

Brown Patch Disease in Kentucky Lawns

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INTRODUCTION

Brown patch, also called Rhizoctonia blight, is a common infectious disease of turfgrass. All turfgrasses grown in Kentucky lawns can be affected by brown patch. However, this disease is usually destructive only in tall fescue and perennial ryegrass during warm, humid weather. While brown patch can temporarily harm a lawn's appearance, it usually does not cause permanent loss of turf except in plantings less than 1 year old.

Brown patch disease is sometimes responsible for poor turf quality, but it is not the only cause of brown spots or bare patches in lawns. You may need to consider other possible causes of thinning or dead grass. These include:

- Improper fertilization
- Chemical injury
- Mower problems
- Dog or insect injury
- Localized dry spots
- Poor soil drainage
- Excessive thatch
- Competition from other plants
- Buried objects.

SYMPTOMS

Areas affected by brown patch are initially roughly circular, varying in size from 1 to 5 feet or more (FIGURE 1). During early morning hours, fine strands of grayish, cobwebby fungal growth (mycelium)



FIGURE 1. BROWN PATCH ON A TALL FESCUE LAWN.

may be evident at the margin of actively developing patches. This “smoke ring” disappears quickly as the dew dries. As an outbreak progresses and diseased patches coalesce, affected areas may lose the circular appearance and become irregular or diffuse.

On blades of 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 2). Brown patch in perennial ryegrass causes blades to wither and collapse. Lesions initially are dark green or grayish green but quickly become tan as decayed leaves dry. In the case of Kentucky bluegrass, infected leaves exhibit elongated, irregular, tan lesions which are surrounded by a yellow or brown border (FIGURE 3).



BROWN PATCH LESIONS ON GRASS BLADES OF TALL FESCUE (FIGURE 2) AND KENTUCKY BLUEGRASS (FIGURE 3).

CAUSE AND DISEASE DEVELOPMENT

Brown patch is caused by infection of grass foliage and crowns by *Rhizoctonia* fungi. *Rhizoctonia solani* is a very common soilborne fungus and is the cause of brown patch symptoms in most instances. *Rhizoctonia zeae* can also cause brown patch in tall fescue under very hot, humid conditions.

Rhizoctonia fungi survive the winter as tiny, brown resting bodies (sclerotia) in the soil and thatch layer of the lawn. When environmental conditions are favorable for growth, the sclerotia germinate and produce cobwebby fungal mycelium, which is the active phase of the fungi. *Rhizoctonia* fungi often harmlessly colonize organic matter in the thatch. However, when stressful conditions weaken the grass, *Rhizoctonia* can infect the plants and cause disease.

Leaf infections are the most common phase of brown patch, but infections of crowns and roots sometimes occur, particularly in seedlings. *Rhizoctonia* colonizes infected tissues and then forms new sclerotia, thus completing its life cycle.

FACTORS AFFECTING DISEASE DEVELOPMENT

Host

Tall fescue and perennial ryegrass are the lawn grasses most susceptible to brown patch under Kentucky conditions. Fine fescues (hard fescue, creeping red

fescue, chewings fescue, and sheep fescue) and zoysiagrass 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. Seedlings of all grasses are more susceptible to infection than mature lawns.

Weather

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

Cultural Conditions

Application of high levels of nitrogen fertilizer, particularly during spring and summer, favors development of brown patch by producing lush, succulent growth that is very susceptible to *Rhizoctonia* infection. Other factors increase disease severity by creating a humid environment favorable for growth of *Rhizoctonia* fungi. These factors include: overwatering, watering in late afternoon/evening, poor soil drainage, lack of air movement, shade, a high mowing height, and overcrowding of seedlings. Excessive thatch, mowing when wet, and leaf fraying by dull mower blades also can enhance disease severity.

MANAGEMENT

Fertilization

Apply the bulk of nitrogen fertilizer to cool-season turfgrasses in fall and early winter rather than spring or summer. Fall fertilization increases overall root growth of cool-season grasses and reduces their susceptibility to several diseases. A single fall application may be applied in November; if making two applications, October and December are good times to fertilize.

Avoid over-fertilizing, particularly with fertilizers high in nitrogen. Maintain adequate levels of phosphorous and potassium in the soil. Do not attempt to cure summertime outbreaks of brown patch with nitrogen fertilization, as this will simply aggravate the disease. For more information on fertilizing, see *Fertilizing Your Lawn* (AGR-212).

Mowing

When environmental conditions are favorable for disease and disease has been problematic in previous years, set a mower height of no greater than 2½ inches. A mower height greater than this aggravates brown patch by reducing air circulation and allowing more leaf-to-leaf contact; conditions which permit greater fungal growth during humid weather. Mow regularly to promote air circulation and rapid drying of the turf, making the lawn environment less favorable for fungal growth. To avoid stressing the grass, mow often enough so that no more than one-third to one-half of the leaf length is removed at any one mowing.

In tall fescue lawns, reducing the mower height to 2 inches or less can further reduce outbreaks of brown patch. However, keep in mind that lawns mowed this closely must be mowed frequently. In an actively growing tall fescue lawn mowed at 2 inches, it may be necessary to mow several times a week to prevent removal of more than one-half of the leaf length at one mowing. Never scalp the lawn from 4 inches down to 2 inches or less. Also keep in mind that mowing grasses short during hot summer weather reduces root production and may result in a reduction in lawn health. Only lower the mowing height if the possibility of infection is very high.

During an active outbreak of brown patch in hot, humid weather, clipping removal can help eliminate a food base for the fungus. However, in the absence

of an active disease outbreak, returning clippings to the lawn is a beneficial practice that returns nutrients to the soil. Keep the mower blade sharp. A dull blade shreds leaves, creating an ideal site for infection. For more information on mowing, see *Mowing your Kentucky Lawn* (AGR-209).

Irrigation

When irrigation is necessary, wet the 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 waterings. These encourage the grass to develop a shallow root system and frequently provide the surface moisture that *Rhizoctonia* fungi need to infect leaves.

If a disease outbreak is evident, water early in the day so that the leaves dry quickly. If the lawn is watered late in the day, the leaves may remain wet until morning, thus providing long periods of leaf wetness favorable for infectious fungi. Removing dew, by dragging a hose across the lawn or by very light irrigation during early morning hours, will reduce prolonged leaf wetness and remove leaf exudates that encourage disease development. For more information on watering, see *Irrigation Tips to Conserve Water and Grow a Healthy Lawn* (AGR 115).

Other Cultural Practices

Avoid using excessive seeding rates when seeding or renovating a lawn, as overcrowding can aggravate an outbreak of brown patch. See the UK Extension publication, *Selecting the Right Grass for Your Kentucky Lawn* (AGR-52) for information on seeding rates. 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 aggravate the disease.

Fungicides

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. So, an established, well-managed lawn often will recover from brown patch without fungicide applications.

Probably the principal situation in Kentucky where judicious use of a fungicide in a home lawn is necessary is to control brown patch in a newly seeded lawn of tall fescue or perennial ryegrass. During the summer following a spring seeding, the immature plants can be easily killed by outbreaks of brown patch during hot, humid weather. Fungicide sprays may be helpful to protect tall fescue or perennial ryegrass lawns seeded the previous spring, to prevent loss of turf during the first season of growth. Under very high disease pressure, a fungicide spray may even be needed during the first summer following a seeding made the previous autumn, especially if the lawn was sown in late autumn. During the first summer of growth in a new lawn, inspect the lawn regularly during hot, humid weather and be prepared to have a certified pesticide applicator treat the yard if necessary.

Fungicide recommendations are described in the publication *Chemical Control of Turfgrass Diseases* (PPA-1). Once the lawn is established, there should be little need for future fungicide applications.

ADDITIONAL UK RESOURCES

Web Sites

Plant Pathology Extension Turfgrass Publications
<http://www2.ca.uky.edu/agcollege/plantpathology/extension/pubs.html#OrnamentalTurfgrass>

Entomology Extension Publications (Landscape Plants)
<http://www2.ca.uky.edu/entomology/dept/entfacts.asp>

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/agc/pubs/agr/agr52/agr52.pdf>

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Photos: Lee Miller, University of Missouri, Bugwood.org (Figures 1 & 2); and Paul Vincelli, University of Kentucky (Figure 3).

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