

**BENTGRASS BREEDING**  
**Annual Report - 1989**  
**Pennsylvania State University**  
**J. M. Duich**

Utilizing starch gel electrophoresis, all but two of 26 varieties from four bentgrass species were distinctly identified by four enzyme banding patterns. PGI and TPI enzymes separated varieties into nine groups, and GOT and PRX into six groups. Seven of nine uncertified seedlots of Penncross were revealed not to be Penncross using PGI and TPI. Three of them even showed colonial bent patterns, which was also confirmed by results of GOT and PRX. A number of golf clubs have encountered serious putting green problems due to the sale of "Bogus" Penncross seed.

A series of studies were completed involving work to enhance colonial bentgrass breeding. Early flowering response beginning with seed germination showed that a 17 week combination of controlled induction and initiation could result in a satisfactory number of seed heads. This was the shortest period in time efficiency. Auxin levels of 2,4-D were studied to determine feasibility of a somatic tissue culture system after haploid production from anthers was not successful for several varieties of colonial bent. Genotype response variation for percentage of callusing seedlings and callus size was detected after culture. Astoria was ranked as the best variety with 59% callusing and a mean size of 4.3 mm. Microspore maturity and callose deposition relative to panicle development in *Agrostis castellana*, Highland bent, were investigated in four stages of panicle development. Evidence suggests that callose could limit response of young microspores to tissue culture.

Putting green evaluation test established with 38 varieties including 28 PSU experimentals. Six of 20 experimentals very promising after first year in three out-of-country trials. Over 200 progeny lines nursery established in program to develop close-cut tolerant creeping bents. Second year fairway bent management results show near elimination of *Poa annua* with two paclobutrazol applications, especially with clipping removal; less leafspot, dollarspot, and brownpatch with clipping removal; and best turf quality and *Poa annua* competition in descending order with Penneagle, Pennlinks, Penncross and Seaside varieties, respectively.