

BREEDING AND EVALUATION OF FINE-TEXTURED, COLD-TOLERANT,
SEED-PROPAGATED BERMUDAGRASS CULTIVARS

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RESEARCH PROGRESS

Basic fertility, as indicated by percent of florets setting seed, has been tripled in a cold-tolerant bermudagrass population via phenotypic recurrent selection. Intensive greenhouse selection for fine texture [small leaves and stems] was initiated in summer 1989. Several experimental synthetic varieties from this population will be placed in field evaluation trials in transition zone states in spring 1990. The ongoing population improvement breeding effort should result in successive improvement in turf quality and seed production potential.

Four very fine-textured, dense, cold-tolerant Cynodon transvaalensis accessions with good seed set were discovered in our germplasm nurseries in 1988. Six hundred and eighty-eight progeny from these plants were field planted August 1, 1988, and demonstrated significant variation for morphological features and winterhardiness. Almost 4000 progeny from the four C. transvaalensis accessions were space planted in field nurseries in 1989. Three thousand of these will be entered in a putting green evaluation test in spring 1990.

Two methods ["Freeze-Regrowth" and "Electrolyte Leakage"] for accurately measuring relative and absolute cold tolerance of bermudagrass plants have been perfected. The two methods are accurate, but time and labor intensive. Good progress was made in 1989 in developing a third method for rapid screening of large numbers of greenhouse grown bermudagrass plants.

Efforts during the past two years to regenerate bermudagrass plants from anther culture have not been successful; but effective, efficient procedures for regenerating plants from meristematic tissues have been developed. These procedures are currently being used to effect screening procedures for traits such as herbicide and salt tolerance, and to obtain genetic variants of potential value.

Four turfgrass evaluation trials are underway at a high maintenance level [fairway conditions]. The national bermudagrass trial, parental line evaluation, and a seeded bermudagrass trial are generating needed adaptation data. A holding nursery of 90 potential parents demonstrates the wide range of morphological features expressed when close mowing [3/4 inch].