



AGRONOMY SERIES

# TIMELY INFORMATION

## Agriculture & Natural Resources

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### Spring Dead Spot and Bermudagrass Decline

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Spring dead spot (SDS) is a damaging, often persistent disease of bermudagrass lawns, tees, and greens. Although this disease is most common in the northern half of Alabama where bermudagrass adaptation may be marginal, damage may be seen statewide after an unusually cold, harsh winter. Varieties of bermudagrass with good cold tolerance, particularly improved common bermudagrasses, are less affected by SDS than hybrid bermudagrasses with less winter hardiness. A similar patch disease occurs on zoysiagrass.

Bermudagrass decline occurs statewide on golf course greens and tees. Development of both diseases is closely tied to turf management practices. SDS occurs most often on intensively managed 3-to 6-year-old turfs, but may occur on turf of any age. Excessive nitrogen fertilization, potash deficiency, sharp increases in soil pH, and thatch accumulation increase turf susceptibility to attack by the causal fungus of SDS. Low maintenance bermudagrass lawns usually have little trouble with SDS. Exceptionally low mowing heights, poor drainage, thatch accumulation, and high soil organic matter content have been linked with the occurrence of bermudagrass decline on greens and tees. The causal fungus of SDS and bermudagrass decline in Alabama is *Gaeumannomyces graminis* var. *graminis*. Related fungi, *Leptosphaeria korrae* and *Ophiosphaerella herpotricha*, have been shown to cause SDS in other sections of the United States.

#### Symptoms

On SDS-damaged turf, arc-shaped to circular patches of bleached, dead turf, which range from a few inches to several feet in diameter, appear as the bermudagrass greens up in early spring. Patches of diseased turf often appear in the same areas year after year. Fairways, roughs and greens are all affected by SDS.

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Bermudagrass decline first appears during the summer as irregular patches of yellowed (chlorotic) turf ranging up to several feet in diameter. Extensive stand thinning often develops as the leaves (oldest first) on diseased stolons yellow, then wither and die. Patches of bare ground may be exposed. Bermudagrass decline is more severe on greens than on higher-cut collars, tees or fairways.

Roots or stolons collected from SDS and bermudagrass decline-damaged turf are withered, dark brown to black in color, and brittle. Few, if any, thick, white, healthy roots are seen on diseased bermudagrass stolons.

Recovery of SDS-damaged turf is often slow. The unsightly patches become less noticeable 2 to 3 months after spring green-up and can disappear completely on intensively managed turf such as golf greens and fairways. Recovery usually must proceed from the edges of the diseased patches. In drier, cooler areas, the circular patches of dead turf may persist from year to year. Competition of weeds or over-seeded grasses may slow the recovery of SDS-damaged turfs. On turfs damaged by bermudagrass decline, some improvement in turf quality may be seen in the fall or early spring, but symptoms rarely disappear.

Although the symptoms of SDS appear in the spring, infection takes place in the fall. By the time SDS is noticeable, the damage is done and the turfgrass manager must focus on recovery and preventing a problem the next fall. For this reason, making maps of areas with SDS is a tremendous help in managing SDS in following years.

### **Control**

Management practices play a pivotal role in the development of SDS and bermudagrass decline. Management practices that promote root growth should help reduce the risk of disease outbreaks and speed recovery of damaged turf.

Nitrogen source has a significant impact on the predisposition of bermudagrass to SDS and bermudagrass decline. Disease development on zoysiagrass may also be influenced by nitrogen source. Nitrate nitrogen sources (ammonium nitrate or calcium nitrate) have been shown to increase the severity of SDS and related diseases on warm-and cool-season turfgrasses and wheat. Acidifying nitrogen sources (ammonium sulfate or ammonium chloride) have been shown to reduce SDS severity, delay the appearance of symptoms, and promote the recovery of diseased turf. Acidifying nitrogen sources are the preferred nitrogen sources for intensively managed, high-risk bermudagrass and zoysiagrass turfs.

To further reduce the risk of disease, fertilize with nitrogen lightly but frequently to maintain moderate turf growth throughout the growing season. Continued use of slow-release forms of organic or inorganic fertilizers may also reduce the risk of SDS and similar patch diseases. After September 1, avoid applying high rates of any fertilizer containing a fast-release form of nitrogen, such as ammonium nitrate, ammonium sulfate, and similar nitrogen fertilizers. Fall fertilization with fast-release forms of nitrogen has

been shown to increase SDS severity on bermudagrass previously damaged by this disease.

Apply nitrogen and potassium in a 1:1 to 2:1 ratio. Make fall applications of potash on greens, tees, and other intensively managed turfs. Use the chloride (murate of potash) rather than the sulfate form of potassium, particularly on turfs previously damaged by SDS or bermudagrass decline. Maintain phosphorus levels according to soil test recommendations. A near neutral to slightly alkaline soil pH has been linked to the increased severity of patch-type diseases on bentgrass and wheat and may increase severity of SDS on bermudagrass. Maintain soil pH at 5.8 to 6.2. Before liming, verticut or aerify bermudagrass or zoysiagrass. Rather than applying high rates of lime every few years, lime lightly each year to maintain a recommended soil pH on high risk turfs. Use acid-forming fertilizers on sites with near neutral to alkaline (7.0+) pH. Some studies have shown a beneficial effect of iron manganese and other micronutrients on SDS and bermudagrass decline severity.

Regular core aeration will stimulate rooting and may help suppress disease development.

Consider preventive fungicide treatments on greens, tees, and other highly visible, intensively managed turfs. Preventive treatments should be made in the late summer to early fall, before the fungus infects the turf. Curative fungicide treatments in the spring have not been shown to help much.

Systemic fungicides may be used to prevent SDS infection. Fungicides are most effective when used in combination with good management practices. The sterol inhibitor (aka DMI) fungicides, such as fenarimol (Rubigan), propiconazole (Banner MAXX), myclobutanil (Eagle) and triademefon (Bayleton). Also, strobilurins such as azoxystrobin (Heritage) and pyraclostrobin (Compass) may be effective. Avoid using contact fungicides as they will not protect the roots. Water in fungicides to make sure they are taken up by the roots.