

# Breeding Seashore Paspalum for Recreational Turf Use

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## Objectives:

1. Develop a course-wide paspalum cultivar.
2. Assess paspalum genotypes for multiple pest resistance.
3. Identify and develop improved disease resistance in paspalum.
4. Develop an efficient method for screening germplasm for salt tolerance.
5. Develop breeding strategies to induce variability through genetic recombination.

**Start Date:** 2003

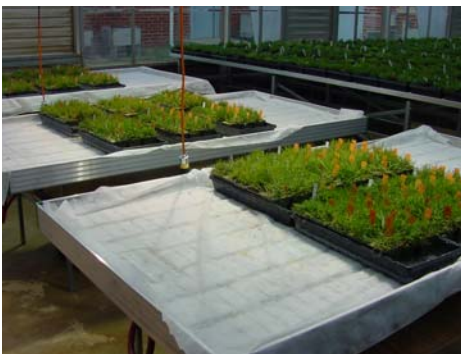
**Project Duration:** three years

**Total Funding:** \$90,000

Seashore paspalum, *Paspalum vaginatum*, is warm-season grass that has rapidly gained popularity as a fine turf on golf courses and other recreational sites especially where salt is a problem. Previous research demonstrated that varieties do vary greatly in their level of tolerance to salt. This means that it is necessary to screen breeding materials prior to release to ensure that they have high salt tolerance and also infers that it may be possible to further improve salt tolerance through breeding and selection.

For these reasons, an efficient and effective salt tolerance screening method for evaluation of large numbers of breeding lines is needed. This year, we developed a greenhouse salt tolerance screening technique using three ebb and flow benches to provide sub-irrigation with salt concentrations of 0, 20, and 40 dS m<sup>-1</sup>. Seawater is approximately 50 dS m<sup>-1</sup>. Six replications of 15 genotypes were simultaneously evaluated at each of the three salt concentrations.

After six weeks at the target concentrations, plants were harvested to determine verdure and crown and root dry weight. Large genotypic differences were



Ebb and flow benches are used to evaluate seashore paspalum for salt tolerance.

observed for all traits measured. Using this technique, two genotypes with salt tolerance levels superior to any previous reports were identified.

## Cultivar Releases

Previous paspalum cultivar releases from The University of Georgia by Dr. Ron Duncan were 'SeaIsle 1', for use on fairways and tees, and 'SeaIsle 2000', for use on greens. Both were released in 2000 and have been well received by the golf industry worldwide. Next year, we expect to release another of Dr. Duncan's paspalums that will be for course-wide use in fulfillment of objective 1. This cultivar has even better salt toler-



Dr. Raymer's new paspalum breeding nursery established at Griffin, Georgia in 2004.

ance than the previous releases and maintains high turf quality when mowed from green to fairway heights.

## Resistance to Japanese Beetle Grubs

Japanese beetle, *Popillia japonica* Newman, is considered the single most important turfgrass-infesting grub in the United States. Studies were conducted during 2003, and continued during 2004, to rank the degree of resistance to Japanese beetle grub feeding among selected seashore paspalum, bermudagrass, and zoysiagrass taxa. During 2003, 13 taxa including nine paspalums, two bermudagrasses, and two zoysiagrasses were com-



Dr. Braman's research staff search for beetle grubs.

pared for their suitability as hosts and susceptibility to damage from Japanese beetles in two trials in the greenhouse. Paspalum lines included '561-79', 'SeaIsle 2000', 'SeaIsle 1', 'Sea Dwarf', 'Salam', 'HI 10', and 'Sea Spray'. Twelve taxa are being evaluated during 2004.

Field trials were also conducted during 2003 evaluating six cultivars for potential antibiosis to Japanese beetle grubs. Two paspalum, bermudagrass and zoysiagrass cultivars were compared. Three cultivars were compared during 2004 for potential antibiosis and tolerance to grub feeding. During 2003, eight cultivars maintained greater than 50% of their uninfested growth potential in both greenhouse trials. All cultivars in the field supported similar numbers of grubs during 2003 and 2004, showing no apparent antibiosis.

## Summary Points

- A salt tolerance screening method for evaluation of large numbers of breeding lines was developed.
- We expect to release a new paspalum cultivar suited for course-wide use in 2005.
- In greenhouse trials to evaluate resistance to Japanese beetle grubs, eight cultivars maintained greater than 50% of their uninfested growth potential.