

Relative Pathogenicity and Fungicide Sensitivity of Isolates of *Rhizoctonia* and Other Fungal Pathogens and the Disease Responses of Seashore Paspalum and Zoysiagrass Cultivars

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Objectives:

1. To confirm pathogenicity of *Rhizoctonia zeae* on seashore paspalum and screen isolates of *R. solani* and *R. zeae* to different fungicides.
2. To confirm whether isolates of *Fusarium* or *Microdochium spp.* obtained from diseased seashore paspalum samples are pathogenic. If so, identify and characterize these isolates and develop diagnostic responses and management recommendations.
3. Screen existing seashore paspalum and zoysiagrass cultivars for resistance to various pathogens.
4. Screen zoysiagrass germplasm accessions to select for resistance to *Rhizoctonia spp.*

Start Date: 2006

Project Duration: three years

Total Funding: \$82,000

The overall objective of this project is to investigate diseases of seashore paspalum and zoysiagrass including screening of cultivars and germplasm accessions for disease resistance and differences in fungicide sensitivity of the fungal pathogens. To determine the major pathogens affecting seashore paspalum in Florida and to collect isolates of *Rhizoctonia spp.*, a sampling program on eight golf courses throughout the mid-southern coastal areas of Florida was initiated. Two sampling events occurred June and August of 2007 and will be continued every two months for approximately two years.

Symptoms associated with *Fusarium* or *Microdochium spp.*, *Pythium spp.*, and *Sclerotinia homoeocarpa* were also documented and isolates collected for further studies, including characterization



The sterol-inhibiting (SI or DMI) fungicides have been among the most effective products for both large patch and dollar spot control in seashore paspalum in inoculated trials.

and pathogenicity of *Fusarium spp.* and *Pythium spp.* Isolates of *Rhizoctonia spp.* from seashore paspalum will be identified to species, characterized by anastomosis group and optimal temperature growth. Selected isolates will be used in future studies of the effect of salinity on disease development.

Studies are underway to identify an isolate of *Fusarium* or *Microdochium spp.* shown to be pathogenic on seashore paspalum. Additional isolates collected this year will be identified to species and tested for pathogenicity (Koch's postulates).

Oat seed inoculum infested with a new isolate of *Sclerotinia homoeocarpa* will be used to determine susceptibility of seashore paspalum cultivars. The following cultivars have been increased in the greenhouse and will be evaluated for susceptibility: 'Sea Green', 'Sea Way', 'Sea Spray', 'Sea Isle 1', 'Sea Isle 2000', 'Sea Isle Supreme', 'Aloha', 'Sea Dwarf', 'Sea Wolf', 'Salam', and some germplasm lines from K. Kenworthy.

A number of turf safety trials with various sterol inhibiting fungicides (SI, DMI) have been conducted on different seashore paspalum cultivars and heights of cut. 'SeaDwarf' and 'Aloha' cultivars maintained at greens and fairway heights were treated with several SI fungicides known to cause phytotoxicity on bermudagrass in summer after repeat applications. Neither cultivar showed phytotoxicity, even when reapplications exceeded label allowances. Preliminary results suggest that SI fungicides are viable safe options for disease management fungicide programs. Further screening and testing is underway.

Fungicide sensitivity trials of isolates of *Rhizoctonia solani*, *R. zeae*, and other *Rhizoctonia spp.* are continuing. A trial using 35 isolates indicate that some isolates are sensitive to thiophanate methyl in amended media agar plates at 10 µg / ml, while other isolates continue to grow at this concentration.

Last year, four isolates collected from dollar spot-like symptoms were found to have a high degree of homology to a genetic sequence published for *Poculum henningsianum*. These four isolates also differed morphologically from dollar spot isolates, and symptoms in the field were different. Superintendents have reported anecdotally that this dollar spot-like symptomatology has occurred again this summer and additional isolates are being collected. A doctoral student will begin studies of *P. henningsianum* and dollar spot this fall.

Summary Points

- Isolates of *Sclerotinia homoeocarpa*, *Rhizoctonia spp.*, and *Fusarium spp.* or *Microdochium spp.* are being characterized for use in disease resistance screening.
- Amended media agar studies indicate that *Rhizoctonia spp.* vary in sensitivity to thiophanate methyl.
- Two cultivars of seashore paspalum exhibited excellent tolerance to sterol-inhibiting fungicides even at summer temperatures in Florida.
- Two sampling events (June and August 2007) at eight golf courses with seashore paspalum in Florida found symptoms attributed to *Sclerotinia homoeocarpa*, *Rhizoctonia spp.*, *Fusarium spp.*, and possibly *Pythium spp.*