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

Maria Tomaso-Peterson
Mississippi State University

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.

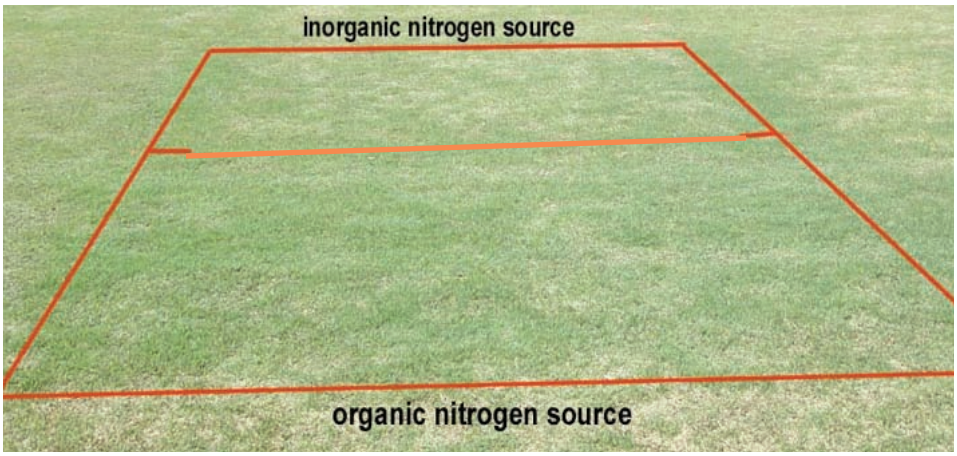
Start Date: 2007
Project Duration: three years
Total Funding: $30,000

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 *Ophiosphaerella* (*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.

Results of a previous study conducted at Mississippi State University suggests the frequency of *O. korrae* in bermudagrass roots was greatest during spring transition compared to summer and fall transition growth periods. As a result of the observed fungal activity in bermudagrass roots during spring transition, this study was initiated in the spring of 2007 in a 'Tifway' bermudagrass fairway with a history of spring dead spot. Symptoms of spring dead spot were observed throughout the study area in the spring of 2007. The treatment plots (15 ft × 10 ft) were arranged in a split-plot randomized complete block design replicated four times.

Fungicide treatments were the whole-plot factor and nitrogen (N) source is the sub-plot factor (7.5 × 10 ft subplots). Fungicide treatments were applied during the spring and fall transitions. The N sources include 12-2-12 organic fertilizer and 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 ft^2 per month (May-October).



Untreated control plot, March 2008. Half the plot was treated with an organic N source (foreground) and the other half with an inorganic N source (background) thorught the 2007 growing season.

Spring dead spot severity was visually rated (1 to 9; 9 = no disease) in the spring of each year and quantified using digital image analysis. Recovery of symptomatic patches was monitored throughout spring transition. Turfgrass quality was recorded each month of the growing season.

Fungicide applications had a significant effect on spring dead spot ratings in the spring of 2008. Neither the N source (organic vs inorganic) nor the interaction of fungicide and N source had an effect on spring dead spot severity. Rubigan treatments applied in April, September, October, or September and October; September application of Rubigan tank-mixed with thiophanate-methyl; October and November applications of propaconazole and myclobutanil, respectively, were all similar with spring dead spot ratings of > 8.5. Rubigan applied in March, April, May or March, April, September, October, and the untreated control were similar with an average spring dead spot rating of 7.3.

Spring green-up was similar for all treatments. However, some plots receiving organic N initially appeared greener than the inorganic N plots. Turfgrass quality was similar for all treatments each month and averaged 6.0 (scale 1 to 9; 9=best) for the growing season. In the spring and summer of 2008, the soil pH in plots receiving organic N (pH=5.63) was significantly higher than the soil pH of plots receiving inorganic N (pH=5.21).

We anticipate the results of this study will identify a fungicide/fertility disease management program 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 biostimulants and microbes as compared to an inorganic, acidifying fertilizer for reducing spring dead spot incidence and severity.

Summary Points

- Fungicide treatments, including fenarimol (4.0 fl oz/1000 ft^2) applied April, September, and October (2007), significantly reduced spring dead spot in 2008
- N source had a significant effect on soil pH.
- Spring green-up and turfgrass quality were similar for all treatments.
- Turf recovery from spring dead spot symptoms was evident in late June 2008.