

WHEN FUNGI ATTACK

YOU, MY GOOD MAN OR WOMAN, are on a roll. It's August 1 and your fields are pristine. The players don't make a single negative comment about its condition, and even better the boss gives you that rare compliment for how it both looks and plays. It's time for a celebratory beer(s). Now it's August 2, and you notice a small brown patch the size of a softball near midfield. No big deal, it's probably just a tad dry, and you increase the irrigation a bit to compensate. You take the weekend off, come back on August 5, and you have most certainly fallen off that roll. Not only has the one patch expanded to the size of a basketball despite increased irrigation, but new patches seem to be popping up all over the place. You make sure to get a fungicide application down that day, but a week later your prized field went from pristine to the surface of the moon. Instead of compliments from the athletes and your boss the athletes are turning ankles and you're receiving stern warnings. What the heck happened?

▼ **Figure 1:**
GRAY SNOW MOLD following snow melt in the spring can seriously hamper spring sports activities in temperate climates.



Maintaining athletic fields under today's demands with today's budgets can seem daunting, and usually one of the last things on a manager's mind is the possibility of disease. While diseases of athletic fields don't require the same intense preventative techniques as those found on golf courses, there are a few that can be serious if you aren't paying attention. Since everything is better in list form; here are my top 5 diseases of athletic fields (cool-season turf edition):

5. SNOW MOLD

This disease (*Typhula incarnata*, *T. ishikariensis*, *Microdochium nivale*) is higher up the list for those in harsher winter climates, and not even close to the list in many climates. Snow mold is actually an umbrella term referring to three distinct diseases: gray snow mold (*T. incarnata*), speckled snow mold (*T. ishikariensis*), and pink snow mold/*Microdochium nivale*. Snow molds rarely kill turf, but can leave significant damage following snowmelt that can severely impact the playability of a field in the early spring (Figure 1). Snow mold can be minimized by avoiding late fall fertilizations heavy in fast-release nitrogen. However, if avoiding late fall fertilization is not practical or the snow cover in the winter routinely persists for 2 or more consecutive months, a preventative fungicide application may be warranted. Many fungicides will provide effective snow mold control when applied preventatively; including but not limited to most members of the strobilurin and demethylation inhibitor (DMI) class of fungicides (Table 1).

4. RUST

Though reports of aggressive rust (*Puccinia* spp) (Figure 2) are becoming more prevalent in certain parts of the country, this disease remains a relatively minor disease for most athletic field managers (except if a team's white uniform is orange after the game [Figure 3]!). Rust is most severe on

Fungicide Class	Active ingredient	Common trade names ²
Strobilurin (Qol)	Azoxystrobin Pyraclostrobin Trifloxystrobin	Heritage Insignia, Insignia SC Compass
DMI	Metconazole Myclobutanil Propiconazole Tebuconazole Triadimefon Triticonazole	Tourney Eagle Banner MAXX, Propiconazole Pro, Spectator, Savvi Torque Bayleton Trinity, Triton FLO

²List of trade names was taken from the University of Kentucky's Chemical Control of Turfgrass Diseases 2013 and is not an endorsement of any particular product.



Figure 2



Figure 3

◀ **Table 1: LIST OF COMMON TURFGRASS FUNGICIDES** in the strobilurin (sometimes called Qol) and demethylation inhibitor (DMI) classes.

▼ **Left Figure 2: RUST** is an easy disease to identify (look for the orange pustules), but can be a hard disease to control when money is tight.

▼ **Right Figure 3: A NON-CHEMICAL** rust solution is to make sure the home team only wears orange uniforms.

slow-growing or stressed turf during July, August, and September though it can appear earlier than that in southern locales. Turf growing on heavily compacted soil, which can be common on heavily trafficked fields, is especially at risk for developing rust. The same goes for fields that are under-fertilized or poorly irrigated. If rust appears on your field, immediately fertilize with a water-soluble nitrogen source and water in to encourage turf growth. For long term prevention of rust, be sure to regularly aerify high-traffic locations of the field to prevent soil compaction. If you continually struggle with rust

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year after year, numerous fungicides from the strobilurin or DMI class of fungicides can easily provide 21-28 days of rust control.

3. NECROTIC RING SPOT

As a root-infecting fungus, this (*Ophiosphaerella korrae*) is one of the more frustrating diseases an sports turf manager can face because once symptoms appear it's too late to treat for the fungus. Adding to the frustration, fungicide applications are notoriously ineffective for this disease because the timing of application is critical and the fungicide also must be watered into the rootzone to the point of infection...and it's darned hard to water a fungicide through 2 inches of grass and a half inch of thatch. The necrotic ring spot fungus is only active on turf roots when soil temperatures are roughly between 55 and 65°F, which is usually mid to late spring. But the circular frog-eye patches characteristic of the disease (Figure 4) often don't appear until early summer, after the fungus has gone into dormancy.



▲ **Figure 4: NECROTIC RING SPOT** can be devastating on recently-sodded turf, something quite common on athletic fields.

At this point, all you can do is manage or 'baby' the turf and its weakened root system the best you can through more frequent irrigation and fertilization. If you repeatedly observe this disease on your field, implement any healthy rooting practices you can think of to increase the number of healthy roots and help the plant ward off symptoms. In addition, use acidifying fertilizers or other acidifying amendments because the disease is more severe when soil pH is above 7.2. Since excessive thatch layers can harbor the fungus, work to minimize the thatch layer to one half inch of thickness or less. As a last resort, some granular fungicides may be able to provide suppression if applied at the proper soil temperature and watered in.

2. BROWN PATCH

If you manage a field with a significant amount of tall fescue, you likely know all about brown patch (*Rhizoctonia solani*). This foliar fungus requires prolonged periods of hot, humid weather to cause disease and can ravage tall fescue plants if left



▲ **Figure 5: IF YOU SEE** white mycelium following hot, humid weather in the summer don't automatically assume it's Pythium blight...it may be brown patch.

unchecked. Symptoms appear as diffuse patches of slightly brown or even purple-colored turf, and in active infections white mycelium can be present in the turf canopy (Figure 5). Fungicide applications are an effective means for controlling brown patch, especially Prostar or those from the strobilurin class. However, limiting nitrogen fertilization and irrigation during hot periods can significantly suppress the disease in the absence of fungicides. However, if you manage tall fescue or experience prolonged periods of hot and wet summer weather, fungicides may be required for effective brown patch control.

1. SUMMER PATCH

This root-infecting disease (*Magnaporthe poae*) is similar to, and often confused with, necrotic ring spot but has a few key differences. Like necrotic ring spot, summer patch is a root-infecting fungus that primarily impacts Kentucky bluegrass (though ryegrass and fine fescues can also be impacted). Like necrotic ring spot,



▲ **Figure 6: OFTEN** similar in appearance to necrotic ring spot, summer patch can be destructive even on high-end athletic fields because of the inability to detect its presence until the damage has been done.

symptoms appear as roughly circular patches of tan turf that can sometimes partially fill in with weeds or grass to create 'frog-eye' patches (Figure 6). The key difference, however, lies in the active temperature range of each disease. Whereas necrotic ring spot only infects when soil temperatures are between approximately 55 and 65°F, the summer patch fungus BEGINS to infect roots once soil temperatures reach approximately 60°F.

As the soil temperatures rise through summer the fungus infects more and more turfgrass roots until sometime in mid-summer when the remaining functioning roots cannot support the plant and it wilts and dies. A fungicide application once symptoms have appeared will stop the current infection from spreading (assuming you get the fungicide down into the roots). However, because the infection decimated so much of the root system, the symptoms are likely to persist and the plants weakened for the rest of the summer. Methods for reducing summer patch infection include healthy rooting practices (summer patch is worse where thatch is excessive and in poorly draining or compacted soils) and reducing the soil pH to under 6.5 through acidifying fertilization or other means. Where summer patch is a consistent problem, fungicides from the strobilurin or DMI class can be used and should be applied in the late spring when soil temperatures are approaching 60°F. Care should be taken to water the fungicides into the top inch of the soil where the fungus is active.

The aforementioned diseases are not the only diseases you will find on your athletic field, and even determining which disease is present on your turf (or if it's a disease at all!) can be very taxing. If you're unsure, I recommend submitting a sample to a diagnostic lab that specializes in turfgrass diagnostics to confirm the presence of a disease PRIOR to applying a fungicide. It's better to spend \$100 on proper diagnostics than waste \$500 on a misapplied fungicide. Many universities around the country, including the Turfgrass Diagnostic Lab at Wisconsin (www.tdl.wisc.edu), have excellent turf diagnostic facilities and can provide needed support to properly diagnose your problem. For the most effective chemical control options check with your local sales representative, extension agent, or look up the University of Kentucky's "Chemical Control of Turfgrass Diseases 2013" online. ■

Paul Koch, PhD, is an associate researcher, turfgrass pathology, at the University of Wisconsin-Madison.



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