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Advances in Seeded Bermudagrasses Could Spark Wider Use

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Bermudagrass has been the backbone of the Southern turfgrass industry for the past century. The various uses of bermudagrass have been almost endless and include golf greens, fairways, tees, roughs, sports fields, home lawns, commercial sites and roadsides.

The wide adaptation of this species reflects a broad range in genetic diversity, from very dwarf, dense putting green selections such as TifEagle or Champion to cultivars that have been selected for their ability to produce massive amounts of foliage.

The genetic advances in the turfgrass quality of seeded bermudagrass will likely increase its use on high-maintenance turf surfaces.



The Emergence of Seeded Varieties

Although these new cultivars should provide a quick, easy and economical way to establish a high-quality bermudagrass turf, several drawbacks do exist, including establishment weed control and the issue of cold hardiness, especially during the establishment year.

Many of the improved cultivars are hybrids. Until recently, most of the improved cultivars or hybrids available to the golf and sports turf industry were infertile and had to be planted using vegetative techniques such as sod or sprig-planting. The bermudagrasses available by seed were generally considered "common" and didn't produce the superior turf surface of the sterile hybrids and selections.

In the 1980s, a handful of turfgrass breeders began a concerted effort to find, cross and develop cultivars of bermudagrass that would produce fertile seed and also produce an acceptable turf. Some of the earliest work was done in New Mexico under the direction of Dr. Arden Baltsenberger and resulted in the release of NuMex Sahara, a seed-propagated bermudagrass with a slight improvement in quality over common.

Further work by breeders at International Seeds in Oregon led to the release of the cultivar Mirage, which had improved performance over NuMex Sahara, but was still inferior to the popular vegetative cultivars.

In the late 1990s, Oklahoma State University and Charles Taliaferro released Riviera, a cultivar with significant improvements in turfgrass quality relative to earlier seeded types. In addition, further work from Baltsenberger's program led to the release of Princess, which also had turfgrass performance that was comparable to industry standards such as Tifway.

Establishment weed control The ability to control weeds during the first six to eight weeks after emergence is a key factor to the success of seeded bermudagrasses.

Summer annual grasses such as crabgrass and goosegrass are particularly competitive in a new bermudagrass seeding and broadleaf weeds may also create problems through shading of young bermudagrass seedlings. Therefore, competition during the seedling stage could significantly inhibit the establishment rate and reduce overall stand density.

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Dennis Martin of Oklahoma State University has provided good information regarding pre-emergent herbicide tolerance of established and newly emerged seeded bermudagrass cultivars. However, pre-emergent control in new seedings often produces poor or inconsistent results due to the nonselective nature of pre-emergent herbicides.

With regard to postemergent weed control, little is known about herbicides that can be effectively used during the critical period for stand establishment.

Work at the University of Arkansas has focused on investigations of postemergent herbicide tolerance of newly seeded bermudagrass, initiated in June 2000, using Princess. At seven, 14 and 28 days after seedling emergence, individual plots were treated with one of seven postemergent turf herbicides at recommended rates, including monosodium methanearsenat; dicamba; metsulfuron; 2,4-D; chlopyralid; diclofop and quinclorac, as well as an untreated control. This study was repeated during the 2001 season, with seeding occurring on May 24.

Over both years of the trial, significant injury was observed with most herbicides at the one, two and four weeks after establishment timings. The injury was similar regardless of the application timing, so combined the data from the three timings for this report.

Metsulfuron and diclofop generally produced the highest levels of herbicide injury on Princess bermudagrass, although significant injury was also observed with dicamba and 2,4-D.

These findings were similar from both years of the study. Although the injury observed at each timing was considered harmful, the turf quickly recovered from the injury.

Plots sprayed with metsulfuron and diclofop were only slightly distinguishable from other treatments at 30 days after treatment. During the 2001 growing season, herbicide injury was overall not as severe as 2000, and recovery occurred much quicker. These differences likely reflect a significant difference in temperature and solar radiation between the two seasons.

During 2000, June was cloudy, wet and cool, while June 2001 had less frequent rain and 4° C to 8° C higher average temperatures compared to 2000. The results of these two studies indicate that several, common postemergent herbicide programs that are effectively used on mature bermudagrass can also be used to establish bermudagrass from seed.

Future studies are in place that will investigate the use of herbicide combinations in combination with repeated applications of chemicals on seedling bermudagrass during establishment.

Winter injury A second limitation to seeded bermudagrasses, especially in the upper transition zone, is a potential for winter kill following the establishment year.



Figure 2; Winter recovery of seeded bermudagrasses, as affected by cultivar (top) and planting date (bottom). Different letters indicate a significant difference between treatments according to their lowest statistical difference (LSD).

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