Anthracnose

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Anthracnose is caused by a fungus (Colletotrichum graminicola) that survives and thrives on dead and decaying organic matter. Although anthracnose may occur occasionally in turf maintained for athletic fields, professional landscapes and residential lawns, it is largely a disease of intensively managed annual bluegrass and creeping bentgrass used on golf courses. Under stressful summer conditions, the pathogen may cause a foliar blight. During cool wet periods in spring the fungus can cause a basal stem rot on annual bluegrass and creeping bentgrass. It is not clear how the foliar blight and basal stem rot diseases are related.d

Foliar Blight Anthracnose

A variety of summer stresses predispose turfgrass plants to the foliar blight

Figure 1

phase of anthracnose. These stresses include heat, drought, nitrogen deficiency, close mowing and compaction. Stress leads to premature decline and senescence and limits the potential for turf recovery. There also is evidence that certain herbicides and plant growth regulators contribute to stress that predisposes plants to anthracnose infection. Under these stress conditions, dead leaf blades are readily colonized by the anthracnose fungus. When conditions are especially favorable, green leaf tissues and possibly crown tissues are infected, resulting in serious damage to the turf stand.

From a distance, anthracnose-infected turf tends to have a yellow-orange cast and appears to lack its usual vigor. Areas of affected turf are not well defined although they may occur in clusters (Figure 1). Irregularly shaped tan leaf spots may occur on infected leaves. The occurrence of anthracnose leaf spots on green leaf tissues is an indication of aggressive disease activity. More often, infected leaves turn yellow and decay from the tips downward. The pathogen also produces huge quantities of spores on infected leaves within specialized structures called acervuli. The acervuli also contain dark, brittle-like features called setae that serve as diagnostic signs of the disease (Figures 2 and 3). These setae are easily visible with a 10x hand lens. The foliar blight anthracnose spreads by rain-splashed and win-blown spores and does not result in any visible surface mycelium.

Basal Rot Anthracnose

The basal rot anthracnose is favored by stress triggered by low mowing, deficient nitrogen levels and practices that wound plant tissues (topdressing and verticutting). This phase of anthracnose appears to be especially severe on putting greens. It seems that annual bluegrass is most vulnerable to basal rot infection during cool wet spring conditions. Extensive symptom expression and turf damage may not appear until plants suffer summer stress.

Basal infection causes rapid chlorosis and decline of individual plants. Leaves turn yellow-orange, usually beginning at the leaf tips. Close inspection of affected areas reveals numerous dime-sized spots of symptomatic plants. Crown tissues of infected plants have a dark necrotic appearance from which the disease takes its name (Figure 4).

Non-chemical Management Options

Annual bluegrass and creeping bentgrass varieties appear to be equally susceptible to anthracnose infection. It is likely that those varieties with improved tolerance to summer stress will suffer less from anthracnose outbreaks. Avoiding

Figure 2

and/or relieving plant stress in spring and summer will make an important contribution towards limiting the damage associated with anthracnose. Spoon feeding small amounts of nitrogen fertilizer (0.1 - 0.2 lb N per 1000 sq ft) during summer months will help plants maintain vigor during periods of slow growth. Syringing vulnerable turf during the heat of the day will help relieve heat and drought stress. Also, re-directing traffic may reduce stress associated with wear and tear and perhaps relieve some of the effects of compaction.

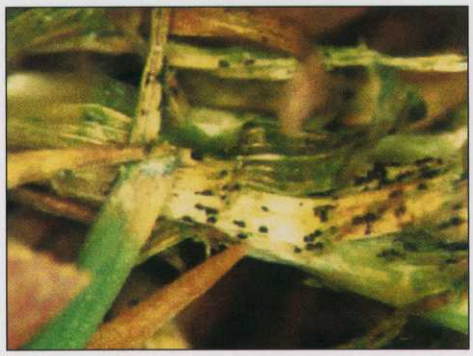

Figure 3

On golf greens with significant annual bluegrass populations, practices that promote the development of healthy turf (such as aeration and topdressing at appropriate times in fall and spring) will help turf tolerate the effects of extended periods of summer stress. Finally, raising

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the height of cut will reduce exposure to anthracnose infection and hasten recovery from damage.

Control with Fungicides

Anthracnose development can be limited by the application of effective fungicides at appropriate times. Protection by contact fungicides that inhibit spore germination will limit the extent of severe outbreaks, especially during periods of hot, rainy weather. Contact fungicides that are registered for anthracnose control include chlorothalonil products (Daconil and others). Systemic fungicides such as Heritage, Cleary 336 and DMI products (Banner Maxx, Bayleton and Eagle) are very effective. The local systemic fungicide Compass also is effective against anthracnose.

Timing of fungicide applications is critical for satisfactory disease control, but there appears to be little data from which to draw valid conclusions regarding timing. Best results have been achieved where outbreaks were anticipate and applications were applied prior to symptom expression. Although effective fungicide will decrease the progress of foliar blight during summer months, sprays applied during cool, wet spring conditions will suppress early infections and limit the extent of subsequent foliar blight.

Figure 4

Iprodione and vinclozonil fungicides (eg. Chipco 26GT and Curalan) are not effective against foliar anthracnose. Prostar, an excellent product for brown patch control, also is not effective against anthracnose.

There have been recent reports of strains of the anthracnose fungus that are 'resistant' to strobilurin fungicides. Therefore, turf managers who rely on fungicides for anthracnose control should implement practices that reduce the risk of resistance. Such practices include tank-mixing systemic products with contact fungicides, avoiding the use of the same or similar fungicides for consecutive applications of related fungicides during the season. Most product labels for systemic fungicides include a discussion of resistance management strategies.