

Establishment and Management of Seeded Bermudagrass in the Transition Zone

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Objectives:

1. The overall goal of this project is to generate a set of best management practices for establishing seeded bermudagrasses in the transition zone.
2. To test whether herbicides may be effectively used to control weeds in newly established seeded bermudagrasses.
3. To test whether charcoal banding will allow the use of pre-emergence herbicides to establish seeded bermudagrass.
4. To test the effect of seeding date and rate on morphology and freeze tolerance of newly seeded bermudagrass.
5. To test the effect of post-emergent applications of fertilizers and growth regulators on newly seeded bermudagrass morphology and freeze tolerance.
6. To correlate post-planting growing-degree days with morphological development and freeze tolerance of seeded bermudagrasses.

Start Date: 2000

Project Duration: 3 years

Total Funding: \$43,007

Several high-quality seeded bermudagrass (*Cynodon dactylon*) cultivars have been recently introduced to the turf market. All studies included the seeded bermudagrass cultivars Princess, Jackpot, Mirage, Mohawk, Nu-Mex Sahara and Yukon, unless otherwise indicated.

A post-emergence herbicide tolerance study was initiated in June, 2000 and June, 2001 using the bermudagrass cultivar 'Princess'. At 7, 14, and 28 days after seedling emergence, individual plots were treated with one of seven post-emergence turf herbicides at recommended rates, including MSMA, dicamba, metsulfuron, 2,4-D, chloryralid, diclofop, quinclorac, and an untreated control.

Significant herbicide injury was again observed with diclofop, metsulfuron,



Several seed establishment techniques and planting dates for the new seeded bermudagrass cultivars are being evaluated at University of Arkansas.

dicamba, and 2,4-D over the first 14 days after application. However, the injury had completely dissipated by 30 days after treatment. These results suggest that common post-emergence herbicide programs can be used on newly seeded bermudagrasses, but some injury can be expected from specific chemicals such as diclofop, 2,4-D, dicamba, and metsulfuron.

A greenhouse study was also conducted to test the effects of the same postemergence herbicides on all of the bermudagrass cultivars mentioned above. There was no cultivar effect on the herbicide injury in that study, suggesting that the field data is applicable across a range of cultivars.

A pre-emergence herbicide study was also completed during the 2000 and 2001 growing season. Seeds were applied in rows with 12 inches between rows. The main objective was to determine whether a band of activated charcoal, applied directly on the soil surface above the seed row, could effectively deactivate pre-emergence herbicides and allow germination in the seed row to occur. Three herbicides were examined in this study, including oxadiazon, prodiamine, and diuron.

Charcoal planting was an effective means of germinating bermudagrass seeds in the presence of pre-emergence herbicides and the rows of bermudagrass produced a significant cover in approximately six weeks. These studies were attempted numerous times during the 2000 and 2001 growing season with inconsistent results. Studies were also conducted to examine the effects of planting rate, planting date, and post-planting management on morphology and

freeze tolerance of seeded bermudagrasses. All cultivars mentioned above were evaluated in the seeding rate and date trials, while 'Princess' was used in the post-planting, management study. All studies were successfully established during the 2000 and 2001 growing season.

Seeding date had a significant effect on winter survival in both the 2000 and 2001. Winterkill was observed in the late-seeded plots for both 2000-2001 and 2001-2002 winters. Yukon, which had the best winter survival among the cultivars from the 2000 planting, also had the highest winter survival rates of all cultivars tested in the 2001 growing season. April and May planting dates had significantly more recovery compared to June and July dates. Yukon consistently had higher survival and recovery than any of the other seeded cultivars. Seeding rate has had no effect on winter survival.

Summary Points

- Charcoal planting was an effective means of germinating bermudagrass seeds in the presence of pre-emergence herbicides and the rows of bermudagrass could produce a significant cover in approximately six weeks. However, these studies were attempted many times during both the 2000 and 2001 growing seasons and it was difficult to produce consistent results.
- Seeding date had a significant effect on winter survival in the 2000 test, with April and May planting dates having higher recovery than June or July planting dates.
- Yukon, which had the best winter survival among the cultivars from the 2000 planting, also had the highest winter survival rates of all cultivars tested in 2001.