Breeding Seashore Paspalum for Recreational Turf Use

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Objectives:

1. Develop superior turf-quality 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 turfgrass breeding program continues to make rapid progress towards the development of improved seashore paspalum cultivars. In 2006, approximately 5,000 single plants were screened for salt tolerance in the greenhouse and approximately 2,000 salt-tolerant individuals were later transplanted to field plots for further evaluation 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.

Currently, the disease susceptibility of seashore paspalum cultivars is largely unknown. This relatively new turfgrass is best adapted to coastal areas of the southern United States but is now being commonly used in more inland areas were fungal diseases may be a significant problem. Dollar spot caused by *Sclerotinia homoecarpa* and large patch (brown patch) caused by *Rhizotonia solani* are likely to be major fungal diseases impacting turf quality of seashore paspalum cultivars.

The Griffin Preliminary Trial which consisted of 37 experimental lines and five commercial cultivars was artificially inoculated with the dollar spot fungus during the fall of 2005 by UGA Plant Pathologists, Drs. Derek Settle and Lee Burpee. Weekly ratings of disease were used to develop a disease progress curve for each of the 42 entries. The entry means for 'Area Under the Disease Progress Curve' (AUDPC) ranged from a high of 243 to a low of 28. This high level of genotypic variability indicates that it is likely that we can successfully breed for improved resistance to dollar spot. Also encouraging was the fact that 43% of the experimental lines in this trial had AUDPC values equal to or below the best commercial cultivar, 'Sea Isle 2000'. This finding provides encouragement that future cultivar releases will have an improved level of host plant resistance to dollar spot.

A preliminary trial at Griffin, GA compares 37 experimental lines to five commercial cultivars.

In experiments conducted in 2005 and 2006, Weed Scientist, Dr. Tim Murphy applied Drive (quinclorac) at 0.5 and 1X (0.375 and 0.75 lbs. ai/acre, respectively) rates to newly-seeded and sprigged 'Sea Spray' seashore paspalum. Application timings were 0, 21, and 42 days after seeding or sprigging. In 2005, Drive at 1X applied at the time of seeding was the only treatment that temporarily decreased the density of seashore paspalum during establishment. This treatment reduced density approximately 30% at 28 and 35 days after application (DAA). No effect on density occurred at > 42 DAA. Drive did not affect seashore paspalum establishment in 2006. This research showed that Drive, an effective herbicide for crabgrass (*Digitaria spp.*) and certain other annual weeds, could be applied at the time of seeding or sprigging, as well as during "grow-in" of seashore paspalum. This information was forwarded to BASF, the registrant of Drive, who has added this use and turfgrass species to this herbicide label.

Each year, approximately 5,000 single plants are placed under high salt conditions to identify the most salt tolerant individuals.

Summary Points

- Our current breeding allows for the evaluation of thousands of individuals each year for traits of importance to the golf industry.
- Considerable genotypic variability for resistance to dollar spot exists within our available germplasm. This suggests that it may be possible to breed for improved resistance to dollar spot.
- Research indicates that Drive, an effective herbicide for crabgrass and certain other annual weeds, could be applied at the time of seeding or sprigging, as well as during grow-in of seashore paspalum.