K·STATE Research and Extension Plant Pathology EP146

Commercial Management of Brown Patch of Cool-season Turfgrasses

Brown patch is common on tall fescue, perennial ryegrass, and creeping bentgrass during hot, humid summer weather. The disease is caused by the fungus *Rhizoctonia solani*.

Symptoms

Lawns: In lawn-height tall fescue, brown patch causes light-brown or tan blighting. The damage can develop as defined patches, several inches to several feet in diameter (Figure 1), or as a diffuse blighting across the lawn (Figure 2). At a distance, symptoms can be confused with drought stress or other damage. At a closer view, on individual plants, the disease causes irregularly shaped tan spots with a dark border (figures 3 and 4). On warm mornings, if the turf is wet from rain, irrigation, or dew, cobweb-like fungal mycelium may be visible on the edges of the patches (figures 5 and 6). In extreme cases, brown patch can damage the crowns of the plant, leaving weak areas of turf that are susceptible to invasion by weeds.

Fairways: In golf course fairways, the symptoms are similar to lawn-height turf. The disease causes blighting (Figure 6), and the patches can develop smoke rings. When weather is very humid, fungal mycelium may be visible at the edge of the patch (figures 5 and 6). Foliar Pythium

Figure 1. *Discrete patches of brown patch in tall fescue.*

Figure 2. *Diffuse symptoms in tall fescue.*

Figure 3. *Brown patch lesions in tall fescue are tan with a dark margin and are irregular in shape.*

Figure 4. *Brown patch lesions and blighted leaves.*

Figure 5. *Cobweb-like fungal growth (mycelium) is sometimes visible on dewy mornings, primarily at the edges of patches.*

Figure 6. *Brown patch symptoms in perennial ryegrass, with cobweb-like fungal growth (mycelium) at the margins.*

blight also occurs in perennial ryegrass and creeping bentgrass fairways under the same weather conditions, and it can cause similar symptoms and mycelium. If in doubt, submit a sample for diagnosis, as most fungicides for brown patch are not effective for foliar Pythium and vice versa.

Putting greens: In golf-course, putting-green turf, the patches are yellow or brown (Figure 7), and they can be several inches to several feet across. When the disease is active, the patch may exhibit a dark gray, outer "smoke ring" symptom (Figure 7). In wet, dewy weather mycelium may be visible at the edge of the patch.

Conditions for Development

Brown patch symptoms develop quickly during warm, humid weather. The fungus becomes highly active when conditions are moist and night temperatures are above 68 degrees Fahrenheit. In Kansas, these conditions are common in July and August. If the weather turns cooler and less humid, the pathogen's growth slows, allowing the turf to recover. This can take several weeks, depending on conditions.

Cultural Management

Manage the turfgrass site so conditions are not favorable for disease.

- Water: Brown patch 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 early morning instead.
- Fertilization: Do not overfertilize, and do not fertilize if you have active brown patch. In tall fescue lawns, the majority of the fertilizer should be applied in fall. Do not apply more than 4 pounds of nitrogen per 1,000 square feet annually.
- Seeding: Use recommended seeding rates. Do not use overly high amounts of seed.

Figure 7. *Brown patch symptoms in putting-green height creeping bentgrass. Patches are yellow to brown and sometimes exhibit a smoky-gray color at the edge.*

- Drainage: Aerification and improved drainage can help prevent brown patch.
- Mowing and Clippings: Returning clippings to the lawn will not increase brown patch. Mow at recommended heights (at least 3 inches for tall fescue lawns).
- Shade and air flow: Shady conditions and poor air flow will increase humidity and leaf wetness. If feasible, adjust site conditions to reduce shade and improve airflow. For golf course putting greens, using fans is another option to improve airflow.

Fungicides

In many cases of brown patch, the turf recovers on its own a couple of weeks after a change to cooler, drier weather. However, chemical controls are available — see Table 1. Following are some points to keep in mind when considering fungicides:

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Table 1. Fungicides for Brown Patch

Active ingredient[a]	Fungicide group[b]	Example trade names	Efficacy[c]	Typical interval (days)
azoxystrobin	Strobilurin/QoI	Heritage	4/3[d]	14-28[d]
Bacillus licheniformis	Biocontrol	EcoGuard	2	3-14
Bacillus subtilis, strain QST 713	Biocontrol	Rhapsody	1	7-10
captan	phthalimide	Captan	L	7-10
chloroneb	Miscellaneous aromatic	Terraneb SP	L	10
chlorothalonil	chloronitrile	Daconil Ultrex, Manicure, Concorde SST, Chlorostar, Echo, Pegasus L	3	7-14
fenarimol	DMI	Rubigan	2	7-14
fluazinam	Oxidative phosphorylation uncoupler	Secure	4	14
fludioxonil	Phenylpyrolle	Medallion	3	7
fluoxastrobin	Strobilurin/QoI	Disarm	3.5	14-28
flutolanil	SDHI	Prostar	3	14-21
fluxapyroxad	SDHI	Xzemplar	L	14-21
hydrogen dioxide	Oxidizing agent	Zerotol	1	7
iprodione	dicarboximide	Chipco 26GT, Proturf Fungicide X, Raven, Lesco 18 Plus, Iprodione Pro	3	14-28
mancozeb	EBDC	Fore, Manzate 200, Protect T/O, Dithane, Pentathlon	3	7
metconazole	DMI	Tourney	3	14-21
mineral oil	Not classified	Civitas	L	7-21
myclobutanil	DMI	Eagle	2.5	10-21
PCNB	Miscellaneous aromatic	Cleary's PCNB, Penstar, Terraclor, Turfcide, Revere	2	7-10
penthiopyrad	SDHI	Velista	4	14
polyoxin D	polyoxin	Affirm	3	7-14
propiconazole	DMI	Banner MAXX, Spectator, Savvi	3	10-21
pyraclostrobin	Strobilurin/QoI	Insignia	4	14-28
tebuconazole	DMI	Torque	3	28
thiophanate-methyl[e]	benzimidazole	Cleary's 3336, Fungo, Proturf Systemic Fungicide, Systec 1998, Cavalier, T-Storm	2.5	10-14
thiram	dithiocarbamate	Spotrete, Thiram	2	7-10
triadimefon	DMI	Bayleton, Proturf Fungicide VII	2	14-30
trifloxystrobin	Strobilurin/QoI	Compass	4	14-21
triticonazole	DMI	Trinity, Triton	3/2[f]	14-28
vinclozolin	dicarboximide	Curalan, Touché	1.5	14-28

[a] This table only includes products with single active ingredients. There are additional products with multiple active ingredients that are labeled for brown patch.
[b] Fungicide group abbreviations: EBDC=ethylene bis-dithiocarbamate, DMI=demethylation inhibitor (sterol inhibitor), SDHI=succinate dehydrogenase inhibitor.
[c] 4=consistently good to excellent control in published experiments; 3=good to excellent control in most experiments; 2=fair to good control in most experiments; 1=control is inconsistent between experiments but performs well in some Instances; N=no efficacy; L=limited published data available.
[d] 4 applies to 2-week interval, 3 applies to a 4-week interval.
[e] A similar disease called leaf and sheath spot, caused by *Rhizoctonia zeae* (*Chrisorhiza zeae*) can occur during hot weather, and it is not controlled by thiophanate-methyl.
[f] The lower rating applies to tall fescue at spray intervals typical for lawn care.

Table modified and used with permission from *Chemical Control of Turfgrass Diseases 2015* by P. Vincelli and G. Munshaw, University of Kentucky

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- Brown patch occurs in home lawns, athletic fields, golf courses, and other sites. Make sure that your site is allowed by the label.
- Fungicides work better preventatively, applied before disease appears. Watch the weather forecasts for conditions conducive to brown patch: warm nights and high humidity. In Kansas, these conditions often begin in late June or early July, but each year is different.
- Repeat applications may be necessary to cover the entire duration of weather conditions conducive to disease.
- Early curative applications, at first appearance of brown patch, will reduce further disease spread but will not truly "cure" already-infected turfgrass. In addition, the fungus has a latent period: it infects plants for a few days before symptoms are apparent. Therefore, there could be more infection than is visible, and it is difficult for fungicides to stop those latent infections.
- Even with fungicide treatment, the appearance of the turfgrass will not improve until new growth emerges, which can take time, especially when the turfgrass is under summer stress conditions.
- In golf-course putting greens, high rates of DMI fungicides during summer stress conditions can reduce turf quality. Other special considerations for putting greens are described in *Chemical Control of Turfgrass Diseases 2015* by P. Vincelli and G. Munshaw, University of Kentucky.
- Granular products can reduce disease but may not be as effective as foliar-applied products.
- 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.

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