Dollar Spot in Golf Course Turf

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Symptoms

Dollar spot is caused by the fungus *Sclerotinia homoeocarpa*. It can develop throughout the growing season, but in Kansas it is most common in spring through early summer and again in late summer through early fall. In putting greens or other low-cut turf, the disease appears as sunken patches of tan to brown turf up to 1 to 2 inches in diameter (Figure 1). In higher-cut turf such as fairways or roughs, the blighted spots are somewhat larger. On dewy mornings, white, cobwebby fungal growth is sometimes visible on the turf (Figures 2 and 3). The cottony fungal growth disappears as the turf dries. In severe cases, the infection spots coalesce to form larger blighted areas. Figure 4 illustrates a fungicide-treated plot surrounded by areas with severe blighting.

Conditions

The pathogen survives in infected plants and debris. The dollar spot fungus does not produce spores. It can be spread in infected debris by water, wind, equipment, or shoes.

Figure 1. *Discrete dollar spot infection centers on creeping bentgrass.*

Figure 3. *White fungal growth (mycelium) can also be seen after incubating overnight night in a moist chamber.*

Figure 2. *White fungal growth (mycelium) can be seen on dewy mornings.*

Figure 4. *Coalescing spots on creeping bentgrass, with fungicide-treated plot at center.*

Disease development is favored by high relative humidity and extended periods of leaf wetness. The optimal temperature range for growth is approximately 60 to 85 degrees Fahrenheit. Low nitrogen fertility also contributes to increased disease severity.

Control

Cultivar selection

Some bentgrass cultivars such as 'Crenshaw' are very susceptible to dollar spot. Consider using less susceptible cultivars, such as 'L-93' or 'Declaration.'

Cultural practices

Several cultural practices will help suppress dollar spot.

- Minimize leaf wetness duration by physically removing dew (poling, mowing, syringing) in early morning and avoid early evening watering. Recent studies have demonstrated that dew removal by poling or early morning mowing can significantly reduce disease severity.
- Do not allow the grass to become drought stressed.
- Maintain adequate nitrogen fertility. Some turf managers have recommended biological control of dollar spot by fertilization with composted turkey litter, bovine wastes, and other organic amendments. However, organic fertilizers have not been shown to consistently reduce dollar spot in university research trials. Similarly, the addition of microbial biological control agents (fungi and bacteria) has not been consistently shown to reduce dollar spot. Recent studies at K-State found no dollar spot reduction with amendments of calcium silicate.

Fungicides

Preventive fungicide applications at 7- to 28-day intervals may be necessary to suppress dollar spot. Timing and frequency of application depend on weather conditions and on the type of fungicide that is applied. Continuous use of certain systemic fungicides, including thiophanate methyl, iprodione, and the DMI (sterol **d**e**m**ethylation **i**nhibitor) fungicides (such as triadimefon, propiconazole, and myclobutanil) may result in the selection and increase of fungicide-resistant strains of the dollar spot fungus. Golf course superintendents should consider limiting the number of applications of these fungicides during the growing season and alternating these products with contact fungicides not prone to resistance problems. Always follow label instructions, which may include resistance management recommendations.

Selected References

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Table 1. *Fungicides labeled for dollar spot*[1]

Active ingredient	Fungicide group[2]	Efficacy and notes	Typical application interval (days)	Examples of products
Bacillus licheniformis	Biocontrol agent	Good	3-14	EcoGuard
Bacillus subtilis, strain QST 713	Biocontrol agent	*Limited data available*	7-10	Rhapsody
boscalid	carboximide	Excellent	14-28	Emerald
chlorothalonil	chloronitrile	Good to excellent	7-14	Daconil Ultrex, Manicure, Concorde SST, Chlorostar, Echo, Pegasus L
copper hydroxide + mancozeb	Copper + EBDC	*Limited data available*	7-14	Junction
fenarimol	DMI	Good to excellent *At risk for resistance*	10-30	Rubigan
hydrogen dioxide	oxidizing agent	Inconsistent, sometimes fair	7	Zerotol
iprodione	dicarboximide	Good to excellent *At risk for resistance*	14-28	Chipco 26GT, Raven, Lesco 18 Plus, Iprodione Pro
mancozeb	EBDC	Inconsistent, sometimes fair	7-14	Fore, Protect DF, Dithane, Mancozeb,
metconazole	DMI	Good to excellent	14-21	Tourney
myclobutanil	DMI	Excellent *At risk for resistance*	14-28	Eagle
propiconazole	DMI	Excellent *At risk for resistance*	7-28	Banner MAXX, Spectator
pyraclostrobin	QoI (strobilurin)	Good	14	Insignia[3]
thiophanate-methyl	benzimidazole	Excellent, *at risk for resistance*	10-21	Cleary's 3336, Fungo, Proturf Systemic Fungicide, Systec 1998, Cavalier, T-Storm
thiram	dithiocarbamate	Fair/inconsistent	7-10	Spotrete, Thiram, Defiant
triadimefon	DMI	Excellent	14-30	Bayleton, Proturf Fungicide VII
Trichoderma harzianum	Biocontrol agent	Fair, inconsistent	7-14	Bio-trek
triticonazole	DMI	Good to excellent	14-28	Trinity, Triton
vinclozolin	dicarboximide	Excellent	14-28	Curalan, Touche, Vorlan

[1] *Table modified and used with permission from Vincelli and Williams 2010 (see reference list on page 2).*

[2] *Fungicide group abbreviations: EBDC = ethylene bis-dithiocarbamate, DMI = demethylation inhibitor (sterol inhibitor)*

[3] *In trials at other universities, pyraclostrobin has provided moderate dollar spot suppression. However, in several recent tests at Kansas State University, plots treated with pyraclostrobin have been ineffective or have developed more dollar spot than the untreated plots.*

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