

# *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

A diverse group of *Rhizoctonia* pathogens cause disease on warm-season turfgrasses in Florida. Diagnosing these related diseases can be difficult because they produce very similar symptoms on closely-mown turf during overlapping periods of disease-favorable conditions.

Seashore paspalum isolates collected during sampling efforts have proven to be very diverse. Isolates that fall within the *Waitea circinata* species complex that includes *R. zeae*, *R. oryzae*, *W. circinata* var. *circinata* and others are especially interesting. Additional research needs to be done to further characterize this group of pathogens.

*Rhizoctonia zeae* isolates have been used to inoculate seashore paspalum cultivars and symptoms similar to those observed in the field (and similar to leaf and sheath spot on bermudagrass) resulted. The pathogens were re-isolated from the symptomatic turf confirming pathogenicity.

Some broad-spectrum fungicide products may be management tools for all of the *Rhizoctonia* diseases, but our fungicide-amended media assays indicate that species of the pathogens differ in sensitivities to most products. These differences may help to explain reports by superintendents of varying management results and efficacy windows for the same product used to treat similar disease symptoms.

Isolates of *R. zeae* were compared to isolates of *R. solani* that cause large patch, those that cause brown patch, *R.*



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*cerealis*, and some related species. Isolates of *R. zeae* were less sensitive to all fungicides tested (azoxystrobin, flutolanil, iprodione, propiconazole, pyraclostrobin, tebuconazole, thiophanate methyl, and triadimefon) than *R. solani* isolates. Our results agreed with previously published findings in that *R. zeae* was completely insensitive to thiophanate methyl, but we also discovered that even with fungicides that are effective for both large patch and leaf and sheath spot, leaf and sheath spot isolates are less sensitive as a group than large patch isolates.

Additional differences between isolates were identified that may have management implications. Yellow patch isolates were sensitive as a group to iprodione, but some *R. zeae* and *Marasmius spp.* isolates were moderately to completely insensitive according to our test.

Fungicide evaluation trials on seashore paspalum for control of large patch, dollar spot, and fairy ring have shown that DMI fungicides such as triadimefon, propiconazole, triticonazole,

metconazole, and combinations of strobilurins with these fungicides are safe and effective as disease management tools on seashore paspalum. The products Headway and Tartan have been among the best treatments evaluated and offer broad-spectrum management options from single products.

Progress has been made toward identifying *Fusarium* isolates that affect seashore paspalum. Some of the isolates have been identified as previously described *Fusarium* species and others may be previously undescribed. Considerable work and additional collections will need to go into investigating these apparently new species prior to publishing descriptions and names; however, pathogenicity trials have been completed and management trials are beginning to provide insight. Research is ongoing.

An inoculation of Dr. Kenworthy's zoysiagrass evaluation trial resulted in little disease. Additional isolates are also being tested on a small number of cultivars to find the most pathogenic and consistent isolate to use in further screening and selection research.

## Summary Points

- Isolates of several *Rhizoctonia spp.* have been characterized from warm-season turf in Florida and initial results suggest a more diverse group than expected.
- Amended-media studies indicate that *Rhizoctonia spp.* vary in sensitivity to many different fungicides and isolates often vary within species, as well.
- A diverse group of pathogens have been isolated from seashore paspalum turf in Florida. We suspect at least two of the species we have confirmed pathogenicity with are previously undescribed.