Best Management Practices for New Dwarf Bermudagrasses

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Objectives:

1. Determine the performance, mowing tolerance, and pest resistance of fifteen experimental and commercially available bermudagrasses and one zoysiagrass on a golf green.
2. Determine the effects of vertical mowing, topdressing, and nitrogen fertility on performance, thatch development, fall and spring overseeding transition, and turf quality of five dwarf bermudagrasses.

Start Date: 1998
Project Duration: 3 years
Total Funding: $69,989

Management of the new bermudagrasses continues to be a challenge for many golf course superintendents. A study planted at the Texas A&M University in April, 1997 has documented the performance of five dwarf bermudagrasses under a range of cultural practices.

Five bermudagrasses including Champion, Floradwarf, MiniVerde, Tifeagle, and Tifdwarf were established on April 15, 1997. Uniform fertilization, mowing, topdressing, grooming, and irrigation were applied to all cultivars until August, 1997. Mowing heights were gradually lowered to 0.125 inch during late June and early July.

Main plots were bermudagrass cultivars. Sub-plots were annual nitrogen treatments of 6, 10, 14, and 18 lb of nitrogen per 1000 square feet per year applied as bi-weekly treatments. Sub-sub plots were vertical mowing treatments of 1) light, bi-weekly treatments, May through September, and 2) severe vertical mowing once during spring transition and once immediately prior to overseeding in October.

Careful attention to nitrogen fertilization and the timing of vertical mowing is needed to avoid turfgrass injury to the new ultra-dwarfs.

Sub-sub-sub plots were topdressing treatments of 1) 0.02 inches applied bi-weekly May through September followed by a 0.20 inch application at overseeding to total 0.35 inches, and 2) 0.15 inches in June and 0.20 inches in October totaling 0.35 inches. Nitrogen, vertical mowing, and topdressing treatments were initiated in August 1997 after grasses were fully established.

Bermudagrass decline became a serious problem for Floradwarf, then Champion, then Tifeagle. Miniverde demonstrated slight sensitivity to bermudagrass decline in late 2000. Tifdwarf exhibited only slight symptoms of bermudagrass decline. Soil pH management resulted in a dramatic recovery of Floradwarf from bermudagrass decline during the summer of 2000. Champion had modest recovery and Tifeagle had marked recovery from bermudagrass decline by late summer 2000.

The new dwarf bermudagrasses demonstrated aggressive thatch production in this study. Best performance occurred at low to moderate nitrogen fertilization. Increasing nitrogen increased thatch accumulation, reduced shoot density in several cultivars, and resulted in lower summer turf quality in 2000. Frequent, light topdressing improved quality of all cultivars. Frequent, light vertical mowing caused substantial reductions in turf quality for all cultivars except Tifdwarf during late-summer 2000 compared to infrequent vertical mowing.

Continued monitoring of performance will be required in order to recommend the most efficient practices for controlling thatch, producing high shoot density, and developing quality putting surfaces. Golf course professionals should incorporate aggressive thatch control practices as well as frequent monitoring.

Thatch accumulation is a problem with the new ultra-dwarf, hybrid bermudagrass cultivars.

Summary Points

- New dwarf bermudagrass cultivars will require intensive culture to control thatch and to provide a true putting surface.
- Closer mowing and the growth characteristics of the new dwarf bermudagrasses will likely require increased turf maintenance budgets.
- Bermudagrass decline became a serious problem for Floradwarf, then Champion, then TifEagle. Miniverde had slight sensitivity to bermudagrass decline in late 2000 (third year) and Tifdwarf only had slight symptoms.
- Soil pH management (lower) and use of ammonium sulfate to supply half the annual nitrogen resulted in a dramatic recovery of Floradwarf from bermudagrass decline.
- Best performance overall for the dwarf bermudagrasses occurred at low to moderate nitrogen fertilization.
- Frequent, light topdressing improved quality over the long-term; however, infrequent heavy topdressing helped control thatch.
- Frequent light vertical mowing caused substantial reductions in turf quality for all cultivars except Tifdwarf.