Acclaim alone had only six percent control when assessed as the percent live bermuda.

**Plant Radius**

Plant radius measurements were made on four dates and treatment effects were significant on one of these dates (September 6). It took three applications before a statistical reduction in bermudagrass radius could be detected. Plant reduction was significant by the close of the test.

On July 22, the percent radius reductions reached only five percent for both Turflon Ester and the tank mix. Acclaim alone had no real effect.

On August 18, percent radius reductions ranged from 14 to 17 percent with Acclaim having the lowest radius reduction.

**PLANT INJURY**

Plant Injury to Midiron bermudagrass after applications of select herbicides in a perennial ryegrass turf. University of Arizona.

<i>Treatment (June 22)</i>	<i>July 22</i>	<i>September 6</i>
Tank Mix (1.0 + 0.38 lb. A/A)	2.4	4.4
Turflon Ester (1.0 lb/ A/A)	2.4	2.7
Acclaim (0.38 lb. A/A)	1.5	2.2
Control	1.0	1.0

Score: 1 = no injury, 6 = severe injury.



## PERCENT BERMUDA CONTROL

Percent bermuda control from select herbicides in perennial ryegrass turf. University of Arizona.

<u>Treatment</u>	<u>September 9</u>	<u>October 6</u>
Tank Mix (1.0 + 0.38 lb. AI/A)	37	56
Turflon Ester (1.0 lb. AI/A)	13	51
Acclaim (0.38 lb. AI/A)	4	6

Percent bermuda control as percent live bermuda compared to untreated check plot.

## PERCENT PLANT RADIUS REDUCTION

Mean percent plant radius reduction of Midiron bermudagrass from select herbicides in perennial ryegrass turf. University of Arizona.

<u>Treatment</u>	<u>Sept. 7</u>	<u>Aug. 18</u>	<u>Sept. 6</u>	<u>Oct. 6</u>
Tank Mix (1.0 + 0.38 lb. AI/A)	5	17	45	35
Turflon Ester (1.0 lb. AI/A)	5	17	30	24
Acclaim (0.38 lb. AI/A)	1	14	27	18

Plant radius reduction as percent control compared to untreated check plot.

On September 6, there were significant differences among treatment means. The tank mix had caused a 45 percent reduction, Turflon Ester alone caused a 30 percent reduction, followed by Acclaim alone with 27 percent reduction.

By October 6, daytime temperatures were still relatively warm, but night temperatures were ranging from 60° to 65°F. The tank mix had 35 percent control. Turflon Ester had 24 percent control, while Acclaim had 18 radius control. The reduced control may be due to decreased activity from shorter day length response of the bermuda coupled with decreased night temperature.

Although percent radius control was less on October 6 than September 9, the percent live bermuda control was not reduced. This indicates that some regrowth after the third application was followed by necrosis.

At no time were visual signs of injury noted on the perennial ryegrass.

## Conclusions

- A single application of the tank mix or the two selective herbicides alone at the rates described caused minimal injury or reduction of growth at 30 days after treatment of Midiron bermudagrass in perennial ryegrass.
- After three applications (30 days apart) significant reductions in bermudagrass injury and percent radius reduction occurred.
- The tank mix was generally superior to Turflon Ester alone, which was generally more effective than Acclaim alone.
- Acclaim applied alone was not effective for bermudagrass suppression at the 0.38 lb. AI/A rate.
- At the rates tested, earlier applications or more frequent applications seem necessary for greater suppression of bermuda.

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