The Dog Days of Summer (Patch)

Reducing turfgrass stress and promoting healthy root development are keys to controlling difficult disease

BY MIKE BOEHM AND JOE RIMELSPACH

Turfgrass patch diseases such as summer patch, take-all patch and spring dead spot are difficult to diagnose and manage. They are caused by a group of fungi known collectively as the ectotrophic root-infecting (ERI) fungi. The ERI fungi produce darkly pigmented runner hyphae along the surface of, and ultimately inside, the vascular tissue of roots. They typically colonize roots, crowns and stolons during periods favorable for turfgrass growth and result in compromised root function during periods of stress.

The characteristic patch or ring spot symptoms associated with these diseases are typically not observed until the turfgrass is stressed by a change in environmental conditions or as a result of cultural management practices. Before 1984, the only confirmed turfgrass disease of this type in North America was take-all patch (formerly known as *Ophiobolus* blight or patch) caused by *Gaeumannomyces graminis* var. *avenae*. Today, at least six different patch diseases of turfgrass are recognized and include: necrotic ring spot (caused by *Leptosphaeria korrae* and recently renamed *Ophiosphaerella korrae)*; summer patch (caused by *Magnaporthe poae*); spring dead spot of bermudagrass (caused by *Leptosphaeria narmari*); bermudagrass decline (caused by *Gaeumannomyces graminis var. graminis*); bentgrass dead spot (caused by *Ophiosphaerella agrostis*); and take-all patch.

Summer patch is most often associated with Kentucky bluegrass, annual bluegrass and various turf-type fine fescues. It has also been reported as a problem on other *Poa* and *Festuca* species and most recently on creeping bentgrass. The disease was first described in 1984, and the summer patch pathogen *M. poae* was identified in 1987.

Symptoms of summer patch are most prevalent and severe during hot (65 degrees Fahrenheit to 85 degrees F), humid or wet weather on stressed turfgrass grown in poorly drained soils. Frequent irrigation also increases disease pressure. Soil pH does not appear to influence summer patch the way it does take-all patch.

Colonization of the host begins when soil temperatures reach 65 F to 70 F, but symptoms don't generally appear until later in the season when temperatures peak (85F to 95 F). Optimal temperature for growth of *M. poae* in the laboratory is reported as 82 F to 87 F.

Summer patch can be confused with other diseases caused by ERI fungi. Although not entirely valid from a scientific standpoint, many field diagnoses of turfgrass patch diseases are based on the type of grass affected (take-all patch if on creeping bentgrass; summer patch if on *Poa annua* putting greens). Although somewhat useful for field diagnoses, the only sure way to know which disease one is dealing with is to have it analyzed by a turfgrass disease specialist or clinician.

On high-cut turfgrass, such as in roughs and clubhouse surrounds, the disease appears as irregular patches, rings and crescents. It appears similar to necrotic ring spot, even to a trained eye. Patches are typically about 1 foot in diameter but often coalesce.

On low-cut turfgrass, such as putting greens, the patches and rings are better defined. Yellowing and decline is often restricted to the *P. annua* in mixed bentgrass/*P. annua* swards. The roots, crowns and stolons of heavily infected turfgrass is often severely darkened because of the presence of a large amount of ectotrophic runner hyphae — a key diagnostic sign of this and other diseases caused by ERI fungi.

THE OHIO STATE UNIVERSITY

This photo depicts colonization of summer patch on creeping bentgrass.

The pathogen *M. poae* is believed to survive unfavorable periods as dormant mycelium in thatch and in infected roots. During cool, moist weather, typical of April and May in the Midwest, the pathogen breaks dormancy and penetrates roots, crowns and stolons. As mentioned previously, primary infections occur when daily average soil temperatures reach between 65 F and 70 F. During this time, the pathogen quietly colonizes and compromises the integrity of turfgrass roots and crowns.

During seasons dominated by ideal turfgrass growing weather, symptoms may not be evident. However, under periods of increased stress, such as those brought about by heavy play, agronomic maintenance practices or the heat of the summer, plants with compromised root systems simply cannot maintain themselves and die.

The first line of defense to prevent or minimize summer patch is through the selection and/or use of disease-resistant turfgrass species/cultivars. Unfortunately, the use of genetically resistant turfgrass is limited to newly established or renovated turfgrass areas or in situations where overseeding is used. Many of the new Kentucky bluegrass varieties offer resistance to summer patch. Information regarding

Continued on page 78

Dog Days of Summer Patch

Continued from page 76

disease resistance can be obtained by contacting seed distributors, extension specialists and through the National Turfgrass Evaluation Program (*www.ntep.org*).

For most, practical management of summer patch begins with the use of cultural practices designed to reduce stress and optimize turfgrass growth. Management practices that promote adequate drainage, reduce soil compaction and promote healthy root growth along with a balanced fertility program are key to avoiding summer patch. The use of quick-release nitrogen (N) fertilizers and frequent, light irrigation cycles should give way to the use of slow-release N fertilizers and deep, penetrating irrigation. Although often recommended but difficult to implement, avoid mowing turfgrass below recommended heights.

In general, do anything and everything possible to reduce stress and promote healthy growing grass. In addition, timely preventive fungicide applications are typically warranted to manage summer patch.

Fungicides labeled for use against summer patch include the stobilurins, the sterol inhibitors, thiophanate-methyl, iprodione and fludioxonil. Thiophanate-methyl also works well as a curative fungicide.

Although turfgrass pathologists may vary somewhat in their recommendations for when to begin fungicide applications, most agree that they should be made when soil temperatures (at 2 inches to 3 inches) reach 65 F. When making fungicide applications, it is critical to know the location (roots, crown, shoots and stolons) of the targeted pathogen and apply accordingly. No biological control products are available for managing summer patch. ■

Boehm is an associate professor and turfgrass pathologist at The Ohio State University. Rimelspach is an extension turfgrass pathologist at OSU.