Development of Minimal Input Best Management Practices for Paspalum: Insect Resistance

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Objectives:

1. To evaluate seashore paspalum genotypes for resistance to mole crickets.
2. To evaluate seashore paspalum genotyopes for resistance to fall armyworms.
3. To evaluate the development and survival of twolined spittlebugs on seashore paspalum genotypes.
4. To evaluate the tolerance of seashore paspalum to feeding injury of Japanese beetle grubs.

Start Date: 1998
Project Duration: 5 years
Total Funding: $125,000

It is essential that as new cultivars of improved turfgrass species are released, cultural information is available that enables turfgrass managers to manage theses grasses. The University of Georgia is developing cultiavrs of Seashore paspalum.

This projects focuses on an important aspect of managing Seashore paspalum: insect resistance. The encompassing objective is to develop and refine best environmentally oriented paspalum management practices for long-term maintenance on golf courses.

Of particular interest is the determination of ecotype tolerance to important stresses, including insects. In the humid southeast, insects of particular importance include both subterranean feeders and surface feeding insect pests.

In this project, seashore paspalum ecotypes are screened for potential resistance to a guild of insect pests that limit turf grass growth, establishment, or appearance. Insect tolerance assessments are sometimes a critical component lacking in final management plans for new releases.

Turfgrass selections including 21 paspalums (*Paspalum vaginatum* Swartz) and 12 zoysiagrasses (*Zoysia spp.*) were compared with susceptible KY31 tall fescue (*Festuca arundinacea* Schreb.) and more resistant common bermudagrass (*Cynodon dactylon* Pers.) and common centipedegrass [*Eremochloa ophiuroides* (Munro.) Hack]) for potential resistance to fall armyworm [*Spodoptera frugiperda* (J.E. Smith)], an occasionally serious pest of managed turf.

Turfgrass and pasture grasses annually suffer sporadic damage by this pest, often severe in the Gulf Coast states. Resistant grasses offer an alternative management tool for the fall armyworm, reducing the need for pesticide use.

Dr. Kris Braman discusses her host plant resistance research on seashore paspalum conducted at the University of Georgia.

Laboratory evaluations assessed the degree of antibiosis and nonpreference present among more than 30 turfgrass genotypes to first and third instar fall armyworms, respectively. Zoysiagrasses exhibiting high levels of antibiosis included Cavalier, Emerald, DALZ8501, DALZ8508, Royal, and Palisades. Paspalum selections demonstrating reduced larval or pupal weights or prolonged development times of fall armyworm included 561-79, Temple-2, PI-509021, and PI-509022.

Additional evaluations were initiated in March, 2000, that screened 64 turfgrass genotypes, including 18 seashore paspalum ecotypes. Four trials have been conducted during 2000. The zoysiagrasses continue to demonstrate the best resistance to fall armyworm, while several bermudagrasses appear promising.

White grub evaluations were conducted during June/September, 1999, and June/September, 2000. A total of 29 turfgrass genotypes were assessed for Japanese beetle larval infestation in September, 1999, following exposure to egg-laying adults in June in the entomology screen house facility.

Grub densities among the eighteen seashore paspalums included in that trial varied Highest grub densities were found on Adalayd and Taliaferro paspalums and Royal zoysiagrass. No grubs at all were found in any of six of the 18 paspalums included in the study. This evaluation was repeated during 2000 and expanded to include 45 turfgrass selections.

Summary Points

- Paspalum website created and management book published.
- Herbicide and weed management programs developed.
- Paspalums with resistance to fall armyworm were identified.
- Six paspalums have been identified with resistance to white grubs.
- An Argentine seashore paspalum had tolerance to mole cricket injury.