ISSUE NO.19

Anthracnose Management in Turf - Liam Harper

Causal Pathogen

The fungal pathogen most commonly responsible for causing anthracnose diseases in turf is *Colletotrichum graminicola*. This fungi is known to colonise plant tissue on most turf species, infecting crown and root tissue (known a basal rot), or foliage (foliar blight).

Among the most susceptible species of turfgrass are *Poa annua* (wintergrass) and *Agrostis spp*. (Bentgrass), both found on golf greens in cool climate and transitional regions of Australia. Though bentgrass suffers from anthracnose foliar blight, it is not known to become infected with the basal rot which commonly affects *P. annua* in golf greens (Smiley, Dernoeden & Clarke 2007).

Symptoms

The pathogen can often be identified through the presence of distinctive acervuli (fruiting bodies) which appear on infected plant tissue as black hairlike protrusions. In anthracnose foliar blight, red to brown elongated lesions can appear on leaf blades, enlarging to blight the entire leaf. Blighted leaves turn yellow and begin to die back from the tip. Using a hand lens, large amounts of black acervuli can often be seen growing on the dead or infected tissue.

Basal rot of *P. annua* most often occurs in low-cut situations such as in golf greens. This will begin with individual plants yellowing off, before turning dark brown. As more plants become infected, large areas can start to thin out, leaving dead plant matter that has the potential to form a mat. The selectivity of anthracnose as a basal rot can be seen in bent/poa blends where the *P. annua* begins to thin out leaving the bentgrass unaffected. As with the foliar blight, distinctive acervuli can be observed growing on infected tissue, particularly under leaf sheaths and at the base of leaf blades. The pathogen infects the stem, crown, upper root tissue and lower foliar tissue, causing dark brown to black discolouration.

Occurrence

Both forms of this disease favour wet weather, with periods of prolonged foliar and crown moisture. The foliar blight generally occurs from later spring to early autumn when temperatures are between 26.7 – 35.0˚C (Fermanian et al. 1997). Whereas anthracnose in the basal rot form can occur at much lower temperatures, all year round but primarily between 21.1 – 27.8˚C (Fermanian et al. 1997).

The basal rot will often recur seasonally in localised patches of *P. annua* where it can limit growth potential and result in a decline in root development.

Cultural Management Practices

Anthracnose will often infect plants in a weakened or stressed state. Any management practices that help to reduce plant stress can be beneficial, such as maintaining adequate nutrition (paying particular attention to avoid phosphorus and potassium deficiencies), proper irrigation (avoid overwatering and underwatering), and regular aeration.

Infected turf can often require micromanagement to reduce symptoms, including raising mowing height and reducing mowing frequency, as well as minimising traffic.

Figure 1. Anthracnose acervuli colonising foliar tissue of Poa annua magnified 40x

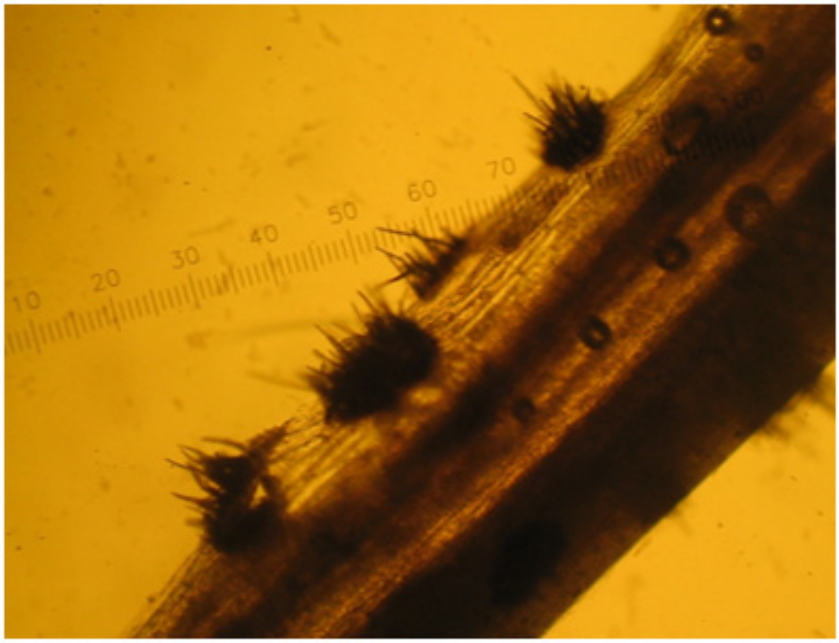

Figure 2. Anthracnose acervuli on leaf blade of Agrostis stolonifera magnified 200x

Figure 3. Basal rot of Poa annua

Chemical Control Options

In times of high disease pressure, when environmental conditions favour disease development, it is often necessary to implement a fungicide program. As anthracnose can be difficult to control once established a preventative fungicide program is generally the most affective.

There are several registered fungicide options available, though there is limited variety in their activity groups. This means extra care must be taken when constructing a fungicide program not to exceed the recommended number of applications for each activity group.

Product	Key Points	Label Rate/100m²
Dedicate 	Dedicate is a new turf fungicide that contains two active ingredients with differing modes of action. Possessing both preventative and curative activity as well as contact and systemic action in the turf. Dedicate provides a broad spectrum of activity.	20mL
Heritage MAXX 	Heritage MAXX is an effective xylem systemic fungicide that delivers excellent protection for up to 28 days against the widest spectrum of turf diseases	30-60mL
Headway MAXX 	Headway MAXX combines the strength longevity and broad spectrum of Heritage MAXX with the speed and early curative action of Banner MAXX in an unbeatable combination. Offers dual systemic action combined with surface protection against all the major turf diseases including Pythium.	90mL
Banner MAXX 	Banner MAXX is an effective xylem systemic fungicide that delivers superior protection for up to 28 days against Dollar Spot, Spring Dead Spot, Anthracnose, Helminthosporium, Winter Fusarium and ERI fungi including Couch Decline and Take All Patch.	50-100mL

Fermanian, TW, Shurtleff, MC, Randell, R, Wilkinson, HT & Nixon, PL 1997, Controlling Turfgrass Pests, 2nd edn, Prentice Hall, New Jersey.

Smiley, RW, Dernoeden, PH & Clarke, BB 2007, Compendium of Turfgrass Disease, 3rd edn, APS Press, Minnesota.