

MICHIGAN STATE UNIVERSITY - Dr. Bruce Branham,  
Principal Investigator

The Effect of Seven Management  
Factors and their Interaction on  
the Competitive Ability of  
Annual Bluegrass and Creeping  
Bentgrass

1985 Grant - \$10,000 (First year  
of support)

Annual bluegrass is the predominant turfgrass found on golf courses in the Northeastern region of the United States. Annual bluegrass is not planted intentionally, but is a weed that is very competitive under golf course management. The preferred species for golf course greens and fairways is creeping bentgrass. These studies were designed to measure the influence of seven management factors and their interactions on the competitive balance between the two species.

Two main field studies are being conducted to examine these seven factors. One study contains five factors of irrigation (daily, three times per week, or irrigation at wilt); fertility (2 lbs N/M/YR or 6 lbs N/M/YR); clipping removal or return; plant growth regulator (flurprimidol at 1 lb AI/A, mefluidide at 0.125 lb AI/A, or a check); and overseeding with bentgrass or no overseeding. This five factor study has been conducted for two years at the Hancock Turfgrass Research Center in East Lansing, Michigan.

The results indicate that removing clippings causes the greatest reduction in annual bluegrass population with a 14.2 percent decrease. The only other factor that caused a significant decrease in annual bluegrass populations was low nitrogen fertility, 2 lbs N/M/YR, which caused a 12.2 percent decrease in annual bluegrass.

There was however, a significant three-way interaction between clipping removal, irrigation, and fertility. Plots where clippings were removed, fertility was at 2 lbs N/M/YR and irrigation occurred at wilt had a significantly lower amount of annual bluegrass with a 22.8 percent decline. The other interesting aspect of this three-way interaction was that where irrigation was applied daily and fertility was low, the clipping treatment was not significant. Whether clippings are removed or returned, significant reductions in the annual bluegrass population can be achieved with low fertility and daily irrigation.

A second study examining the same irrigation and clipping treatments along with compaction and coring treatments found only compaction to be significant. Compacted plots had a 9.6 percent increase in annual bluegrass while noncompacted plots had a 5.4 percent decrease.

A final field study was designed to determine the effects of flurprimidol, a plant growth regulator which is claimed to give a competitive advantage to creeping bentgrass, on the rate of spread of creeping bentgrass. Results are preliminary but seem to indicate that flurprimidol does not encourage the spread of creeping bentgrass in an annual bluegrass turf.

UNIVERSITY OF MINNESOTA - Dr. Donald B. White,  
Principal Investigator

Breeding of Poa annua for Improved Cultivars

1985 Grant - \$15,000 (Second year of support)

During 1985 new accessions were added to the germplasm collection from Arizona, California, Illinois, Michigan, Missouri, New Jersey, Minnesota and several European locations.

Evaluation of first and second generation selections continued and included a spaced planting in the field of representatives of 145 selections.

Several investigations into stolon propagation and storage resulted in the development for inducing flowering, storage of stolons, and evaluation of rooting habit. Investigations were also initiated regarding the modification of tissue culture for somaclonal variation.

The first field planting from stolons of superior selections was established and the first selections from the F1 generation of a 16B clone parent has been identified.

Crossing, selfing, evaluations, selection, seed harvest and data collection continue.

In 1986 we plan to continue research in the following areas:

1. Selfing, crossing and selection programs;
2. Self-incompatibility;
3. Tissue culture including efforts investigating possibilities for somaclonal variation;
4. Flower suppression and improved methods of emasculation;
5. As activities permit, increase the 16B selection for testing and evaluations at the University of Minnesota and other sites.