Colonial Bentgrass, *(Agrostis tenuis)*, Breeding and Cultivar Development

Dr. Bridget Ruemmele

University of Rhode Island

Goals:

- Develop resource-efficient, improved colonial bentgrasses for use individually, in blends, or in mixtures with fine fescues.
- Improvements desired for colonial bentgrass include: brown patch resistance, increased cold hardiness, dark green color, close mowing tolerance, recuperative ability and wear tolerance, tolerance to reduced cultural inputs, retention of desired turf-type characters.

New accessions continue to be added to the current germplasm collection at the University of Rhode Island. Four private companies have been actively involved during the acquisition and assessment of materials introduced into this program.

Up to five clones of more than 600 plants were established in the field during fall 1993. A cold, snowy winter and cold spring stressed young plants set in the field in late fall. Most of these plants survived the winter stress, despite their late establishment. Additional material was propagated for greenhouse assessment and planting in other field plots during 1994.

Ms. Pei-Yu Zeng, an M.S. degree student, conducted preliminary and advanced greenhouse screening trials for *Rhizoctonia* sp. (brown patch) resistance in bentgrasses. From eight strains of this fungus, the three most virulent strains were identified for use in the screening of the entire germplasm collection later in the year. Differences among the fungal strains were confirmed by polymerase chain reaction (PCR) technology.

Progeny from 69 accessions were planted last fall in Rhode Island and varied in establishment and survival this spring, as well as possible resistance to weed invasion. The highest-rated material was planted in a polycross this past fall for seed production next spring in Oregon. This material was also included in the brown patch screening at Rhode Island.

Molecular genetics techniques have included successful preparation of both creeping and Colonial bentgrass in tissue culture suitable for gene transfer. Genes that are available and useful for this process are being identified.