

# Commercial Management of Brown Patch of Cool-season Turfgrasses

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Brown patch is a disease caused by the fungus *Rhizoctonia solani*. Tall fescue is particularly susceptible, but brown patch also occurs on perennial ryegrass and creeping bentgrass.

## Symptoms

**Tall Fescue:** Initially, patches are dark purple-green then quickly fade to light tan or brown as the diseased leaves dry out. Diseased turf may appear drought stressed even when the soil is moist. The pattern of damage is variable. Damaged areas sometimes form circular patches of

blighted turf from several inches to several feet in diameter (Figure 1). However, damage often develops in an irregular pattern without formation of discrete, circular patches (Figure 2).

The pathogen primarily infects the foliage and makes tan lesions with a brown border (Figure 3). The leaves in affected areas are killed. On warm, dewy mornings you might find white, cobweb-like fungal growth in the foliage (Figure 4). Changes in the weather will slow the pathogen, new leaves will emerge, and the turf will recover in 2 to 4 weeks. In extreme cases, the pathogen can infect crowns



**Figure 1.** Discrete patches of brown patch in tall fescue. (Photo by P. Sell)



**Figure 2.** Diffuse symptoms in tall fescue. (Photo by N. Tisserat)



**Figure 3.** Brown patch lesion on tall fescue: tan with dark border. (Photo by D. Settle)



**Figure 4.** Cobweb-like fungal growth is sometimes visible on dewy mornings. (Photo by D. Settle)



**Figure 5.** *Brown patch in greens-height turf. (Photo by R. St. John.)*

or stems, leaving weak areas of turf that are susceptible to invasion by weeds.

**Lower-cut turf:** In greens-height turf, the patches are yellow or brown (Figure 5), and they can be several inches to several feet across. In fairway or greens-height turf, when the disease is active, a grey or purple “smoke ring” is sometimes visible on the edge of the patch (Figure 6).

### Conditions for Development

Brown patch symptoms develop in 24 to 48 hours during warm, humid weather. The fungus becomes highly active when conditions are moist and night temperatures are above 65 degrees Fahrenheit. That is, if a lawn is dewy in the morning, with overnight low temperatures of 65 to 75 degrees, then conditions are favorable for brown patch. In Kansas, this usually occurs in July and August.

### Cultural Management

The first step is to manage the turf so conditions are not favorable for disease. This disease is favored by long periods of leaf wetness. Do not irrigate in the evening — this leads to a long, wet period overnight that extends into the dew period in the morning. Water in the morning instead. Fertility is also a key factor. Do not overfertilize, and do not fertilize if you have active brown patch. Finally, if you are seeding or reseeding, do not use overly high rates. Overly thick, lush lawns are highly susceptible to brown patch. Aerification and improved drainage can help prevent brown patch. Using fans on putting greens can improve airflow. Research at K-State has demonstrated that returning grass clippings to the lawn has no effect on brown patch.



**Figure 6.** *Active brown patch in perennial ryegrass. The fungus is visible as smoky-gray mycelium at the edge of the patch. (Photo by M. Kennelly)*

### Fungicides

In many cases, the turf recovers on its own after a couple of weeks, especially after a change in the weather. However, chemical controls are available — see Table 1. Repeat applications may be necessary. Fungicides work better as a prevention before disease appears or when disease first appears. If you have a site with a history of brown patch, and a high aesthetic requirement, you might consider a preventative application around July 1 and another one or two applications as described on the product labels. Once the disease appears, it is impossible to “cure” infected plants. All you can do is protect the remaining healthy tissue to prevent further spread. However, the fungus has a latent period; it infects plants for a few days before we see symptoms. Therefore, you might have even more diseased tissue than you realize, and it is difficult for fungicides to stop those latent infections.

Finally, keep in mind that other conditions can lead to brown turf (insects, thick thatch, poor soil conditions, other diseases such as Pythium blight), so if you have any doubts contact your local K-State Research and Extension office for help with a diagnosis.

### Fungicides for Brown Patch

**Always check the label to make sure the site (ex: home lawn/residential lawn/golf course) is allowed.** It is the responsibility of the user to read, understand, and follow the label.



| Active ingredient                         | Fungicide group <sup>a</sup> | Example trade names  | Efficacy              | Typical interval (days) |
|---|------------------------------|--|-----------------------|-------------------------|
| azoxystrobin                              | Strobilurin/QoI              | Heritage   | Good to excellent     | 14-28                   |
| <i>Bacillus licheniformis</i>             | Biocontrol                   | EcoGuard   | Good                  | 3-14                    |
| <i>Bacillus subtilis</i> , strain QST 713 | Biocontrol                   | Rhapsody   | Little data available | 7-10                    |
| chlorothalonil                            | chloronitrile                | Daconil Ultrex, Manicure, Concorde SST, Chlorostar, Echo, Pegasus L              | Good to excellent     | 7-14                    |
| copper hydroxide + mancozeb               |                              | Junction   | Little data available | 7-14                    |
| fenarimol                                 | DMI                          | Rubigan  | Good                  | 7-14                    |
| fludioxonil                               | Phenylpyrrole                | Medallion  | Good to excellent     | 7                       |
| fluoxastrobin                             | Strobilurin/QoI              | Disarm   | Good to excellent     | 14-28                   |
| flutolanil                                | carboximide                  | Prostar  | Good to excellent     | 14-21                   |
| hydrogen dioxide                          | Oxidizing agent              | Zerotol  | Inconsistent          | 7                       |
| iprodione                                 | dicarboximide                | Chipco 26GT, Proturf Fungicide X, Raven, Lesco 18 Plus, Iprodione Pro            | Good to excellent     | 14-28                   |
| mancozeb                                  | EBDC                         | Fore, Manzate 200, Protect T/O, Dithane, Pentathlon                              | Good to excellent     | 7                       |
| myclobutanil                              | DMI                          | Eagle  | Good                  | 10-21                   |
| polyoxin D                                | polyoxin                     | Endorse  | Good to excellent     | 7-14                    |
| propiconazole                             | DMI                          | Banner MAXX, Spectator   | Good                  | 10-21                   |
| pyraclostrobin                            | Strobilurin/QoI              | Insignia   | Good to excellent     | 14-28                   |
| thiophanate-methyl                        | benzimidazole                | Cleary's 3336, Fungo, Proturf Systemic Fungicide, Systec 1998, Cavalier, T-Storm | Good                  | 10-14                   |
| thiram                                    | dithiocarbamate              | Spotrete, Thiram   | Good                  | 7-10                    |
| triadimefon                               | DMI                          | Bayleton, Proturf Fungicide VII  | Good                  | 14-30                   |
| trifloxystrobin                           | Strobilurin/QoI              | Compass  | Good to excellent     | 14-21                   |
| triticonazole                             | DMI                          | Trinity  | Good to excellent     | 14-28                   |
| vinclazolin                               | dicarboximide                | Curalan, Touché  | Inconsistent          | 14-28                   |
| <b>Combination Products</b>               |                              |  |                       |                         |
| trifloxystrobin + triadimefon             |                              | Tartan   | Good to excellent     | 14-28                   |
| trifloxystrobin + triadimefon             |                              | Armada   | Good to excellent     | 14-28                   |
| azoxystrobin + propiconazole              |                              | Headway  | Good to excellent     | 14-28                   |

<sup>a</sup> Fungicide group abbreviations: EBDC = ethylene bis-dithiocarbamate, DMI = demethylation inhibitor (sterol inhibitor)  
 Tables modified with permission from "Chemical Control of Turfgrass Diseases 2008" by P. Vincelli and A.J. Powell, University of Kentucky

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