



Extension FactSheet

Plant Pathology, 2021 Coffey Road, Columbus, OH 43210-1087

Brown Patch on Turfgrass

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Rhizoctonia solani causes unsightly patches of blighted turfgrass (Figure 1) and is capable of infecting and killing most cultivated turfgrass species. Especially, young immature grass seedlings are highly susceptible to the disease. During long periods of hot, wet and humid



Figure 1. Brown patch on a creeping bentgrass putting green.

conditions, brown patch can develop rapidly so that large blighted area can occur within 24-48 hours. Preventative and curative fungicide applications are made for managing the disease on highly cultivated turfgrass such as golf course greens, tees and fairways. The disease is a common nuisance in home or commercial lawns, but in most cases it does not kill the plants. Turfgrass usually recovers from light attacks in 2-3 weeks with cooler temperatures and/or dry condition.

Causal Organism

Rhizoctonia species are best characterized as being facultative parasites. The fungus survives on decaying

organic matters or in soil, but will use living plant tissue if available. *Rhizoctonia solani* is classified in the group of basidiomycetes, club and mushroom fungi. However, the brown patch fungus is known to produce no spores or mushrooms, and is often referred to as being in the group of imperfect fungi known as the mycelia sterilia, fungi with sterile mycelium. Sclerotia, compact masses of mycelia, are formed for surviving under unfavorable conditions.

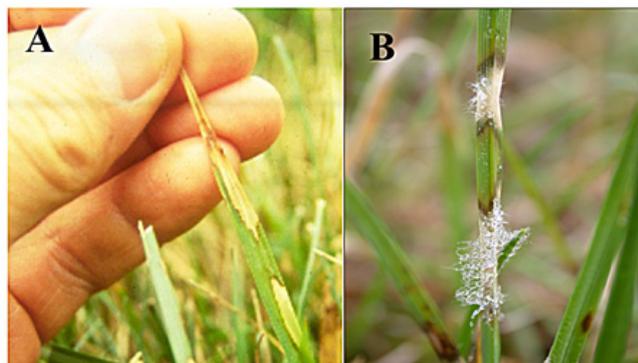
Signs and symptoms

Symptoms of brown patch vary greatly depending upon turf species, mowing height, soil, and environmental conditions. In low cut turfgrass, symptoms appear irregularly blighted patches of a few inches to 2 feet in diameter, especially evident during mornings of warm humid weather. A chief field diagnostic feature is a dark purplish gray smoke-ring border on diseased areas, especially on short-cut turf (Figure 2). The disease usually has some green leaves present within the patch. In high cut turfgrass, af-



Figure 2. Dark purplish gray smoke-ring on creeping bentgrass affected by brown patch.

ected areas appear as larger circles of 2–3 feet in diameter or general thinning of areas with irregular shapes. Leaf lesions are not distinctive and irregular. Leaf tissue within the margins is often gray and grungy-looking (Figure 3A) as apposed to dollar spot that generally has a lighter tan color and expands across the entire width of the leaf blade, looking like the shape of an hourglass (Figure 3B). White



(Photo courtesy of David Gardner)

Figure 3. Grungy-looking lesions of brown patch on tall fescue (A) and hourglass-looking lesions of dollar spot on Kentucky bluegrass (B).

mycelium growth in the turf canopy may be encountered during periods of high relative humidity (Figure 4), but it is likely to be confused with mycelium of dollar spot or pythium. However, rhizoctonia hyphae (branches of a mycelium) are septate, which is different from non-septate



Figure 4. White mycelia of brown patch on tall fescue.

hyphae of pythium. Also, rhizoctonia hyphae have a 90-degree angle branching, which is different from dollar spot. These hyphal characteristics are used for diagnostic purposes in the lab (Figure 5).

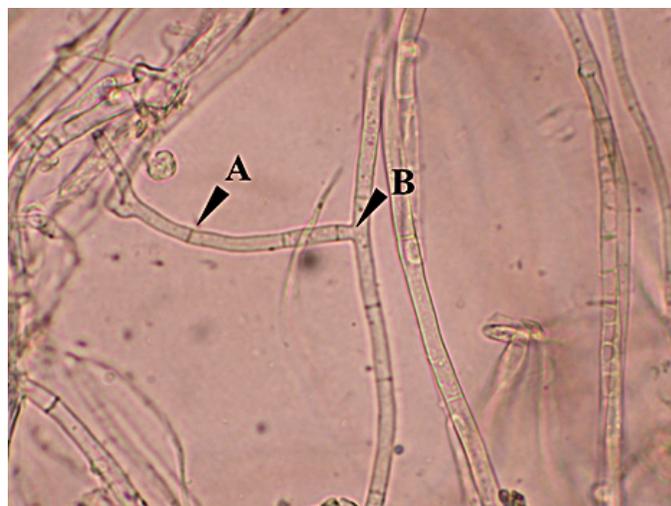


Figure 5. Key microscopic diagnostic characteristics of *Rhizoctonia solani*: a septum (A) and a 90-degree angle branching with a narrow neck (B) of the hyphae

Management

Cultural. Excessive nitrogen fertilizer applications should be avoided, especially in warm and wet weather. Keeping foliage dry and avoiding wet soil are the most important practices to reduce disease pressure. Irrigation should be reduced, especially late in the day during disease-activating periods. If possible, irrigate in the morning. Excessive water should be properly drained. Dragging or poling in the morning will remove dew and guttation water, and accelerate drying the surface of the plants. Increase light penetration and air circulation to reduce the level of free water and humidity on turfgrass.

Genetic. All cool season turfgrass species are susceptible to brown patch. In general, Kentucky bluegrass is less susceptible than ryegrasses or tall fescues. Moderately resistant cultivars of perennial ryegrass, Kentucky bluegrass, and tall fescue are available. Most creeping bentgrass cultivars are susceptible to brown patch. Velvet bentgrass is very susceptible to the disease.

Chemical. Preventive fungicide applications are made on bentgrass fairways, greens, and tees when environmental conditions are favorable for brown patch. The first application should be made when the night air temperatures do not fall below 67 F, and there are wet conditions. There are many fungicides labeled for managing brown patch: chlorothalonil (Daconil Ultrex), iprodione (Chipco 26019 or 26GT), vinclozolin, Thiophanate-methyl (Cleary's 3336),

azoxystrobin (Heritage), flutolanil (ProStar), mancozeb (Fore), PCNB, trifloxystrobin (Compass), pyraclostrobin (Insignia) and polyoxin D zinc salt (Endorse). Read the label for additional information for proper use of the product. Fungicides integrated with other management practices will maximize their effectiveness.

Biological. Numerous *Trichoderma*-based products are available on the market, but their effectiveness still needs to be determined on turfgrass.

Disclaimers:

The use of fungicide trade names in this publication is for the information and convenience of the reader. Such use does not constitute an official endorsement or approval by the United States Department of Agriculture, the Agricultural Research Service, The Ohio State University, the Ohio Agricultural Research and Development Center, or Ohio State University Extension of any product or service to the exclusion of others that may be suitable.

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