

## UNIVERSITY OF NEBRASKA

### **Breeding, Evaluation and Culture of Buffalograss for Golf Course Turf**

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(Seventh year of support)

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Buffalograss (*Buchloe dactyloides*) is considered to be a low water user, have low maintenance requirements, and able to survive the heat, drought, and cold extremes of the great plains region of the USA. This project is the first concerted effort to enhance the turfgrass characteristics of buffalograss. The following items update the status on cultivar releases and research progress.

Plant Patent Update. Plant Patents and crop registrations are still being prepared for NE 84-609, NE 84-315 and NE 85-378. These three selections will be included in the National Buffalograss Evaluation Trial scheduled for 1991. It is possible that two other selections from this project will be included.

NE 84-609 Commercialization. The NE 86-609 planting made May 14, 1990, established successfully with no problems. David Doguet, Crenshaw and Doguet Turfgrass, hopes to have 100 acres of 609 by next summer; however, this will not be enough sod to meet the present demand. An additional one acre foundation planting was made in Florida during September, 1990. A small amount of 609 will be planted on the new Barton Creek Golf Course in Austin, Texas.

Commercialization - Seeded Buffalograss. Native Turf Development Group (a consortium of Farmers Marketing Corporation, Yuma, Arizona; Arrow Seed, Broken Bow, Nebraska; and Johnston Seed, Enid, Oklahoma) harvested seed from a seed yield trial established during summer, 1989. Three to five of the synthetics will be included in the National Buffalograss Evaluation Trial.

Seeded Buffalograss Selection. The 1991 nursery will have approximately 3,000 individual seedlings originating from Dr. Garald Horst's salt screening research. The seed will be established in the greenhouse and planted to the field in 1991. The seed was collected from buffalograss genotypes able to withstand severe drought and saline conditions. This nursery will serve as a population from which improved selections will be made for advanced testing.

Buffalograss Tissue Culture. Utilizing buffalograss variety NE 84-609, research was completed on the callus initiation phase. The most important conclusions that have been found from this research include:

- 1) An extremely low concentration level (2.5  $\mu$ m) of the auxin dicamba can be used to initiate and maintain callus.
- 2) Differences in callus morphologies are seen when a minimum of 150 milligrams of callus is induced from the nodal segment.

Buffalograss Hybridization Methods. The hand pollination method was superior to the field and shaker methods in making buffalograss crosses. The temperature seed priming treatment was better than scarification for enhancing germination. Matching flowering dates for crossing was possible by staggering the dates when male and female clones were brought into the greenhouse.

Development of Turf-Type Seeded Buffalograss with Improved Drought Resistance. The goal of this project is to evaluate a buffalograss breeding system using selection techniques based on parental performance and realized heritability estimates. The components being studied are drought resistance and improved turf quality. The aim of the breeding program is to develop a dioecious synthetic mating system. The project includes three areas of extensive evaluation. They include: components of root performance, water use efficiency, and components of parental turf quality and seed production. Performance of parent and progeny material in each area will determine final selection criteria for the initial synthetic generation of an advanced population of buffalograss.

Vegetative Establishment - Fertilizer Evaluation. Treatments of an inorganic nitrogen carrier gave significantly higher mean values for stolon number per plug and stolon length per plug compared to the organic nitrogen carrier in a greenhouse study. Results from the same study duplicated in the field indicated no significant differences between the organic and inorganic nitrogen sources. A possible reason for the field results could be the previous cropping systems used in the area of this study. Soils in the area were analyzed and shown to have a high soil fertility level.