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Gray leaf spot of perennial ryegrass

Gray leaf spot (GLS) is a damaging fungal disease of perennial ryegrass. Disease development in Kansas is sporadic with little or no disease development in some years. Nevertheless, the potential destructiveness of GLS forces many turfgrass managers to apply preventive fungicide applications every year.

Fig 1: Small, brown lesion on perennial ryegrass. *Photo courtesy Ned Tisserat, Colorado State University, Bugwood.org*

Fig. 2: Diseased turf first appears droughty. *Photo courtesy Derek Settle, Bugwood.org.*

Symptoms

In Kansas, GLS symptoms usually start in early to late August. Small, chocolate brown spots approximately 1/16 inch in diameter develop on leaves. During early disease development these leaf spots may not be numerous and can be easily overlooked. The spots expand slightly with age and develop a gray center surrounded by a yellow halo (Figure 1). Depending on weather, multiple coalescing leaf spots will girdle and kill both leaf and crown tissue. Dying leaves tend to develop a characteristic twist ("fish hook") at the leaf tip that helps differentiate this disease from brown patch or Pythium blight. In warm, humid weather, the infected areas are sometimes covered with fuzzy, gray spores. GLS often develops first in heat or drought prone areas such as the tops of small mounds or on steep slopes. The diseased turf first appears droughty even though soil moisture is sufficient, but soon collapses and turns a dull brown (Figure 2). The fungus may quickly spread from these diseased patches and cause extensive blighting if weather conditions are favorable for infection (Figure 3). In some years the disease never progresses beyond blighting in these 'hot spots'. Other turfgrass species including Kentucky bluegrass, annual bluegrass, and creeping bentgrass that may be mixed in with the ryegrass are not affected by the disease. Blighting may continue through late summer and into early fall and cause significant damage to young ryegrass seedlings emerging from fall overseeding. GLS may also occur on tall fescue although it is rare in Kansas. Symptoms are similar to those on perennial ryegrass but disease progression is slower and damage is much less severe. Leaves initially develop small dark brown spots that eventually expand and develop a gray center (Figure 4). In tall fescue, the spots rarely coalesce to kill leaf blades or plants.

Fig. 3: Large areas of perennial ryegrass fairways can be damaged in a short period of time. *Photo courtesy Ned Tisserat, Colorado State University, Bugwood.org*

Fig. 4: GLS lesions in tall fescue. By N. Tisserat

Conditions

The fungus is thought to survive the winter locally in infected leaves and debris. Influx of spores from distant sources may also occur in some years. The fungus apparently infects perennial ryegrass plants at non-detectible levels in early summer then builds in intensity later in the growing season. High temperatures, extended periods of leaf wetness interspersed with intermittent dry periods favor disease development. The optimum conditions for disease development are temperature of 82-90°F. The fungus requires a wet leaf surface in order to infect the plant. In the optimal temperature range, infection can occur with as little as 9 hours of leaf wetness. New leaf symptoms appear within a few days of infection. The fungus sporulates profusely from leaf lesions and vast quantities of spores can be spread by wind, splashing water and equipment to infect new leaves. The combination of quick symptom development and massive spore production are reasons why GLS epidemics progress rapidly and are so destructive.

Control

Certain cultural practices may help reduce GLS severity. Avoid excessive nitrogen fertilization during the late spring or summer months. Time irrigations to minimize leaf wetness periods, but avoid letting the turfgrass go under drought stress.

Some new cultivars of perennial ryegrass have demonstrated reduced susceptibility to GLS, though it is not 100% disease control.

Cultural practices alone are unlikely to control GLS. Fungicide applications beginning in early- to mid- August and continuing through September at regular intervals may be required to prevent damage on perennial ryegrass golf course fairways and athletic fields. Resistance to Q_oI fungicides has been documented in other regions. While resistance to thiophanate-methyl and DMI fungicides has not yet been reported for GLS, other

pathogens have shown resistance to these chemicals, and they should be considered at risk. Practice rotation or tank mixes with fungicides with different modes of action, including contact fungicides.

Fungicides labeled for gray leaf spot.

- 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***	**Efficacy****	**Typical application interval (days)**	**Examples of products**
azoxystrobin	Q_oI (strobilurin)	4	14-21	Heritage
chlorothalonil	chloronitrile	2.5	7-10	Daconil Ultrex, Manicure, Echo, Pegasus L
fluoxastrobin	Q_oI (strobilurin)	L	14-28	Disarm
mancozeb	EBDC	2	14	Fore
mancozeb + chlorothalonil	EBDC + chloronitrile	3	14	Fore Rainshield + Daconil Ultrex
metconazole	DMI	2	14	Tourney
mineral oil	Not classified	2.5	7-21	Civitas
myclobutanil + mancozeb	DMI + EBDC	3	14	MANhandle
polyoxin D	Polyoxin	1	7-14	Affirm
propiconazole	DMI	2	14	Banner Maxx, Spectator, Savvi
propiconazole + chlorothalonil	DMI + chloronitrile	3	14	Banner Maxx + Daconil
pyraclostrobin	Q_oI (strobilurin)	4	14-28	Insignia
tebuconazole	DMI	L	28	Torque
thiophanate-	benzimidazole	4	7-14	Cleary's

methyl				3336, Fungo
triadimefon	DMI	2	14	Bayleton,
triadimefon + chlorothalonil	DMI + chloronitrile	3	14	Bayleton + Daconil Ultrex
trifloxystrobin	Q_oI (strobilurin)	3+	14-21	Compass

* DMI = demethylation inhibitor, EBDC = ethylene bis-dithiocarbamate
**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.

Original fact sheet by N. Tisserat. Revised 2015 by M. Kennelly

References to products are not intended to be an endorsement to the exclusion of other products that may be similar. Any person using pesticides assumes full responsibility for their use in accordance with the label.

Tables modified with permission from Chemical Control of Turfgrass Diseases 2015 by P. Vincelli and Gregg Munshaw, University of Kentucky