

ANTHRACNOSE ON TURFGRASS

Colletotrichum graminicola

F A C T S H E E T

Introduction

Anthracnose of turfgrass is found in many areas and climates. It attacks most turfgrasses but is most damaging on Annual Bluegrass (*Poa annua*) and Bentgrass (*Agrostis palustris*) in North America. The fungus is an active pathogen of young leaves but it is most readily detected on senescent plant parts.

Symptoms

The pattern of symptoms depends largely on weather conditions. Rotting of the basal stem is the most prevalent symptom detected during cool, wet weather. Water-soaked stem lesions become dark in color and the leaf blades eventually yellow and die (**Fig. 1**). The central stem can be pulled from the plant quite easily revealing a blackened base. Microscopic examination reveals the dark mycelium and hyphopodia.

Reddish-brown lesions may occur when warm weather, dry soil and increased humidity within the turf canopy occur. Reddish-brown irregular patterns on the turf may form as the disease develops. Over time, the patterns turn yellow, tan then brown. Mycelium and acervuli may be detected on the lower stems or on seasoned tissue. Characteristic setae, that look like black, bristly hairs (**Fig. 2**), are often associated with the acervuli.

Figure 1: Symptoms of Anthracnose on turfgrass.
(provided by **Dr. Eric B. Nelson, Cornell University**)

Figure 2: Microscopic view of setae of the fungus.
(provided by **Dr. Eric B. Nelson, Cornell University**)

Disease Cycle

The fungus, *Colletotrichum graminicola*, overwinters on living plant material. Stressed turfgrass is most susceptible to infection. The fungus penetrates the root, crown, and/or leaf tissue during high humidity and wet weather conditions.

Management Strategies

Keeping the turf healthy and reducing stress, such as soil compaction, may help in reducing the damage observed on the plant material. Proper watering and correcting fertilizer deficiencies, especially phosphorus and potassium, will be particularly helpful in reducing damage caused by *Colletotrichum graminicola*.

Many products are available for use against Anthracnose. For home lawn use in New York State, apply fungicides containing the active ingredients: chitosan, propiconazole, or triadimefon, or use Sysstar WDG, Cleary's 3336F, Heritage or Golden Eagle. Before purchasing, be sure the product is labelled for the intended use, and follow directions on the label. Commercial applications please refer to the appropriate commercial pest management guidelines, or contact your local Cooperative Extension Office for more information on currently registered products.

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This publication contains pesticide recommendations. Changes in pesticide regulations occur constantly, some materials mentioned may no longer be available, and some uses may no longer be legal. All pesticides distributed, sold, and/or applied in New York State must be registered with the New York State Department of Environmental Conservation (DEC). Questions concerning the legality and/or registration status for pesticide use in New York State should be directed to the appropriate Cornell Cooperative Extension Specialist or your regional DEC office. **READ THE LABEL BEFORE APPLYING ANY PESTICIDE.**

The Plant Disease Diagnostic Clinic at Cornell University is located at 334 Plant Science Building, Ithaca, NY, 14853. Phone: 607-255-7850, Fax: 607-255-4471, Email: kls13@cornell.edu or slj2@cornell.edu

Biology and Management of Turfgrass Anthracnose

Sponsoring Committee: Turfgrass Pathology

Organizers: Frank Wong, University of California, Riverside, and Eugene Milus, University of Arkansas, Fayetteville

Turfgrass anthracnose has been an emerging disease on turfgrass for several years. This session will provide an overview of the pathogen that causes this disease. Presentations will also address what is known and not known about turfgrass anthracnose and the best strategies for its control.

Anthracnose: An emerging problem in turf. F. WONG. University of California, Riverside
Biology and genetics of *Colletotrichum graminicola*. L. VAILLIANCOURT. University of
Kentucky, Lexington

Sorghum anthracnose: Lessons learned from a closely-related pathosystem. P. WHARTON.
Michigan State University, East Lansing

Phylogenetic relationship of *Colletotrichum graminicola* from turf and other graminaceous
hosts. J. CORRELL. University of Arkansas, Fayetteville

Pathogenicity and host specificity of *Colletotrichum graminicola*. P. LANDSCHOOT.
Pennsylvania State University, University Park

Epidemiology of turfgrass anthracnose. J. VARGAS. Michigan State University, East Lansing

Chemical and cultural control of anthracnose. B. CLARKE. Rutgers University, New Brunswick,
NJ

Turfgrass

Anthracnose

Pathogen: *Colletotrichum graminicola*

(Reviewed 6/03, updated 6/03)

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DESCRIPTION OF THE DISEASE

There are two types of anthracnose symptoms, a basal rot that occurs in cool, wet weather in spring and early summer, and a foliar blight that occurs under periods of heat and water stress. The foliar blight is most common in California; the basal rot anthracnose has not been reported in California.

For foliar blight symptoms, the older leaves are often attacked first, with reddish brown to brown lesions that turn a pale tan color.

For basal rot, dark infection mats are often visible on the lower leaf sheaths and diseased crowns are often black and necrotic. Leaves are often yellow-orange.

In both cases, the fungus can produce fruiting structures ([acervuli](#)) that have fine black hair-like projections (setae) and are filled with small, crescent-shaped spores.

SUSCEPTIBLE TURFGRASSES

Anthracnose is most severe on annual bluegrass, *Poa annua*; it also occurs on Kentucky bluegrass, *P. pratensis*. Other species are only rarely affected by this disease in California.

CONDITIONS FAVORING DISEASE

Basal rot anthracnose is favored by cool, wet conditions (50 - 60°F) while the foliar blight is favored by higher temperatures (80 - 95°F). Both basal rot and foliar anthracnose development are favored by low soil fertility, high compaction, and high soil salinity. Extended periods of leaf wetness contribute to the development of the disease, as do practices that cause mechanical damage to the turf (top dressing and verticutting).

MANAGEMENT

Anthracnose is best managed by proper cultural practices. Fungicides should be used primarily on golf course greens and other intensively managed turf.

Cultural Control

Apply adequately balanced nutrients as necessary, concentrating on potassium and phosphorus. Fertilize the turfgrass with low rates of nitrogen (0.1 - 0.2 lb/1000 sq. ft.) monthly, especially during late spring and through the summer. Avoid fertilizing during periods of high temperatures (over 80°F).

Irrigate deeply and infrequently based on evapotranspiration needs of turfgrass. Allow leaves to dry between irrigations. Irrigate early in the morning rather than during late afternoon or evening. Lightly water (syringe) golf greens during the day to reduce heat and drought stress.

Reduce compaction through mechanical aerification in fall and spring. Increase mowing heights to reduce stress on affected turf. Increase air movement and reduce shading by selective pruning of trees and landscape that block air movement or light the grass

Treatment Decisions

Fungicides are most effective when used preventively. For areas where anthracnose is common, begin applications when the soil temperature rises above 65°F (mid to late spring) to reduce the severity of initial epidemics.

Strains of the anthracnose pathogen resistant to both QoI (strobilurins) and benzimidazole fungicides have been documented in California. If control by fungicides from either chemical class has been ineffective in the past year, switch to a different chemical class or try tank mixing with a multi-site fungicide such as chlorothalnil.

Repeated applications of fungicides from the same chemical class (benzimidazole, DMI, or QoI fungicides) for summer patch control may contribute to the development of fungicide resistance in anthracnose because both diseases tend to occur at the same time in the season. Practice resistance management strategies for both diseases at the same time.

Common name	Chemical class
	

Many of these products are available for use by licensed applicators only and cannot be used by home gardeners.

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|-----------------------|---------------------------|
| A. AZOXYSTROBIN | QoI (strobilurins) |
| B. CHLOROTHALONIL | Chlorophenyl (multi-site) |
| C. FENARIMOL | DMI |
| D. MYCLOBUTANIL | DMI |
| E. PROPICONAZOLE | DMI |
| F. THIOPHANATE-METHYL | Benzimidazole |
| G. TRIADIMEFON | DMI |
| H. TRIFLOXYSTROBIN | QoI (strobilurins) |