

Breeding Seashore Paspalum for Recreational Turf Use

Paul Raymer
University of Georgia

Objectives:

1. Develop superior quality turf cultivars suitable for use on golf courses and recreational venues.
2. Document and improve disease resistance.
3. Further improve salt tolerance.
4. Develop improved weed management strategies.
5. Develop molecular tools to support breeding.

Start Date: 2006

Project Duration: three years

Total Funding: \$90,000

The University of Georgia has an established seashore paspalum breeding effort for the development of improved cultivars suitable for use by the golf course industry. Thus far, our cultivars have been well accepted by the turf industry both domestically and internationally. The University of Georgia turfgrass breeding program has the largest and most diverse collection of seashore paspalum ecotypes in the world. We are now utilizing this growing germplasm collection to generate new genetic variation through recombination.

This approach allows us to generate thousands of unique individuals each year. Individual plants are hand-trimmed in the greenhouse and undesirable plants eliminated. In 2008, more than 6,000 individuals were also screened for salt tolerance in the greenhouse and approximately 2,000 salt-tolerant individuals were later transplanted to field plots for further eval-



Dr. Paul Raymer develops superior seashore paspalum cultivars for use on golf courses.



Automated rain-out-shelter covers field plots during natural rainfall events allowing us to impose drought conditions.

uation of turf quality and resistance to dollar spot. This approach allows our breeding program to efficiently evaluate large numbers of individuals for important traits and should insure continued improvement in turf quality, disease resistance, and salt tolerance in our future cultivar releases.

Over the past two years, a number of turf trials were established including a Vegetative Preliminary Trial, a Fairway Variety Trial, and a Green Variety Trial at Griffin, as well as a Fairway Variety Trial at Tifton. In addition, in 2007, three advanced breeding lines were entered into the first National Turfgrass Evaluation Program (NTEP) multi-state trials for seashore paspalum. All of these trials are now generating valuable data on the performance of several advanced lines in our program.

Based on the data that we have accumulated thus far, it appears that several of these lines represent significant improvements over any existing cultivars and therefore are being positioned for release as our next cultivar. Vegetative increase of these lines is now underway and plans are to begin more broad-scale evaluation during 2009.

In 2007, Dr. Bob Carrow and his staff initiated a replicated field study with 24 entries under our automated rain out shelter. These plots were subjected to three

dry-down cycles during the 2008 growing season. During these dry down events, individual plots were rated twice weekly for turf quality, leaf firing, and normalized difference vegetative index (NDVI).

When the data were averaged over all dry-down periods, one of our advanced lines topped the lists for NDVI, turf quality, and color under drought stress.

The top group for turf quality also included 'SeaIsle 2000', 'Sea Dwarf', 'SeaIsle 1', and several other advanced lines. The bottom group for turf quality included 'Aloha', 'Salam', 'Tifway' bermudagrass, and a number of our advanced lines.

During the summer of 2009, we plan to continue this evaluation for drought resistance as well to establish a new drought tolerance experiment with our newest advanced lines. Data generated from such studies will be essential in developing the next generation of drought tolerant seashore pasaplum cultivars.

Summary Points

- Extensive greenhouse and field testing for salt tolerance, turf quality, and disease resistance is used to identify new cultivars with a combination of improved traits.
- Drought studies conducted under a rain-out shelter help us to identify potential cultivars that can maintain turf quality even during periods of prolonged water stress.