

Anthracnose

Anthracnose is a warm weather disease that can cause serious damage to annual bluegrass greens and fairways. Recently this disease has also been found on creeping bentgrass in isolated instances. Disease symptoms appear as irregular patches of yellow-bronze turf ranging in size from a few inches to several feet. Leaf lesions initially appear as elongated reddish-brown spots.

Anthracnose is caused by the pathogen *Colletotrichum graminicola*. This fungus infects the plant via spores that are small curved and hyaline (transparent). In the presence of water, these spores germinate and produce an appressoria which allows the fungus to penetrate the leaf epidermis. The fungus then proceeds to grow and develop, culminating in the formation of a fruiting structure called an acervulus (plural spelling is acervuli). The acervulus erupts through the leaf epidermis, releasing numerous spores, thus continuing the infection cycle. A characteristic of acervuli is the presence of spiny structures called setae. The diagnostic key for this pathogen is the observation of acervuli.

Disease occurrence is most severe when night-time temperatures are warm, moisture is present (i.e., rainy period) which is then followed by warm, drier weather. Anthracnose has also been reported to occur under cool temperatures during the spring. The fungus that causes warm weather anthracnose also causes the cool weather anthracnose. Symptoms are the same, but one difference between the two is the location of the acervuli. With warm weather anthracnose the acervuli appear on the leaf blade, while on cool weather anthracnose the acervuli form in or around the crown region.

It may appear that this disease has no pattern—occurring both in cool and warm weather—but the one common thread is that the turf plants are under some sort of stress. *Colletotrichum graminicola* is very effective in killing annual bluegrass if it is under an environmental stress.

No cultural practices exist that will completely control anthracnose. Moderate nitrogen applications ($\frac{1}{2}$ lb./1000 sq. ft.) monthly during June, July, and August, however, have proven effective for reducing the amount of disease.

Fungicide applications are effective for controlling anthracnose. The sterol inhibiting (Bayleton, Banner and Rubigan) and the benzimidazole (Tersan 1991, Fungo 50 and Cleary's 3336) fungicides have performed well. Daconil 2787 has been effective only through preventative applications. I have found that the first fungicide application to be the most critical. If the application can be made at or just before the first infection, this pathogen can be easily controlled. If damage occurs, control through curative treatments is more difficult.

In using fungicides for controlling *Colletotrichum graminicola*, especially with the benzimidazoles, thought should be given to how best to use them. As previously mentioned, the benzimidazoles are effective, but we have found resistance in the field to these fungicides with repeated use. Alternating or mixing the benzimidazoles with a fungicide with a different mode of action would be advisable.

—Karl Dannenherger, Ph.D.

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