



Brown Patch

in Home Lawns & Commercial Turfgrass

Paul Vincelli
Extension Plant Pathologist

Gregg Munshaw
Extension Turfgrass Specialist

IMPORTANCE

Brown patch, also known as Rhizoctonia blight, is a common disease of turfgrass. All cultivated grasses grown in Kentucky can be affected; however, this disease is usually only destructive in tall fescue and perennial ryegrass. Fine fescues (hard fescue, creeping red fescue, chewings fescue, and sheep fescue) are all moderately susceptible to the disease. Occasionally, Kentucky bluegrass lawns can be affected by brown patch, although this grass is less susceptible than others.

While brown patch can appear unsightly in home lawns and commercial turfgrass, it usually does not cause permanent losses except in plantings less than one year old. Seedlings of all grasses are more susceptible to infection than mature plantings.

SYMPTOMS

Overall Turf Symptoms

General appearance of brown patch can vary depending on type of grass, mowing height, and environmental conditions. Affected areas are initially roughly circular (FIGURES 1 & 2), varying in size from 1 to 5 feet or more. During early morning hours, fine strands of grayish, cobwebby fungal growth (mycelium) may be evident at the margin of actively developing patches. This “smoke ring” is generally more evident on closely mowed turf (FIGURE 3) and quickly disappears as dew dries. If an outbreak progresses and diseased patches coalesce, affected areas may lose the circular appearance and become irregular or diffuse.



FIGURE 1. BROWN PATCH ON A TALL FESCUE LAWN; PATCHES ARE ROUGHLY CIRCULAR AND VARY IN SIZE.

FIGURE 2. CLOSE-UP OF TURFGRASS DAMAGE DUE TO BROWN PATCH.

FIGURE 3. A “SMOKE RING” MAY BE EVIDENT EARLY IN THE MORNING ON CLOSELY MOWED TURF. SHOWN HERE IS A SMOKE RING IN FAIRWAY-HEIGHT (APPROXIMATELY 1/2 INCH) TURFGRASS. OBVIOUS SMOKE RINGS DO NOT GENERALLY OCCUR IN LAWNS.



Symptoms on Leaf Blades

Lesion appearance depends on the type of turfgrass. A hand lens can aid in examining leaf blades for symptoms distinctive to brown patch.

Tall fescue — Lesions resulting from very recent infections are olive-green; as they dry, lesions become tan and are surrounded by a thin, brown border (FIGURE 4).

Perennial ryegrass — Leaf blades wither and collapse. Lesions initially are dark green or grayish green but quickly become tan as decayed leaves dry.

Kentucky bluegrass — Infected leaves exhibit elongated, irregular, tan lesions which are surrounded by a yellow or brown border (FIGURE 5).



Crown & Root Infections

While leaf infections are the most common phase of brown patch, infections of crowns and roots sometimes occur, particularly in seedlings, resulting in plant death (FIGURE 6).



FIGURE 4. BROWN PATCH LESIONS ON TALL FESCUE LEAF BLADES BECOME TAN WITH A DARKER BORDER.

FIGURE 5. BROWN PATCH LESIONS ON KENTUCKY BLUEGRASS LEAF BLADES ARE TAN, ELONGATED, AND IRREGULAR IN SHAPE.

FIGURE 6. INFECTIONS OF ROOTS AND CROWNS RESULT IN PLANT DEATH.



CAUSE & DISEASE DEVELOPMENT

Brown patch is caused by *Rhizoctonia* fungi, which are very common soilborne organisms. In most instances, the pathogen is *Rhizoctonia solani*; however, *Rhizoctonia zeae* can also cause brown patch in tall fescue under very hot, humid conditions.

Rhizoctonia fungi survive adverse conditions as tiny, brown resting bodies (sclerotia) in soil and turfgrass thatch layers. Germinating sclerotia produce cobwebby fungal mycelium, which is the infective phase of the pathogen. *Rhizoctonia* fungi often harmlessly colonize organic matter in the thatch. However, when stressful conditions weaken turf, *Rhizoctonia* can infect plants and cause disease. After colonizing infected tissues, *Rhizoctonia* forms new sclerotia, thus completing its life cycle.

FAVORABLE CONDITIONS FOR DISEASE

Brown patch is most destructive during humid weather and when temperatures are stressful to the grass. Thus, in cool-season grasses (e.g., tall fescue and perennial ryegrass) disease is most severe under high temperatures (highs above 85°F, lows above 60°F). Conversely, in warm-season grasses (e.g., zoysiagrass) *Rhizoctonia* infections are most severe in humid weather with moderate temperatures (45° to 70°F).

Cultural practices that encourage lush, succulent plant growth, as well as conditions that create a humid environment within the turf, can favor disease development. The following factors can increase disease severity:

- Applications of high levels of nitrogen fertilizer, particularly during spring and summer.
- Overwatering or watering in late afternoon/evening.
- Poor soil drainage.
- Shade and lack of air movement in landscapes.
- High mowing height (3 inches or more).
- Heavy seeding resulting in over-crowded seedlings.
- Excessive thatch.
- Mowing when wet.
- Mowing with dull mower blades that cause leaf fraying.

MANAGEMENT

Fertilization

- Maintain adequate levels of phosphorous and potassium in the soil. Many soils across Kentucky naturally contain high levels of these nutrients. A soil test should be performed prior to applying any fertilizer.
- Avoid over-fertilizing, particularly with fertilizers high in nitrogen.
- Do not attempt to cure summertime outbreaks with nitrogen fertilization, as this will simply aggravate the disease.

Mowing

- Mow regularly to promote air circulation and rapid drying of the turf.
- Remove no more than one-third to one-half of the turf height at any one mowing; excessive removal stresses turf.
- Set mower height no greater than 2½ inches when environmental conditions are favorable for disease and disease has been problematic in previous years. When environmental conditions are not favorable for disease, mow as tall as possible.
- Remove clippings during an active outbreak of brown patch; diseased clippings provide a food base for the pathogen.
- Keep the mower blade sharp; leaf blades shredded by a dull blade creates an ideal site for infection.

Irrigation

- Irrigate as necessary, wetting soil to a depth of at least 4 inches to promote deep rooting. Check the watering depth by pushing a metal rod or screwdriver into the soil; it will sink easily until it reaches dry soil.
- Avoid frequent, light watering, which encourages grass to develop a shallow root system and provides surface moisture for *Rhizoctonia* infections.
- Water early in the day so that leaf blades dry quickly, reducing periods of leaf wetness that would favor infection.
- Drag a hose across turf or apply very light irrigation during early morning hours to remove dew and leaf exudates that encourage disease development.

Other Cultural Practices

- Avoid using excessive seeding rates when seeding or renovating a lawn, as overcrowding favors outbreaks of brown patch
- Selectively prune nearby trees and shrubs to increase air movement and light penetration, thereby allowing leaf surfaces to dry more quickly.
- Avoid applying herbicides during an active outbreak, as these may intensify the disease.

Fungicides

Home lawns

In an established lawn, fungicide sprays are not recommended to control brown patch. Cultural practices will usually do a great deal to reduce the disease. Even if an outbreak of brown patch occurs, crowns and roots of established plants often survive, and blighted turf begins to recover when cooler weather arrives.

In newly seeded lawns of tall fescue or perennial ryegrass, judicious use of a fungicide may be necessary to prevent loss of turf from brown patch during the first season of growth. Under very high disease pressure, a fungicide spray may even be needed during the first summer following a late autumn seeding. Regularly inspect a new lawn during the first season of growth, especially during hot, humid weather, and be prepared to have a certified pesticide applicator treat the yard if necessary.

Commercial turfgrass

Preventative applications of fungicide may be necessary in golf courses and other commercial settings when environmental conditions favor brown patch. Fungicide recommendations are described in the publication *Chemical Control of Turfgrass Diseases* (PPA-1).

ADDITIONAL RESOURCES

Web Sites

- Plant Pathology Extension Turfgrass Publications
<https://plantpathology.ca.uky.edu/extension/publications#TURFGRASS>
- Plant and Soil Sciences Tips and Recommendations for Maintaining Home Lawns
<http://www.uky.edu/Ag/ukturf/lawns.html>

Publications

- Chemical Control of Turfgrass Diseases (PPA-1)
<http://www.ca.uky.edu/agc/pubs/ppa/ppa1/ppa1.pdf>
- Fertilizing Your Lawn (AGR 212)
<http://www2.ca.uky.edu/agc/pubs/AGR/AGR212/AGR212.pdf>
- Mowing your Kentucky Lawn (AGR 209)
<http://www2.ca.uky.edu/agc/pubs/AGR/AGR209/AGR209.pdf>
- Irrigation Tips to Conserve Water and Grow a Healthy Lawn (AGR 115)
<http://www2.ca.uky.edu/agc/pubs/AGR/AGR115/AGR115.pdf>
- Selecting the Right Grass for Your Kentucky Lawn (AGR-52)
<http://www2.ca.uky.edu/agcomm/pubs/agr/agr52/agr52.pdf>

October 2019

Acknowledgement

The authors thank Kiersten Wise, Extension Professor, University of Kentucky, for her review of this publication.

Editor: Cheryl Kaiser, Extension Plant Pathology Support

Photos: University of Kentucky - Paul Vincelli (5 & 6); Bugwood.org - William M. Brown, Jr. (2), Megan Kennelly, Kansas State University (3), and Lee Miller, University of Missouri (4)
