Turfgrass Diseases

Anthracnose Foliar Blight and Basal Rot, *Colletotrichum graminicola*

Anthracnose can occur both as a foliar blight and a rot of the crown, stem base, and roots (basal rot). Anthracnose foliar blight typically occurs during mid-summer and attacks the leaves and stems of most cool-season turfgrass species. Particularly severe cases can develop on annual bluegrass fairways on golf courses. Anthracnose basal rot can occur during spring, summer, and fall and develops in the crowns, stem bases, and roots of annual bluegrass and creeping bentgrass, usually on golf course putting greens.

Anthracnose basal rot symptoms on annual bluegrass putting green.

**Symptoms and signs**

Anthracnose foliar blight appears as irregular yellow or bronze patches of diseased turf. Symptoms on individual plants first appear as yellow or red lesions on the oldest (outermost) leaves, then progress to a blighting of younger leaves and shoots. Occasionally, fungal fruiting structures called *acervuli* can be observed with a good quality hand lens on diseased leaves and stems. Acervuli resemble small, black pin cushions and are the location of spore production.
Acervuli of *Colletotrichum graminicola* on annual bluegrass.

Anthracnose basal rot symptoms vary depending on the grass species affected. On annual bluegrass, symptoms appear as a bright yellowing of the turf in irregular patches. Affected bentgrass turf typically appears as irregular red or bronze basal rot, a dark brown or black color is present at the base of the plant. As the disease worsens, the darkening (rotting) progresses up the stem and acervuli can be observed with a hand lens on stem and leaf tissue.

Rot of stem bases and crowns on annual bluegrass affected by anthracnose basal rot.

**Disease cycle**

The causal fungus, *Colletotrichum graminicola*, survives the winter as dormant resting structures called sclerotia and as dormant mycelium in infected plant debris. During
early spring outbreaks of anthracnose basal rot, the fungus, which may have overwintered in the plant, initiates infection at the base of the plant. Outbreaks of anthracnose foliar blight and / or basal rot can result when spores produced in acervuli are dispersed by splashing water or tracked by mowing equipment from one area to another. These spores then germinate and cause new infections on other plants. Anthracnose is likely to occur when plants are growing slowly (during periods of hot and cold temperatures), during overcast periods, and in high humidity conditions.

**Cultural control**

Proper fertilization and maintaining good soil physical conditions are the most effective approaches to managing anthracnose. If your turf is underfertilized, increase the rate and / or frequency of nitrogen fertilizer applications. This will improve resistance to the disease and sid in turf recovery. Add potassium and phosphorus if your soil test report indicates a need. Improved drainage and a regular aeration program will reduce excess soil moisture, alleviate compaction, and improve root growth, creating conditions that are less favorable for anthracnose.

**Chemical control**

Fungicides are only used to control anthracnose on golf courses. Preventative (before the disease occurs) applications of fungicides are generally more effective in controlling anthracnose foliar blight and basal rot than curative (after the disease appears) applications. Application timing will vary from one region to another and possibly from year to year at the same location. The best way to time your applications is to keep records for several seasons of the environmental conditions under which the disease occurred on your course, then apply fungicides when conditions are conducive for disease development.

**Brown Patch, *Rhizoctonia solani***

Brown patch is a major summer disease of lawns and golf courses. The most susceptible grass species include perennial ryegrass, tall fescue, and the bentgrasses. Occasionally, brown patch becomes a problem on Kentucky bluegrasses in mid- to late-summer during extended periods of high temperature and humidity.
Symptoms of brown patch on creeping bentgrass putting green. Note dark rings around periphery of patch (smoke rings).
(photo courtesy of Dr. Noel Jackson)

**Symptoms and signs**

On high-cut turf, patches may be up to several feet in diameter and circular. In early morning on dew-covered turf, white mycelium of the causal fungus can often be seen on and between grass leaves and stems in the patch. Sometimes, all the grass within the patch is killed, creating a sunken or "pocket" effect. More often, the turf in these patches is thinned rather than completely killed. Occasionally, no circular pattern can be seen, and disease appears as a diffuse blight.

On tall fescue, symptoms of brown patch can be observed on individual leaves and not necessarily in patches. Symptoms on leaves appear as irregular tan or light brown lesions surrounded by dark brown borders. In severe cases, the entire stand may look discolored and thinned.
Symptoms of brown patch on tall fescue leaves.
Note irregular, light brown lesions with dark brown borders.
(photo courtesy of Dr. Noel Jackson)

A distinguishing feature of brown patch on golf course putting greens is the presence of dark purplish rings around the periphery of the patches. These are called smoke rings and range from 1/4 to 1/2 inch wide. Smoke rings are more pronounced in the early morning hours, usually fading by midday.

**Disease cycle**

The causal fungus overwinters in the form of resting bodies called sclerotia, either within infected grass tissue or in the soil. The fungus is capable of surviving in soil for years in the absence of a susceptible grass. Disease activity is prevalent when surface moisture and humidity are high, night temperatures are above 68° F and daytime temperatures average 80° F or above. Rainy weather and a saturated atmosphere (100 percent relative humidity) greatly speed disease development. Disease severity is greater on lush, succulent turfgrass maintained with high nitrogen levels than on grass maintained with moderate levels.

**Cultural control**

Applying nitrogen fertilizers on turf with a known history of brown patch during hot and humid weather may create the need for fungicide applications to control the disease. Removal of dew or guttation water that collects on the grass leaves each morning has proven effective as an aid in reducing brown patch. This removal can be achieved by mowing or by dragging a water hose across the area. Necessary watering should be done in time for the grass to dry before nightfall.

**Chemical control**

Fungicide treatment should only be needed on high-value ryegrass or bentgrass turfs. Fungicide treatment usually is made on a curative basis; the first spray should be applied
immediately after the onset of symptoms, especially if prolonged hot, humid weather is expected. In areas where brown patch causes severe thinning on putting greens, preventative fungicide applications may be justified.