

BREEDING AND DEVELOPMENT OF ZOYSIAGRASS

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A major redirection within the zoysiagrass program occurred in 1989 with the addition of Dr. Richard H. White, as Assistant Research Scientist specializing in turfgrass physiology, and Dr. Bridget Ruemmele in turfgrass breeding. The combined efforts of the group have been directed specifically to the assessment of germplasm relative to stress tolerance mechanisms and the specific hybridization of selected accessions in order to study the relative heritabilities of such traits and to combine multiple desirable traits into new varieties.

Maintenance of the zoysiagrass germplasm nurseries will receive considerable attention these next few years due to the reduction in turfgrass research efforts on the part of the United States Department of Agriculture. The Oriental zoysiagrass collection will be consolidated and eventually entered into the Plant Introduction System. Vegetative maintenance and production of these accessions, as well as newly developed cultivars, has become streamlined and more expedient with the use of thin-layer sod production techniques developed here.

Numerous elite accessions of zoysiagrasses have been evaluated for water-use requirements under field conditions using the Linear Gradient Irrigation System [LGIS]. A parallel set of accessions are also being evaluated for growth response under the Turfgrass Root Investigation Facility [TRIF] as well as under heavy natural shade. The combined testing facilities suggest considerable genetic variability exist within the elite accessions [DALZ lines] as well as the Oriental collection. Of greatest promise is the variation noted for water-use, canopy temperature, growth response, growth habit, texture and turf quality. Regional trials suggest good variability exist among the lines under evaluation for cold hardiness, rate of spread, texture and turf quality.

Regional field trials have been established in several locations including Missouri, Illinois, Arizona, California, Oklahoma and Florida as well as several locations in Texas. Electrophoresis has been completed on 23 DALZ lines by Dr. Lin Wu, University of California, Davis.

DALZ8501 and DALZ8502 have been identified for their superior regrowth and recovery ability due to highly rhizomatous growth characters. DALZ8502 has potential for use in the deep south for putting greens. It retains an excellent winter growth characteristic, has been identified as a low water-user, and has a relatively low

nutritional requirement. Additional testing will be initiated for its potential use on the putting surface. Foundation production fields of both DALZ8501 [1.0 acres at TAES-Dallas] and DALZ8502 [1.7 acres in Bay City, Texas] were planted in the spring of 1989.

Numerous selections have been identified in the Oriental collection for turf quality, color retention, greenup, drought hardiness, seed production potential, and numerous desirable agronomic traits. Considering the cold susceptibility of DALZ8501, and DALZ8502, it will be necessary to concentrate on identifying and developing accessions with considerably more winter hardiness.