



Dollar spot

Warm Season Turfgrass Disease Management

Knowing which diseases can affect your fields during the warm season can help you identify and combat those foes.

by Drs. Ed A. Brown (Plant Pathology) and Gil Landry (Crop and Soil Science) University of Georgia

Even though there are more than 70 diseases reported to attack turfgrasses, less than six commonly cause problems on sports fields. These disease causing organisms require specific environmental conditions to proliferate and infect a turfgrass. The disease triangle is used to examine the interaction between the disease causal agent (pathogen), the plant (host), and the environmental conditions required by the pathogen to infect the turf. This same triangle can be a means of formulating a plan to manage the

pathogen, the turf or the environment, to prevent or reduce the disease infection.

Since bermudagrass is the main warm season turfgrass used for sports fields, and since it is relatively resistant to most organisms, the focus will be on the more common organisms. Also, because a healthy turf is the first step in managing potential disease problems, a review of the common turf management practices associated with disease problems is important.

Water management is probably the most common practice that can affect disease problems. Most of the time it is not excess water that causes problems on sports fields but the lack of water. Even though grass growth slows from moisture stress, there is still generally sufficient moisture from dew formation to enable the pathogen to proliferate on the weakened turf.

Thus providing water when needed to maintain a healthy plant is important. In fact, simply irrigating to encourage moisture-stressed turf is often enough to reduce the disease problem. Before sunrise is considered the best time to irrigate because of low wind and temperature and the removal of morning dew from turf leaves. Irrigation before the dew has dried in the morning or before it forms at night extends the period of free surface moisture and may enhance disease development.

Obviously, water management is also related to soil conditions. Hard, compacted soils reduce turf rooting and increase moisture stress. Thus, cultivation to alleviate compaction can reduce disease potential.

Some thatch is desirable on sports fields because it forms a cushion which decreases turf wear. Thatch also insulates the soil from high and low temperatures and reduces vaporation losses of water from the soil surface. However, a thatch layer becomes undesirable when it exceeds a depth of one-half inch. Thatch then begins to restrict water and air movement into the soil, encouraging a shallow root system. It also provides an ideal environment for disease organisms. Thus, proper thatch management is essential to disease management.

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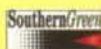


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These large circular patches, usually two to four feet in diameter, are typical symptoms of brown patch.

However, a different strain is now frequently being found in the cool months of the fall and during spring greenup.

Symptoms:

The fungus starts to develop from microscopic fungal mycelium fragments surviving in the thatch and organic debris and rapidly forms a circular pattern. The circular patches can be from several inches to 20 feet in diameter, but

usually are between two to four feet in diameter. Affected areas are thin in the center with sprigs of grass surviving and thinner at the margin of the advancing outer edge of the ring. During periods of activity, the outer edge has a smoke ring that is grayish to reddish brown in color. Fungus mycelium can be seen at the margin in the early morning when the dew is heavy or water is present. In bermudagrass, only the foliage is generally affected and the grass will recover from healthy rhizomes.

Finally, managing soil fertility is critical to maintaining a healthy plant, and manipulating nutrients can significantly reduce or increase disease problems.

With those general turf management principles covered, the remainder of this article describes conditions that favor disease development, symptoms of the disease, and turf management practices for disease control.

BROWN PATCH

Brown Patch is caused by the fungus *Rhizoctonia solani* which can infect all warm season grasses. This disease can be devastating and is difficult to control after developing. The most favorable disease conditions occur from April through October.

Environmental Conditions Favoring Disease:

Wet leaves and soil favors growth of the fungus. A heavy dew alone does not usually promote disease unless the wet period is extended by rain or improper irrigation. High nitrogen (more than one pound of N per 1000 sq. ft.) applications can excessively stimulate the development of young succulent turf and cause brown patch to be more severe. Although the most favorable temperatures for infection are 80-85F, the fungus can be active at 50F and up to 90F. Since the temperatures usually drop below 90F for much of any 24-hour period, the fungus may continue to be active all summer, awaiting a favorable combination of temperature, nitrogen-induced succulent turf, and water to infect. This disease mainly occurs in the summer.

Control and Management:

Turfgrass management is important in brown patch control. Avoid high N applications (more than 1 pound per 1000 sq. ft.) and avoid N if the disease is active. Fungicides can be applied as a preventive measure if the oncoming weather indicates wet conditions. Curative applications should be applied when first symptoms are observed. The fungicide should be applied in a minimum of 120 gallons of water per acre. This is important to provide foliage, stem and upper root zone/thatch coverage with the fungicide.

DOLLAR SPOT

The fungus *Sclerotinia homeocarpa* (*Lanzia* sp. and *Melero-discus* sp.) causes dollar spot. The severity of dollar spot disease is determined by soil moisture, nitrogen and potassium levels, and temperature.

Environmental Conditions Favoring Disease:

Ideal conditions for disease development include the combination of low nitrogen levels, low soil moisture,

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The straw-colored lesions on the bermudagrass, which have developed from the leaf margin and moved across the leaf eventually girdling the blade, are from dollar spot.

temperatures in the 60-80F range, heavy dew, or excess water.

Symptoms:

Early symptoms are straw-colored patches one to three inches in diameter. Infection can be severe and these damaged spots coalesce to form rather large areas where the foliage is bleached to a tan to whitish or straw color. There are straw-colored lesions on the grass blades that develop from the margin of the blade across eventually girdling the leaf. This fungus is primarily a foliage disease and a warm season grass like bermudagrass generally has no problem recovering from the damage. Overnight mycelial growth can be seen during active disease periods as cottony growth in the morning dew.

Control and Management:

Management practices that help control this disease are the addition of nitrogen and providing adequate soil moisture. Obviously, soil compaction can increase disease incidences by restricting rooting. Soil moisture should be adequate enough for good growth. Soil potassium levels should be maintained at medium to high levels. When the first symptoms are observed, evaluate if a fungicide should be applied. If so, select a contact fungicide that is not suspected of developing pest resistance and follow up after the labeled recommended interval with a systemic fungicide for longer residual control. The fungicides should be applied in a minimum of 120 gallons of water per acre. This will assure good coverage of the foliage, stems, and the upper thatch or organic zone.

HELMINTHOSPORIUM DISEASES

There are actually several fungi that cause this type of disease symptom. These fungi include *Bipolaris* spp., *Exserohilum* spp. and *Drechslera* spp., which were once classified as *Helminthosporium* spp. They are now considered to be *Helminthosporium* diseases. This is to facilitate communication to not confuse the issue with turfgrass managers. Some of these fungi can cause leaf, crown and root diseases. In most cases bermudagrass is tolerant of these fungi, although under stress and potassium deficient conditions it can be affected.

Environmental Conditions Favoring Disease:

The ideal temperature for infection is 77F, but infection can occur from 68-95F. However, *Drechslera* spp. diseases can cause disease during cooler temperatures. Infection by most of these fungi can take place at any time during the spring, summer and fall, provided adequate moisture is available. Problem areas in turf are usually associated with prolonged periods of leaf wetness and nutrient imbalances which weaken the turf.

Symptoms:

Black to purple spots on leaves and leaf sheaths with spots turning tan to brown in the center. The lesions are often elongated running in the direction of the veins of the leaf blade. Root and crown rot are also associated with these fungi. These phases are generally associated with dry periods during the hot part of the summer and cause a collapse of the turf tissue resulting in thinning and decline. Lesions can be found on the stolons and rhizomes under severe disease conditions.

Control and Management:

Fertilize with adequate amounts of potassium and nitrogen. Areas that are shaded or protected by structures or landscape may have more problems, so improving air movement in these areas would be helpful.

PYTHIUM BLIGHT

Bermudagrass is fairly tolerant of *Pythium* spp. infections if managed correctly. Poor surface and/or subsurface drainage are often associated with this disease. *Pythium* spp. are water molds and need excess water to infect.

Environmental Conditions

Favoring Disease:

Overseeded bermudagrass can have *Pythium* spp. problems but it is generally the cool season turf and not the bermudagrass that has the problem. Over-fertilization to stimulate excess young succulent turf and over-watering are usually associated with these problem areas.

Symptoms:

Greasy brown patches of turf an inch or less in diameter, increasing to several inches and turning straw colored. Cottony mycelium on leaf blades may be seen in the morning dew. The roots and crowns can be damaged. These turf problems are usually found in low areas where drainage is poor. Improving the nutrition may not cause the expected growth response, because there are limited roots to translocate the nutrients.

Control and Management:

Do not over-water or over-fertilize. After turf recovery, aerify if necessary to improve drainage. Fungicides may be useful in a fall overseeding program. If a problem has been identified previously, then consider a preventive fungicide application. Use treated seed for overseeding. If warm weather persists after the overseeding has germinated, then a fungicide application may be recommended until cool weather persists and the threat of disease is over.

Sports turf diseases can usually be beaten by good sound management. Monitoring weather conditions and providing the best possible management for the turf are the best disease controls. Being alert and able to identify disease problems as they develop, and then knowing what preventative and curative steps to take, will reduce the potential of significant disease damage to a sports field.

Finally, relying on fellow professionals, your local county Extension office, well-trained suppliers, or your state land grant university, can help you manage turf problems.

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