PURDUE EXTENSION

Turfgrass Disease Profiles

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Botany and Plant Pathology

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Spring Dead Spot

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Spring dead spot (SDS) is the most serious disease of bermudagrass and is caused by any of three closely related fungal pathogens in the genus *Ophiosphaerella*. SDS is a root disease that kills individual plants, thins turf stands, and increases vulnerability to weed infestation. Outbreaks tend to be more severe on intensively maintained bermudagrass on golf courses and athletic fields.

Symptoms

SDS forms well-defined circular patches of blighted turf that begin to appear as bermudagrass emerges from dormancy in the spring (Figure 1). Leaves of affected plants exhibit die-back symptoms — that is, leaf decay begins at leaf tips and progresses toward the crown. As infection progresses, roots and stolons turn black (Figure 2).

SDS severity depends on two factors:

1. The extent of root infection in the fall
2. The severity (coldness) of the following winter

The SDS pathogens infect turf when soils are moist and temperature ranges from 50°F to 70°F. Fall infection weakens roots, predisposing them to injury and death with sustained periods of low temperature during winter.

SDS is a greater concern in northern areas of the transition zone where the climate is not as conducive for warm-season grasses. Symptoms may fade in midsummer as pathogen activity slows and rapidly growing bermudagrass overgrows and conceals patches of dead turf.

Reports indicate that SDS severity is greater after late summer nitrogen applications and in areas where there is excess thatch. Research results suggest that potassium nutrition does not influence disease severity.

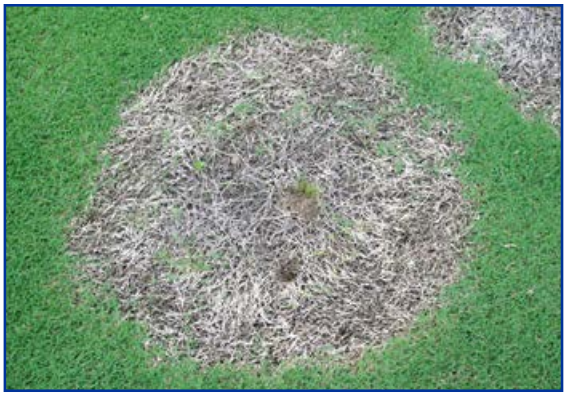

Figure 1

Figure 2

Disease Control

As with other infectious root diseases, trying to limit infection and mitigate turf damage often have inconsistent results — complicated by our incomplete understanding of the SDS pathogens. Two of the most prevalent *Ophiosphaerella* species in the United States (*O. korrae* and *O. herpothricha*) appear to differ in their virulence, their response to nitrogen source and pH, and geographic range (although the ranges overlap).

In the eastern United States, *O. korrae* is most common; *O. herpotricha* prevails in the Midwest. Recent published reports show that calcium nitrate applications reduced the symptom severity of *O. korrae* infection, while an acidifying nitrogen source (such as ammonium sulfate) reduced the symptom severity of *O. herpotricha* infection.

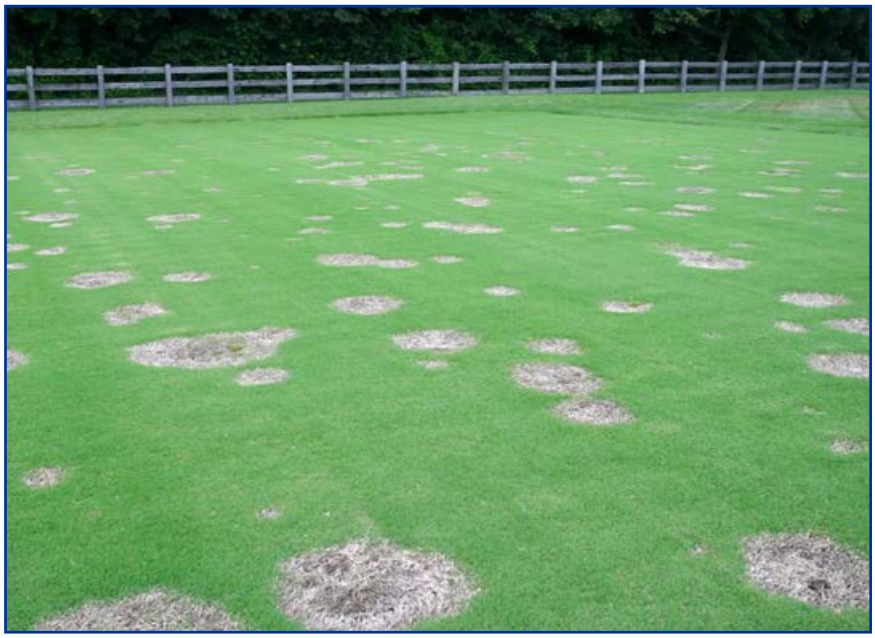

Figure 3

Avoiding fertilizer application when grass growth begins to slow down (late summer or early fall) will contribute to reduced infection, regardless of *Ophiosphaerella* species. Also, regular attention to verticutting and core aeration will decrease thatch and promote healthy roots, thereby reducing vulnerability to SDS damage.

Although resistance to infection by *Ophiosphaerella* has not been documented among bermudagrass cultivars, winter-hardy (cold tolerant) cultivars are reportedly less prone to SDS damage, especially during mild winters. However, root infection combined with extended periods of low temperature in winter (common to the Midwest) are likely to result in disastrous SDS outbreaks — even on the most cold-tolerant cultivars.

Figure 3 shows SDS symptoms on cold-tolerant "Patriot" bermudagrass in West Lafayette, Indiana. Current cultivar evaluations are provided in reports published by the National Turfgrass Evaluation Program (www.ntep.org).

Fungicides often fail to provide satisfactory control of SDS. Compounds that have some potency against pathogen growth do not move down from leaves to roots within the plant — so emphasis is placed on efforts to deliver (drench) fungitoxic concentrations into the thatch and soil.

Some success has been achieved with certain combinations of DMI (DeMethylation Inhibitor), QoI (strobilurin), and SDHI (Succinate Dehydrogenase Inhibitor) fungicides. Product labels often suggest increasing application volume to 2-4 gal/1,000 sq ft or applying supplemental irrigation (0.25 inch/1,000 sq ft) following the fungicide spray.

Timing of fungicide application is critical. The most effective approach is to apply one or two sprays in the fall, before bermudagrass goes dormant. Anecdotal evidence suggests that fungicide application should be initiated as soil temperature (2-inch depth) approaches 70°F in late summer or early fall.

Use DMI fungicides with caution. Repeated DMI fungicide applications have been associated with leaf injury and restricted root growth of dwarf bermudagrass cultivars.

Other publications in the *Turfgrass Disease Profile*s series are available from the Purdue Extension Education Store (www.edustore.purdue.edu) and Purdue Botany and Plant Pathology (ag.purdue.edu/btny/Lists/Publications/Diseases of Turf.aspx).

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