

Five experimental seeded strains from the New Mexico State University breeding program were entered in a National Bermudagrass Test administered from Beltsville, Maryland. These tests were established in many states in the South and along the transition zone. Results from those tests will be valuable to the breeding program in indicating breeding progress and in determining where continued selection pressure is needed.

NORTH CAROLINA STATE UNIVERSITY - Dr. Leon T. Lucas
Principal Investigator

Spring Dead Spot Disease

1986 Grant - \$10,000 [second year
of three year study solely supported
by contributions from Mr. Hall Thompson,
Shoal Creek, Alabama]

A post doctorate position was accepted in August, 1986 by Dr. Bert McCarty to intensify investigations in this research project. Since that time, fungicide and fertility evaluation for Spring Dead Spot control has been undertaken. Three sites in the southeastern United States have been treated with several fungicides and fertilization sources for potential disease control. Disease control evaluation will be made in the spring of 1987.

Fungicide/fertility evaluation on increasing low temperature hardiness of Tifway bermudagrass is also underway. Several fungicides and fertilization sources have been applied to Tifway bermudagrass. Plugs will be extracted from these areas during the fall, winter, and spring, and subjected to artificially induced cold temperatures to determine treatment effects on bermudagrass winter hardiness.

Isolation of the Spring Dead Spot causal organism[s] is planned. Several selected media and baiting techniques are currently being used to try and isolate the SDS causal organism[s]. Isolation attempts will be during the fall and winter, 1986 as well as spring, 1987.

OHIO STATE UNIVERSITY - Dr. Karl Danneberger
Principal Investigator

Mechanisms for Heat Tolerance
in Annual Bluegrass

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[first year of support]

Twenty-five Poa annua biotypes collected from the continental United States were screened for high temperature tolerance. A 12°C difference

was detected between the least and most tolerant biotypes. The most heat tolerant biotype in this study was sampled from Avon CC, Cleveland, Ohio and the least from Douglasville, Georgia. No correlation between location and tolerance was found. High temperature treated biotypes were more prone to drought stress than non-treated. It was interesting to note that the experiment was repeatable during the summer months but no difference in heat tolerance was detected among biotypes when screened during the fall [October].

An interesting observation was made that may explain why annual bluegrass is sensitive to drought and pest stresses. When we subjected biotypes to heat treatments, followed by a two-week recovery period, the heat treated biotypes that survived appeared visually the same as the non-treated biotypes [controls]. However, if these biotypes were subjected to a minor moisture stress [a level at which no visual affect was observed on the controls], the heat treated biotypes died. From this observation it appears that heat predisposes annual bluegrass to moisture stress. Further, work is needed to quantify this observation. It may help explain the sensitivity of annual bluegrass to summer diseases such as anthracnose that are caused by relatively weak pathogens. This is conjecture but it does bring up the possibility of future research.

The two biotypes from Avon, Cleveland and Douglasville, Georgia along with "Victa" Kentucky bluegrass and a tall fescue cultivar are being propagated in suspension culture. This plant material will be used to determine if and in what quantity heat shock proteins [HSP] are formed. These proteins will be evaluated for feasibility and practicality as a rapid screening method of determining high temperature tolerance in turfgrass genetic material.

This work will be successful and completed by the summer of 1987. At this time, the use of HSP for determining heat tolerance in breeding programs is still feasible. Preliminary work at Cornell University has shown differences among corn hybrids with regard to HSP formation. It may turn out to be a method for "finger printing" turfgrass cultivars. The project is progressing well and will hopefully yield information important to the turfgrass community.

OKLAHOMA STATE UNIVERSITY - Dr. A. D. Brede
Principal Investigator

Breeding and Evaluation of
Cold Tolerant Bermudagrasses

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of support]

Presently there is no cold-tolerant, seed-propogated, fine-textured turf bermudagrass variety available for use in the northern half of the bermudagrass belt. The basic objective of research jointly