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John E. Watkins

University of Nebraska-Lincoln, jwatkins1@unl.edu

Roch E. Gaussoin

University of Nebraska-Lincoln, rgaussoin1@unl.edu

Terrance P. Riordan

University of Nebraska - Lincoln, triordan1@unl.edu

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'Helminthosporium' Leaf Spot and Melting Out Diseases of Turfgrass

Symptoms and controls for "Helminthosporium" leaf spot and melting out are discussed.

John E. Watkins, Extension Plant Pathologist
Roch Gaussoin, Extension Turfgrass Specialist
Terrance P. Riordan, Turfgrass Breeder

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Leaf spot and melting out are two fungal diseases of turfgrass within the "Helminthosporium" leaf, crown and root disease complex. They are the most common and serious groups of cool season turfgrass diseases in North America.

Figure 1. Leaf spot symptoms on turfgrass.

The leaf spot pathogen *Bipolaris sorokiniana* attacks bluegrasses, bentgrasses, ryegrasses and fine and tall fescues. Melting-out caused by *Drechslera poae* potentially is the most serious disease of Kentucky bluegrass. *B. sorokiniana* is a warm weather pathogen, where as *D. poae* is a cool weather pathogen. Although both produce similar symptoms, i.e. leaf spotting and thinning of turf, optimum conditions for infection and disease development differ between the two.

Leaf Spot

Symptoms and Disease Occurrence

A variety of symptoms indicates disease development. These range from small oval spots on leaf blades to fading out of the turf, to extensive rotting of the crowns and roots. The two phases of symptom development correspond to changing temperatures during the growing season. The leaf spot stage is most evident between 70°F and 85°F. At temperatures above 85°F necrosis of the entire leaf blade results in a leaf blight. On Kentucky bluegrass and fine and tall fescues, early symptoms are small, dark purple to black spots on the leaf blade. Older leaf lesions are round to oval spots with buff-colored centers surrounded by a dark brown to dark

purple margin (*Figure 1*). One or more lesions may merge and girdle a leaf blade, causing it to turn yellow or reddish-brown and die back from the tip. As leaf blighting progresses, a brownish fading out of the turf occurs. During hot, humid weather, leaf sheaths, crowns and roots become infected causing thin, open areas in the turf. Plants with severe crown and root rot usually die from heat and drought stress.

Symptoms on bentgrasses differ from those on the other hosts. Infection of bentgrass golf greens gives a smokey blue cast to the turf that progresses to a yellowing and finally complete blighting of the leaves and thinning of the turf. The affected area conforms to a definite pattern with distinct margins. Leaves within the affected area are water-soaked and matted. On bentgrass fairways initial symptoms are yellow flecks on the leaves that develop into small oval lesions and then into irregular water-soaked blotches.

B. sorokiniana colonizes leaf litter which serves as the primary source of spore inoculum. During cyclical patterns of drying and wetting, spores are produced and splashed or blown onto leaves. Temperatures of 70°F to 80°F and a moist turf canopy favor infection and spread. Leaf spot is more severe when grass is growing under soil moisture stress or when the turf has been heavily fertilized with nitrogen. Applications of the herbicides 2,4-D, MCPP or dicamba may increase a turf's susceptibility to leaf spot.

Melting Out

Symptoms and Disease Occurrence

The leaf spotting symptoms of melting out on Kentucky bluegrass are essentially identical to those of leaf spot caused by *B. sorokiniana*--small dark lesions that develop into oval spots with buff centers and dark purplish-black margins on infected leaf blades. Colonization of the leaf sheath causes the leaf to turn yellow then tan and eventually drop from the plant. This stage is known as melting out. As with the leaf spot disease, the stages of symptom development progress from leaf spotting, through melting out, to rotting of crowns and roots. At low nitrogen levels the turf turns yellow (*Figure 3*); at high nitrogen levels the turf becomes blackish brown. Ultimately the affected areas become brown and thin.



Figure 3. Melting out disease in turfgrass.

Optimum conditions for melting out are 65°F to 75°F, high atmospheric humidity and cloudy weather. Under these conditions severe turf loss occurs within three weeks. Cyclical periods of wetting and drying stimulate spore production. The pathogen is transported on infected leaf fragments that cling to shoes, mowers and other equipment.

Prescription for Healthy Turf

The most effective preventive for leaf spot and melting out combines the use of resistant turfgrass cultivars with good turfgrass management practices. If the various "Helminthosporium" diseases cannot be controlled by resistance or management, fungicide sprays may be applied on a preventive schedule.

Host Resistance

A blend of at least three improved cultivars should be planted when establishing a new lawn or when renovating or overseeding an existing turf. Many of the improved cultivars are selected, in part, for their resistance to disease. However, the reaction of different cultivars may vary from one geographic region to the next and under different nutritional programs. This is where blending is beneficial since it spreads the disease risk among several cultivars. When buying seed or sod from a dealer, producer or garden center, insist on a blend of improved cultivars adapted to Nebraska.

Integrated Plant Management Practices

Management practices such as proper mowing, fertilizing and watering are essential to maintain a healthy, vigorous turf.

Use a balanced fertility program that maintains sufficient levels of nitrogen, phosphorus and potassium. On turfs other than putting greens, apply two-thirds of the total annual nitrogen in two fall applications--one in early September and the second after the final mowing. The remaining third can be applied during the growing season. Avoid heavy applications of nitrogen at anytime. Lush, over fertilized turf is more susceptible to infection.

Mow Kentucky bluegrass at 2 inches in spring and fall and at 2 1/2-3 inches in summer. Adjust mowing frequency to the turfgrass growth rate.

Avoid keeping turf wet or allowing it to become excessively dry. Water as needed to prevent wilting and drought. Apply up to 1 inch of water per week in spring and fall and 1 1/2 inches per week in summer, depending upon rainfall and general climatic conditions.

If thatch accumulation exceeds a depth of 1/2 inch, dethatch the turf by aerifying or power raking. Confine these operations to early spring and/or early fall to allow three to four weeks for the turf to heal before the onset of hot or cold weather.

Fungicides

Many fungicides (*Table I*) will control leaf spot and melting out if applied as preventives from mid-April to early June. Make the first fungicide application shortly after green-up, followed by two additional applications spaced two to three weeks apart. Granular fungicides may need to be applied more frequently than sprays.

The list of fungicides in *Table I* is supplied with the understanding that there is no guarantee of effectiveness by the University of Nebraska, nor discrimination intended for any products not listed, and no endorsement for those listed.

Table I. A recommended list of fungicides and turfgrass diseases controlled.

Fungicide Common Name ¹	Some Trade Names ²	Commercial/ Homeowner Use
Chlorothalonil	Daconil 2787 (ISK Biotech)	C
Anthracnose	Daconil 2787 WDG (ISK Biotech)	C
Leaf spot	Daconil Ultrex (ISK Biotech)	C
Brown patch	Manicure (LESCO)	C
Large brown patch (Zoysia)	Turf Fungicide (Lebanon)	C
Red thread	Multi Purpose Fungicide (Ortho)	H
Rusts	Fungi-Gard (Security)	H
Dollar spot	Liquid Daconil Fungicide (Ferti-lome)	H
	Lawn Fungicide (Greenview)	H
	Daconil 2787 (Dragon)	H

Iprodione	Chipco 26019 (Rhone-Poulenc)	C
Dollar spot	Chipco 26019 FLO (Rhone-Poulenc)	C
Brown patch	Fungicide X (Scotts)	
Leaf spot		
Large brown patch (<i>Zoysia</i>)		
Fusarium blight		
Necrotic ring spot		
Gray snow mold		
Pink snow mold		
Red thread		
Mancozeb	Fore (Rohm and Haas)	C/H
Fusarium blight	Formec 80 (PBI/Gordon)	C
Red thread	Mancozeb (LESCO)	C
Slime molds	Mancozeb Flowable (Bonide)	H
Leaf spot	Maneb Plus (Green Light)	H
Brown patch	Fore Lawn & Ornamental Fungicide Spray (Acme)	H
Rusts		
Pythium blight		
Algae		
Dollar spot		
Pink snow mold		
Myclobutanil	Eagle WSP (Rohm and Haas)	C
Brown patch		
Dollar spot		
Leaf spot		
Stripe smut		
Necrotic ring spot		
Powdery mildew		
Summer patch		
PCNB	Turfcide 400 (Uniroyal)	C
Brown patch	Defend 2F (Cleary)	C

Leaf spot	PCNB 75WP (Cleary)	C
Dollar spot	PCNB 10G (Cleary)	C
Gray snow mold		
Pink snow mold		
Propiconazole		
	Banner (Ciba)	C
Dollar spot	Banner GL (Ciba)	C
Brown patch		
Anthracnose		
Red thread		
Rusts		
Powdery mildew		
Stripe smut		
Summer patch		
Pink snow mold		
Gray snow mold		
Leaf spot		
Large brown patch (Zoysia)		
Thiophanate-methyl		
	3336 WP (Cleary)	C
Anthracnose	3336 F (Cleary)	C
Dollar spot	Fungo Systemic Fungicide (Scotts)	C
Brown patch	SysTec 1998 (Regal)	C
Large brown patch (Zoysia)	Halt Systemic (Ferti-lome)	H
Red thread	Lawn Fungus Control (Scotts)	H
Pink snow mold	Systemic Fungicide 3336 (Dragon)	H
Summer patch		
Fusarium blight		
Necrotic ring spot		
Stripe smut		
Leaf spot		
Vinclozolin		
	Curalan (BASF)	C
Dollar spot	Touché (LESCO)	C
Leaf spot	Vorlan (Scotts)	C

Red thread		
Brown patch		
Gray snow mold		
Pink snow mold		
Chlorothalonil+fenarimol	TwoSome Flowable Fungicide (LESCO)	C
Leaf spot		
Necrotic ring spot		
Summer patch		
Fusarium blight		
Dollar spot		
Anthracnose		
Brown patch		
Large brown patch (Zoysia)		
Red thread		
Powdery mildew		
Rusts		
Take-all		
Pink snow mold		
Gray snow mold		
Chlorothalonil+thiophanate-methyl	ConSyst (Regal)	C
Anthracnose		
Dollar spot		
Leaf spot		
Brown patch		
Large brown patch (Zoysia)		
Red thread		
Rusts		
Powdery mildew		
Yellow tuft (Downy mildew)		
Thiophanate-methyl+iprodione	Fluid Fungicide (Scotts)	C
Leaf spot	Turf Builders plus Fungicide (Scotts)	H
Dollar spot		

Brown patch		
anthracnose		
Thiophanate-methyl+mancozeb	Duosan (Scotts)	C
Dollar spot		
Anthracnose		
Brown patch		
Leaf spot		
Pink snow mold		
Red thread		
Rusts		
Thiram+tridimefon	Fluid Fungicide III (Scotts)	C
Leaf spot		
Dollar spot		
Brown patch		
Anthracnose		
Rusts		
<p>¹The active ingredient is labeled for the diseases listed; however, the trade name products may not contain all of the diseases listed for the active ingredient.</p> <p>²This list is presented for information only and no endorsement is intended for products listed, nor criticism meant for products not listed. Consult the product label before buying and using a specific fungicide.</p>		

File G925 under PLANT DISEASES

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