Breeding and Evaluation of Turf Bermudagrass Varieties

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Objectives:

1. Assemble and evaluate *Cynodon* germplasm accessions for important descriptors.
2. Incorporate descriptor information and accessions into the National Plant Germplasm System.
3. Maintain a working collection of germplasm accessions with breeding value and utilize it in turf bermudagrass breeding program.
4 Improve bermudagrass breeding populations for seed production potential, cold tolerance, and other traits conditioning turf performance.
5. Identify bermudagrass parental plants with superior combining ability for use in producing inter-and intra-specific F1 hybrids.

Start Date: 1998
Project Duration: 5 years
Total Funding: $124,978

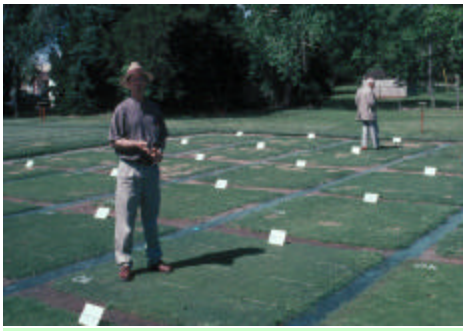
Bermudagrass is the most widely used turfgrass in the sourthern United States, and its current use is due to the high quality turf varieties developed beginning in the middle of this century. The turf bermudagrass breeding program at Oklahoma State University seeks to develop improved seed- and vegetatively-propagated cultivars for the transition zone.

Specific goals of the project are to: 1) assemble and evaluate *Cynodon* germplasm accessions for important descriptors, 2) improve bermudagrass breeding populations for seed production potential and traits conditioning turf performance, and 3) identify bermudagrass parental plants with superior combining ability for use in producing inter- and intra-specific F1 hybrids.

Recurrent selection for turf performance traits was continued in broad genetic base *C. dactylon* populations in 1999-2000. Recurrent selection in these populations has increased turf quality, transition zone adaptation, and seed production potential.

Two new cultivars, OKS 91-11 and OKS 95-1, have resulted from the cumulative breeding effort. The breeding effort has reached the threshold point where new incrementally improved varieties can be systematically developed. Testing of six new experimental synthetic varieties will begin in 2001. Additional elite plants were selected in 1999-2000 from recurrent selection breeding nurseries to generate new experimental varieties.

Intra- and inter-specific crosses were made to generate F1 progeny populations for evaluation as potential vegetatively-propagated hybrid bermudagrass cultivars. Initial screening of approximately 2,000 F1 *C. dactylon* x *C. transvaalensis* hybrids transplanted into field nurseries in spring 1999 produced 112 plants for continued testing.



At Oklahoma State University, Dr. Dennis Martin reviews the extensive series of tests promising bermudagrass cultivars undergo before being released.

About l200 new F1 interspecific hybrid plants were established in screening nurseries in spring 2000. The interspecific hybrid OKC 18-4, with good performance to date in the 1997 NTEP bermudagrass trial, is a candidate for release as a commercial variety.

Dr. Charles Taliaferro summarizes the bermudagrass breeding program at Oklahoma State University with USGA Research Committee members.

Summary Points

- The breeding programs has reached the threshold point where new incrementally improved varieties can be systematically developed.
- Recurrent selection for turf performance traits continues and has had a positive impact on turf quality and seed production.
- Two new cultivars, OKS 91-11 and OKS 95-1, have resulted from the breeding program.
- Intra- and inter-specific crosses were made to generate F1 progeny populations.
- The interspecific hybrid OKC 18-4 is a possible candidate for release.
- Six new experimental synthetic varieties will be tested in 2001.