

The Efficacy of Spring Fungicide Applications Plus Organic Fertilizer for Controlling Spring Dead Spot of Bermudagrass

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Objectives:

1. Determine the efficacy of spring and fall fungicide applications for reduction of spring dead spot incidence and severity.
2. Determine the effect of organic fertilizer for the reduction of spring dead spot incidence and severity and overall improvement of turf quality.

Start Date: 2007

Project Duration: three years

Total Funding: \$30,000

Spring dead spot is a serious root-rot disease of bermudagrass and is the most important disease of hybrid bermudagrasses managed as putting green and fairway turf. Aesthetically undesirable necrotic patches ranging from a few inches to several feet in diameter are evident in the spring and early summer in bermudagrass swards that experience a dormant period.

Three fungal species in the genus *Ophiostphaerella* (*O. korrae*, *O. herpotricha*, and *O. narmari*) are identified as the causal organisms throughout the United States and Australia. In Mississippi, *O. korrae* has been identified as the causal organism of spring dead spot and has been consistently isolated from 'Tifway' bermudagrass roots managed as a fairway on a monthly basis for two years.

Based on fungal isolation results, it has been determined that the frequency of occurrence of *O. korrae* was greatest during spring transition (9.4%) compared to summer (4.6%) and fall transition (3.1%) growth periods. As a result of the observed fungal activity in bermudagrass roots during spring transition, fenarimol and other standard fungicides labeled for spring dead spot control will be applied to the symptomatic bermudagrass fairway in the spring and fall. An organic or inorganic nitrogen source will be applied concurrently with fungicides to identify a fungicide/nitrogen source combination that results in reduced spring dead spot incidence and severity while promoting high turf quality.

The study was initiated in the spring of 2007 in the 'Tifway' bermudagrass fairway adjacent to the previously mentioned fungal occurrence study located at Old Waverly Golf Club, West Point, MS.



Spring dead spot is a serious root-rot disease of bermudagrass and is the most important disease of hybrid bermudagrasses managed as putting green and fairway turf.

Spring dead spot symptoms were observed throughout the study area in the spring of 2007. The treatment plots (15 x 10 ft.) are arranged in a randomized complete block design with a split-plot arrangement of treatments and replicated four times.

Fungicide treatments are the whole-plot factor and nitrogen source is the sub-plot factor (7.5 x 10 ft. sub-plots). Fungicide treatments are applied during the spring and fall transitions. The nitrogen sources include Roots® 12-2-12 organic fertilizer and a 12-2-12 blend of inorganic fertilizer including ammonium sulfate (21-0-0), triple super phosphate (0-46-0), and muriate of potash (0-0-60) applied at 1.0 lb. of N per 1000 sq. ft. per month (May-October).

Turfgrass quality is recorded monthly throughout the growing season. Spring dead spot incidence and severity is evaluated in the spring of each year by determining the number of patches and quantifying the area of symptomatic bermudagrass per plot using digital image analysis. Recovery of symptomatic patches will also be monitored throughout spring transition. The soil pH was 6.1, with phosphorous, potassium, magnesium, zinc, and calcium at high to very high levels according soil analyses conducted at the Mississippi State University Soil

Testing Lab, Mississippi State, MS. Soil pH will be analyzed in the spring and fall of each year to monitor the effects of the nitrogen sources.

The results of this three-year study will identify a fungicide/fertility disease management program that is efficacious for controlling spring dead spot of bermudagrass managed as fairway turf. These results will also allow us to determine whether there is an added benefit of using an organic nitrogen source that includes bio-stimulants and microbes compared to an inorganic, acidifying fertilizer in reducing spring dead spot incidence and severity.

Summary Points

- The occurrence of *O. korrae* was greatest in 'Tifway' bermudagrass roots in spring transition (9.4%) compared to summer (4.6%) and fall transition (3.1%) growth periods of 2005 and 2006.
- Fenarimol and other standard fungicides labeled for spring dead spot control are applied to a symptomatic 'Tifway' bermudagrass fairway in the spring and fall.
- An organic or inorganic nitrogen source is applied concurrently with fungicides to identify a fungicide/nitrogen source combination that results in reduced spring dead spot incidence and severity.