

*Pennsylvania State University - Dr. Joseph M. Duich*

#### *Bentgrass Breeding*

This research program has made a tremendous impact on golf through the development of 'Penncross', 'Penneagle', and 'Pennlinks' creeping bentgrass. The USGA/GCSAA research program has contributed a modest amount toward the continuing efforts of Dr. Duich to develop improved creeping and colonial bentgrass varieties.

In 1986, Pennlinks (PSU 126) was released and named. This cultivar featured an upright growth habit, finer leaves, minimal segregation, and improved seasonal turf quality and overall performance. A putting green evaluation trial with 38 varieties was established in 1989 and included 28 new PSU experimentals. Six of the experimentals were very promising, and resulting progeny continue to be evaluated under close clipping to develop close-cut tolerant creeping bentgrasses.

In addition, gel electrophoresis (finger printing) was evaluated to help develop methods which identify differences between bentgrass varieties. Fairway management studies with new and old bentgrass varieties also were conducted with growth regulators and clipping removal as methods to reduce *Poa annua* and disease reduction (i.e., leafspot, dollarspot, and brownpatch).

Studies were completed to enhance efforts to develop improved colonial bentgrasses. Early flowering response, improving rhizome production, tissue culture attempts to produce haploid plants from anthers, and refining somatic tissue culture media were some of the areas investigated.

*University of Rhode Island - Dr. C. Richard Skogley*

#### *Selection and Breeding of Superior Bentgrasses*

Since 1960, ongoing USGA research grants have been utilized to support an extensive effort in plant improvement at the University of Rhode Island. In 1989, 'Providence' creeping bentgrass was released and seed was sold to several New England golf courses and many others nationally. Through the years, the turfgrass breeding program conducted by Dr. Skogley has produced several other important turfgrass cultivars, including, 'Jamestown' and 'Jamestown II' Chewings fescues, 'Georgetown' Kentucky bluegrass, 'Kingstown' velvet bentgrass, and 'Exeter' colonial bentgrass.

*Texas A&M University - Dr. Milton C. Engelke*

#### *Breeding and Development of Bentgrass*

Even though creeping bentgrass provides a superior putting surface, its use is limited in the South due to its intolerance of high heat. Moisture stress can be relieved with good irrigation management; however, very little can be done to relieve the plant stresses caused by high temperatures. The major objective of this project was to develop bentgrass cultivars with superior heat tolerance for both high soil and air temperatures.

High ambient and soil temperatures impair the transpirational cooling process of bentgrass. Most bentgrasses also exhibit a definite degeneration of root tissue and shortening of roots under high soil temperatures, close frequent mowing, and heavy traffic.

Through the efforts of Dr. Engelke and his research staff, screening techniques were developed which examined leaf and shoot water content as it relates to bentgrass plants grown in high ambient and soil temperatures. In addition, a root screening procedure which identifies individual plants with superior root growth characteristics was developed. Numerous parental plants were identified with superior agronomic and biological characters.

The increased use of bentgrass on fairways, in addition to putting greens, and support of bentgrass breeding on the part of the USGA/GCSAA, renewed the interest of seed companies and universities to release or develop new varieties. Several new experimental varieties from Texas A&M University and new commercial varieties, including Providence, Pennlinks, Putter, SR-1020, Cobra and others will meet the future demands of golf course greens and fairways.

*Department of Scientific and Industrial Research, New Zealand - Dr. William Rumball*

#### *Colonial Bentgrass Breeding*

The original objective of this project was to breed a colonial bentgrass (*Agrostis castellana*) cultivar for U.S. golf courses using New Zealand breeding materials. Breeding work was conducted in New Zealand, and many selections were tested in the United States. The resulting cultivar would, hopefully, require much less water and maintenance than those currently available in the United States, but still be attractive and persistent.