Seeded Bermudagrass Water Use, Root and Shoot Growth Under Soil Stresses

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Goals:

- ET, drought resistance, rooting/water extraction patterns and shoot responses will be determined under field conditions.
- Basic cultural programs (fertility, disease/insect, traffic tolerance) will be defined.
- Determine genetic stability of these grasses with respect to environment, disease, and insect pressures.

Bermudagrasses, *Cynodon* spp., are drought resistant grasses in many areas of the southern United States. In the Piedmont region, as well as Utisol and Oxisol soils world-wide, turfgrass root growth can be inhibited by soil stresses: a) high soil strength, and b) acid soil complex, a combination of element toxicities with nutrient deficiencies. Genotypes of bermudagrass may differ in tolerance to these stresses. This project is evaluating the water use, rooting patterns, and best-suited cultural programs for eight seeded bermudagrass genotypes from the USGA-supported breeding program at Oklahoma State University versus two commercial cultivars (AZ common and Primavera) under three traffic levels and three nitrogen fertilizer regimes.

Results to date:

1. The most rapid establishment was observed for Primavera, 91-2, 91-1, and AZ common, while least was for 91-14, 91-12, and 91-3.

2. AZ common and Primavera exhibited some winterkill (i.e., 5 to 10%), while no winter injury was noted on the experimentals.

Data was obtained in 1994 on genotype responses under the traffic and N treatments for shoot aspects, rooting, water use, water extraction by root depth, and rhizome production. Further data will be obtained in 1995 before conclusions are developed.