Disease Management in Sports Turf

By Dr. Gail L. Schumann

Diseases of turfgrass may seem to appear suddenly and without warning, but the truth is that there is usually a specific reason why a disease has occurred. When these problems arise, it is worth a little diagnostic detective work to help prevent future outbreaks and to speed recovery from the current epidemic.

Diagnosis of common turf diseases may be very easy or exceedingly frustrating. Some common diseases show symptoms that are readily recognized even without a microscope; others can be diagnosed accurately only in a laboratory. When a turfgrass disease does not easily match up with the pictures in a book, other possible causes of turf problems need to be considered. Mowing injury, insect problems, or misapplication of fertilizers and pesticides can all cause symptoms that might be similar to disease symptoms.

Fungi cause most turf diseases. These disease-causing organisms are actually parasites that use turfgrass as a source of nutrients. They are comprised of growing filaments (mycelium) and reproduce by forming spores. Spores are survival structures for a fungus. They also serve as packets of fungus that can be dispersed across grassy areas on feet and mowers, especially in wet conditions. Once turf has been established for a few years, it is likely that most of the fungi that cause the common diseases are present and waiting for an opportunity to infect the grass plants.

The Disease Triangle

Disease occurs only when three factors are present: a pathogen, a susceptible plant and an environment favorable to the disease. The fungi that cause common turf diseases are generally microscopic, so your field observations will be limited. When the grass is wet, however, it is common to see the mycelium and/or the spores of the fungus that is causing a disease. While not all fungi, particularly root-infecting fungi, will be visible without a microscope, the observation of an active fungus is invaluable in disease diagnosis.

Colorful Diseases

Several common turf diseases are easily recognized by the colored mycelium and spores visible on wet grass. In cool, wet weather, the fungus responsible for red thread disease produces tiny red threads on the tips of the leaf blades. Tiny cotton candy-like puffs of spores are produced by the same fungus. These spores are sometimes visible even when the red threads are not obvious. Red thread develops best when turf is growing poorly due to compaction, low fertility and other stresses.

Rust is another common disease that is easily identified by its color. Often you can see it on white athletic shoes, which may become covered with the orange, powdery spores during severe outbreaks. Like red thread, rust is most prevalent in grass that's growing slowly due to compaction, low fertility or dry soil. The spores take 10 to 14 days to form following infection. This means that infection on well-maintained grass is usually mowed off before the spores can form. Rust is most common in late summer and fall in many northern areas. It rarely kills plants, but can weaken them and make them unsightly.

Several common turfgrass pathogens produce white mycelium on wet grass, especially in the early morning. The mycelium is very similar to spider webs, and may even be confused with cottonwood seeds in spring and early summer (actual cottonwood seeds can usually be felt when rubbed between the fingers). The two most common diseases associated with white mycelium are dollar spot and Pythium blight. Dollar spot typically occurs in warm, wet weather on low fertility turf. Infected leaf blades are often straw colored below the mycelium. Pythium blight generally occurs in hot, wet weather on high fertility turf. Infected leaf blades look greasy.

From a distance, the white mycelium of the dollar spot fungus looks similar to cottonwood seeds. Photos by: Gail Schumann.

The distinctive orange color of turfgrass with rust disease is common in late summer and fall.

Looking for Circles

It is not a coincidence that most turfgrass-disease names include the words "spot" or "patch." Fungi generally begin to grow outward from a central point to form circular spots or patches of diseased turfgrass plants. You are most likely to observe the circular nature of diseases in the early stages, before the circles coalesce into a large, blighted area. Circles from diseased spots and patches are also most obvious at the low mowing heights of golf putting greens, and may not be as distinct at the higher mowing heights of sports turf. Some important diseases, such as leaf spot, develop in irregular areas rather than circular patches.

Red thread occurs in cool, wet weather and is common where soil is compacted or turf is stressed. The turf often has a pink or reddish look.

Environment Determines Disease

Many fungi have a temperature preference, so we expect certain diseases whenever an extended period of cool, warm or hot weather occurs, especially when it is accompanied by excess moisture. In cool weather, expect leaf spot and red thread. As weather gets warmer, dollar spot and necrotic ring spot may develop. In hot weather, brown patch and Pythium blight are more likely.

Turfgrass is more susceptible to certain diseases when it is stressed. Examples of stress factors include soil compaction, drought, poor drainage, mower scalping, dull mower blades, low or unbalanced fertility, and soil pH that is too high or too low. Diseases that are more common in stressed turf include dollar spot, necrotic ring spot, red thread and rust.

Necrotic ring spot can be very destructive. It is caused by a fungus that infects the roots of the plant, so most of the damage is done by the time the above-ground symptoms are observed. These symptoms include rings (frog-eyes) or patches of dead grass about 8 to 12 inches in diameter. Symptoms are common in early summer and fall. Damaged areas may be overseeded with perennial ryegrass, which is not susceptible to the disease, or with Kentucky bluegrass and fine fescue cultivars with tolerance to the disease.

Factors That Favor Fungi

Most leaf-infecting fungi require water droplets on the grass blades, so their spores, like seeds, can absorb water, germinate and produce new mycelium. Extended periods of rain or irrigation favor infection. Irrigation in the late afternoon or early evening may favor disease by increasing the time turf remains wet each night. Excessive

nitrogen applications may produce succulent leaf growth that is more susceptible to infection by fungi. Abundant moisture and excess nitrogen favor infections by the fungi that cause brown patch, leaf spot/melting out, powdery mildew and Pythium blight.

Leaf spot fungi are common in spring and fall in cool, wet weather. If only a few leaf spots are present on a leaf blade, they may be mowed away as the grass grows. Early spring nitrogen applications can cause a burst of succulent leaf growth. If this is followed by prolonged wet weather, many leaf spot infections may occur, leading to blighting of the entire blade and a thinning of the grass called "melting out." Overseeding damaged areas with genetically resistant cultivars is usually more effective than fungicide applications for the long-term control of this disease.

Special Circumstances

Snow molds and damping-off are two disease situations that require a slightly different approach. The fungi that cause snow mold grow best on turf blades beneath the snow. Thus, snow mold is most severe when turf is still green and succulent at the time of lasting snowfall. Typhula blight (gray snow mold) can appear very severe after the snow melts, but it does not generally kill the plants. The turf will usually recover with the return of warm weather.

Fusarium patch (pink snow mold) can occur even without snow cover, and is commonly seen in prolonged wet weather at cool temperatures. Fusarium patch results in small reddish, greasy spots. Mowing and foot traffic can track the fungus across turf, causing widespread blighting. Fusarium patch is more severe where soil pH is high and can be exacerbated by lime applications in the fall. To avoid both snow molds, do not delay turf dormancy by late fertilizer applications. When possible, minimize the time turf is covered with snow with snow fences, and avoid piling plowed snow on turf.

Damping-off is the term used to describe the loss of seedling turf and seed rot. Many fungi can cause damping-off, but *Pythium* is the most common cause in wet weather or where turf is overwatered. Overseeding of sports turf puts seedlings at risk if environmental conditions are not optimal for seed germination. Fungicides are not usually helpful once very young plants have been infected.

Are Fungicides the Answer?

Fungicides are a useful way to control diseases when mother nature is providing too much rain. Routine fungicide applications should not be necessary. Many turf diseases develop during unusual weather conditions that are only temporary. Once the weather pattern changes, the disease may no longer pose a serious threat to the health of the turf. Fungicides will not bring dead turfgrass back to life. Overseeding damaged areas and correcting faulty irrigation or mowing practices may be more effective solutions. Finally, not all turf problems are diseases. If a clear diagnosis is not possible, a fungicide is probably not justified, because it is not possible to choose the right product or apply it at the correct time. Sound cultural practices are the best approach to healthy turfgrass. ❑

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Category Blast Service

Use this new Category Blast Service to get FREE information on the products or service categories listed below which you are planning to purchase within the coming nine months. You will receive information, and possibly other follow up contact, from appropriate companies advertised not just in this issue, but throughout the year in ***sportsTURF.*** Just circle the number(s) on the reader service card (opposite) corresponding to the product or service categories below and drop the card in the mail!

9001	Aeration equipment
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9005	Field covers
9006	Field marking paint / equipment
9007	Infield mixes
9008	Irrigation supplies
9009	Mowers
9010	Seed
9011	Site amenities
9012	Sod

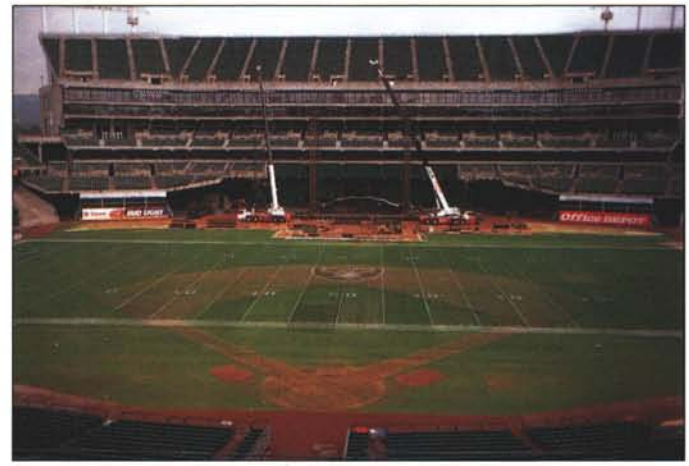
Correction: In previous issues, ***sportsTURF*** printed incorrect membership prices on the STMA membership application form. Prices are correct as they appear on page seven of this issue. We apologize for any inconvenience this may have caused.

STMA in Action

Rolling Stones Help Kickoff Nor-Cal

When the Northern California Chapter of the Sports Turf Managers Association held its first ever meeting at the Alameda County Complex, its 170 members were greeted by a massive six story stage built for the Rolling Stones' "Bridges to Babylon" tour. Throughout the day, stage hands and construction crews assembled the intricate steel-rigging using cranes, forklifts, tractors and trucks. It was easy to see the challenges the extravagant show presented the turf manager, who was expected to grow a high-quality professional sports field under those conditions.

Attendees of the grand opening had a chance to observe activities on the field from the country-club-like setting of the Coliseum's West Side Club, where Nor-Cal STMA President **Sal Genito** opened the day's activities. He introduced and thanked the chapter's 17 commercial sponsors, who made a strong commitment to the group by providing seed money to establish the chapter. Without these commercial supporters' willingness to get involved, the chapter would not exist.



As Nor-Cal's meeting progressed, so did construction of the six-story-high stage for the Rolling Stones tour.

Next came presentations by **Bob Milano**, sports turf manager, University of California, Berkeley, on sand-based field technology; **Steve Trusty**, STMA executive director, on the national association and its services; and **Steve Wightman**, turf manager, Qualcomm Stadium, on sports turf management "then and now."

Wightman focused on how our profession has changed over the last 20 years, and how professional associa-

tions are critical in such a specialized industry. He illustrated his point by reading a job opening from a past newspaper for a stadium turf manager, and it required "a high school education, reliability, and *some* experience with turf maintenance." He then read a job opening for a stadium manager today: "must have a four-year degree in turf management or related field, must be proficient in computer irrigation management and personnel management; and must work cooperatively with decision-makers such as stadium manager, team presidents, owners, etc." Clearly, the industry and expectations have grown.

The day concluded with walking tours of the Coliseum and the New Arena in Oakland, the rebuilt home of the Golden State Warriors. Oakland A's head grounds-keeper **Clay Wood** answered questions and described how he planned to resod the entire football playing surface for the remaining Raiders home games after the four — yes, four — Rolling Stones concerts. (He did a superb job, in a very short window that was complicated by rain almost every day.)

The Nor-Cal Chapter is off to an unprecedented start, and already it's planning for a community service project and a field day in 1998.

STMA Chapter News

Midwest Chapter: The Midwest Chapter held its annual meeting December 3 at the Pheasant Run Resort & Expo Center in St. Charles, Ill., in conjunction with the Sports Turf Track of the North Central Turfgrass Exposition. Elected for 1998 are the following officers: president, **Scott Pippen**, Village of Lincolnshire; vice president, **Jim Lewandowski**, Hinsdale Central High School; past president, **Marc Van Landuyt**, Van's Enterprises; treasurer, **Donald Michaels**, Conserv FS; and secretary, **Tom Breier**, National Seed Co.

For information, call The Chapter Hotline: (847) 439-4727.

Iowa Chapter: The Iowa Sports Turf Managers Association will again participate in the Iowa Turfgrass Conference, held January 26-28 at Des Moines Convention Center.

The Monday, January 26, Sports Turf Workshop morning sessions include: "Winning Fields = Winning Teams," by **Duane Banks**; "Setting Up for Practice," **Mike McDonald**; "Pattern Mowing," **Luke Yoder**; and Round Table Discussions: "Dealing with Soccer/ Football on the Same Field and Heavy Use Fields," led by **Gary Peterson**; "Football/Soccer Painting (Rules, Techniques and Logos)," **Mike Andresen**; "Fertility/Soil Sampling," **Ron Crooker**; "Baseball/Softball Mound & Homeplate Maintenance," **Luke Yoder**; "Picking an Infield Mix," **Jesse Cuevas**; "Football/Soccer Goalmouth Maintenance," **Kevin Vos**.

The afternoon session offers a combined golf course/sports turf session, "Selecting Sands and Soil Modification," presented by **Dr. Jim Crum**.

The sports turf session on Tuesday afternoon includes: "Using Crumb Rubber to Improve Wear Tolerance," presented by **Dr. Jim Crum**; "Landscaping Your Complex," **Ron Crooker**; "Aeration: Not Just for Compaction Relief," **Jesse Cuevas**.

The ISTMA Annual Membership Meeting is at 3 p.m., and will be followed by an informal social time with hors d'oeuvres, raffles and networking.

The sports turf session on Wednesday morning includes:

"Conversion from Artificial to Natural Turf — Kansas City Fields," presented by **Gary Custis**; "Ten Tips for Managing Fields on a Limited Budget," Dr. **Dave Minner**; "I'm Not the Boss — What Are My Responsibilities?" **Jeff Salmond**; "Managing and Its Role," **Mike Burt**.

For more information, contact Lori Westrum at The Turf Office: (515) 232-8222 (phone) or (515) 232-8228 (fax).

KAFMO: On February 19, the Keystone Athletic Field Managers Organization will hold seminars in conjunction with the Pennsylvania Recreation and Parks Society. Further details will be announced soon.

For information, contact Dan Douglas, Reading Phillies Baseball Club: (610) 375-8469, extension 212.

Florida Chapter #1: Florida Chapter #1 is planning a meeting for March 18 at Pro Players Stadium. The meeting's focus will be field and equipment safety. Further details will be announced soon.

For information, contact John Mascaro: (954) 938-7477.

Northern California Chapter: The Nor-Cal Chapter of STMA is planning its 1998 schedule of events and will announce details soon.

For more information about the Nor-Cal Chapter, contact Gail Setka at the UC Davis Grounds Office: (916) 752-5035 or fax to (916) 752-9631.

MAFMO: For information on the MAFMO Chapter or upcoming activities, contact The Hotline: (410) 290-5652.

Colorado Chapter: For information on the Colorado Chapter or upcoming activities, call the 24-Hour CSTMA Chapter Hotline/FAX: (303) 438-9645.

Minnesota Chapter: For information on the Minnesota Chapter or pending activities, contact Connie Rudolph: (612) 646-1679.

Southern California Chapter: For more information on the Southern California Chapter or pending activities, contact The Chapter Hotline: (1-888) 578-STMA (toll free in Southern California).

Chapters on the Grow

Arizona: For information on the Sports Turf Managers Association of Arizona or upcoming events, contact Bill Murphy, City of Scottsdale Parks and Recreation Department: (602) 994-7954.

Mid-South Chapter: The newly forming Mid-South Chapter of STMA will hold its next meeting in mid-February. More details will be announced soon.

The Mid-South Chapter serves Tennessee, Mississippi, Alabama, Arkansas, and parts of Louisiana, Missouri and Kentucky. For more information, contact Chip Houmes: (901) 377-5081; or Jim Calhoun: (901) 755-1305.

Nevada: Plans are moving forward on the formation of a Nevada Chapter of STMA. For information on this developing chapter, contact Ibsen Dow: (702) 649-1551.

Great Plains: For information on the Great Plains Sports Turf Managers Association or upcoming activities, contact Mark Schimming, City of Wichita: (316) 337-9123. ❑