



Brown Patch of tall fescue and other cool-season turf:

Information for Commercial turf managers

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: Patches initially are dark purple-green, but 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 (Fig 1). However, damage often develops in a more irregular pattern without formation of circular patches (Fig 2).

The pathogen mostly infects the foliage and makes lesions with a brown border (Fig 3), and the leaves in affected areas are killed. On warm, dewy mornings you might find white, cobweb-like fungal growth in the foliage (Fig. 4). Changes in the weather or applications of fungicides will slow down the pathogen, new leaves will emerge, and the turf will recover in 2-4 weeks. In extreme cases the pathogen can infect crowns or stems, leaving weak areas of turf that are susceptible to invasion by weeds.

Greens-height turf: In greens-height turf the patches are yellow or brown in color (Fig 5), and they can be several inches to several feet across. When disease is active, a grey or purple “smoke ring” is sometimes visible on the edge of the patch.



Figure 1: Discrete patches of brown patch in tall fescue. By P. Sell



Figure 2: Diffuse symptoms in tall fescue by N. Tisserat.



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

CONDITIONS FOR DEVELOPMENT:

Brown patch symptoms develop in 24-48 hours during warm, humid weather. The fungus becomes highly active when conditions are moist and *night* temperatures are above 65 degrees F. That is, if you step outside in the morning and the lawn is dewy, with air temperatures 65-75, 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 that 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. Don't over fertilize, and don't fertilize if you have active brown patch. Finally, if you are seeding or re-seeding, don't 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.

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 the table on the next page. Repeat applications may be necessary. Fungicides work better as a prevention (before disease appears) or very early on 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 1 or 2 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. So, 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 K-State Research and Extension for help with a diagnosis.



Figure 4: Cobweb-like fungal growth is sometimes visible on dewy mornings. *By D. Settle*



Figure 5: Brown patch in greens-height turf. *By R. St. John*

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.

*Mention of a product does not imply endorsement, nor does lack of mention of a product imply non-endorsement.

Active ingredient	Fungicide group	Example trade names	Efficacy	Typical interval (days)
azoxystrobin	Strobilurin/Qol	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 info 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/Qol	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		Endorse	Good to excellent	7-14
propiconazole	DMI	Banner MAXX, Spectator	Good	10-21
pyraclostrobin	Strobilurin/Qol	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/Qol	Compass	Good to excellent	14-21
triticonazole	DMI	Trinity	Good to excellent	14-28
vinclozolin	dicarboximide	Curalan, Touché	Inconsistent	14-28
COMBINATION PRODUCTS:				
Trifloxystrobin + Triadimefon		Tartan	Good to Excellent	14-28
Trifloxystrobin + Triadimefon		Armada	Good to Excellent	14-28
Azoxystrobin + propiconazole		Headway	Good to Excellent	14-28

^aFungicide 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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