



ANTHRACNOSE OF TURFGRASSES

Anthracnose is a widely distributed but generally minor disease of turfgrasses caused by two fungi: *Colletotrichum graminicola* (synonym *C. cereale*; sexual state *Glomerella graminicola*) and *Microdochium bolleyi* (synonym *Gloeosporium bolleyi*). The *Glomerella* sexual state of *Colletotrichum* is rare in nature.

In the Midwest the disease is most commonly found on closely cut annual bluegrass (*Poa annua*). Bentgrasses, fine-leaved fescues, perennial ryegrass, and Kentucky bluegrass are also commonly found infected. Probably all turfgrasses are susceptible during prolonged, warm to hot 80°



Figure 1. Anthracnose with early yellowing followed by bronzing symptoms on annual bluegrass.

to 90°F (27° to 32°C), dry or very moist weather when the grass is under severe stress. If such conditions persist, this damage can become quite extensive (Figure 1). Anthracnose usually occurs where the turfgrass is weakened by such causes as “Helminthosporium” leaf spot and melting-out diseases, insect damage, soil compacted from heavy machinery or foot traffic, low or unbalanced fertility, poor soil drainage, a thick thatch, or drought stress.

Symptoms

During cool, wet periods – or during hot weather on closely cut *Poa annua* greens and fairways – water-soaked lesions occur on the stems. These lesions later become bleached and girdle the tiller, and scattered individual or small patches of plants turn yellow and die. The crowns and roots can also be infected. During warm to hot weather, especially when the soil is dry and the turf and atmosphere are wet or very humid, the anthracnose fungi readily colonize older leaves apparently hastening leaf and tiller senescence and death. Occasionally, lesions are found on individual grass blades which are round to oblong, or elongated, reddish brown to brown spots or blotches surrounded by a yellow halo (Figure 2). These lesions may enlarge and merge to blight and kill the entire leaf blade. The anthracnose fungi commonly infect grass blades from the tip down, especially grass that has been freshly mowed.

Infected leaves turn yellow, then light tan to brown as they die. The chief diagnostic feature of the more common *Colletotrichum* anthracnose fungus is the appearance of numerous minute, raised, black fruiting bodies, called acervuli, which are widely distributed on senescing and dead leaves. The acervuli, easily seen with a magnifying lens, are covered with long black bristles called setae which easily distinguishes

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Colletotrichum from other fungi which infect or grow on turfgrasses. The Microdochium anthracnose fungus does not produce setae. Acervuli are also evident on young leaves when either fungus is active.

Shoot infections result in stem girdling and can develop into yellow-bronze patches of turf varying in size from 2 inches followed by a slow deterioration of large, irregular areas of turf 10 to 20 feet or more in diameter (Figure 1). Anthracnose-blighted plants are reddish brown at first fading to yellow, then tan or brown. The stem bases, crowns, and root systems of severely infected plants may be brown or black and shallow.

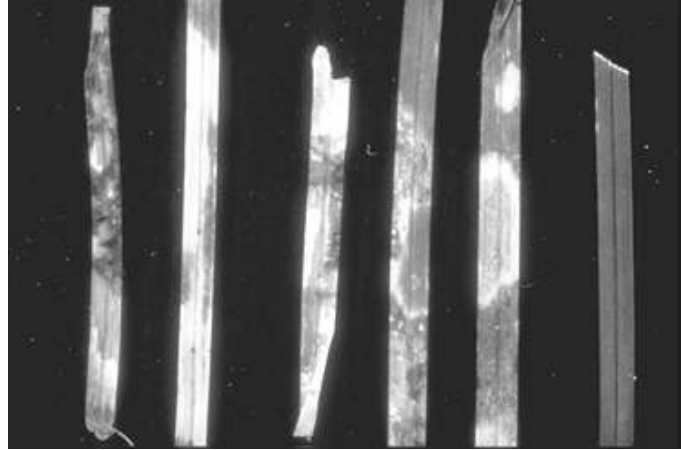


Figure 2. Anthracnose lesions on five Kentucky bluegrass leaves. Healthy leaf to the right (courtesy Dr. R.W. Smiley).

Disease Cycle

The anthracnose fungi produce large numbers of microscopic, one-celled, bean- or crescent-shaped spores (conidia) in the elongated acervuli in leaf and stem lesions. The conidia of Colletotrichum are larger (4 to 25 microns long) than those of Microdochium (5 to 9 microns). The conidia are distributed by splashing or flowing water, air currents, grass clippings, shoes, and on all types of turfgrass equipment. Both fungi overseason as dormant mycelium in colonized grass debris in the thatch layer. When atmospheric humidity is high and leaves are wet, both germinating conidia and fungal hyphae penetrate foliar, stem, or root tissues under stress from temperature extremes, drought, soil compaction, unbalanced fertility, or another cause. Acervuli form on dead tissues and conidia are disseminated to healthy plants repeating the disease cycle.

Control

1. Keep the turfgrass growing vigorously throughout the growing season by carrying out the following cultural practices:
 - a. Provide good surface and subsurface drainage when establishing a new turf area. Test the soil reaction (pH) and follow the recommendations in the soil report. A pH between 6 and 7 is best for all turfgrasses grown in the Midwest.
 - b. Grow locally adapted, disease-resistant grasses in blends or mixtures. Check with University of Illinois Extension Turfgrass Specialists and your local county extension adviser for suggested grass species and cultivars to grow and for available disease resistance in turfgrass cultivars.
 - c. Purchase only top quality, certified sod, sprigs, plus, or pathogen-free seed from a reputable dealer. Plant at suggested rates in a fertile, well-prepared seedbed.
 - d. Fertilize according to local recommendations and soil tests. Recommendations will vary with the grasses grown and their use. Adequate to high levels of phosphorus and potassium (potash) may help to suppress disease development. Do not apply fertilizer during periods of drought or high temperature. Turfgrass fertilizer recommendations can be obtained from University of Illinois Turfgrass Specialists or your nearest Extension adviser.

- e. Mow frequently at the height recommended for the area, season, and grasses grown (1 1/2 to 2 1/2 inches for lawn-type grasses and 1/4 inch or slightly less for fine bentgrass turf). Remove no more than one-third of the leaf height at one cutting. Keep the mower blades sharp. Do not mow when the grass is wet.
 - f. Water established turf thoroughly during droughts. Moisten the soil to a depth of at least 6 inches at each irrigation. Repeat every 7 to 10 days if the weather remains dry. Water as infrequently as possible to allow gaseous exchange between soil and atmospheric air. Avoid light sprinklings, especially in late afternoon or evening.
 - g. Increase light penetration and air movement to the turfgrass area and speed drying of the grass surface by selectively pruning or removing dense trees, shrubs, and hedges bordering the turf area.
 - h. Remove excess thatch in early spring or fall or when it accumulates to 1/2 inch for higher-cut grasses and 1/8 to 1/4 inch for fine turf. Use a vertical mower, power rake, or similar dethatching equipment. These machines may be rented at most large garden supply or tool rental stores.
 - i. Core aerify compacted areas one or more times each year, using a hand aerifier or power machine. Eliminate foot and vehicular traffic by putting in walks, fences, shrubbery, patios, parking areas, and so on.
 - j. Follow suggested insect and weed control programs for the area and grasses being grown. Follow recommendations of University of Illinois Extension Entomologists and Turfgrass Specialists. Insects commonly transmit disease-causing fungi or provide entry wounds for them, while weeds may harbor pathogenic fungi.
 - k. Where feasible, golf greens and other high-value turf should be cooled down once or twice on very hot days by syringing for a few minutes during the hottest part of the day.
 - l. Control other turfgrass diseases such as those caused by "Helminthosporium". These diseases have been shown to promote the outbreaks of anthracnose.
 - m. Strains of creeping bentgrass and annual bluegrass are tolerant to most pathogenic races of the anthracnose fungi. Resistant hard fescues include 'Aurora', 'Reliant', 'Spartan', and 'Waldina'.
2. The cultural practices outlined previously should keep anthracnose well under control. If not, there are several protective fungicides which have proven effective. Suggested fungicides, when and how they should be applied, are given in Illinois Extension Urban Pest Management Guide, which is revised annually. It should be available in all Extension offices.