

## **Diseases of Turf Grass**

### **Foliar and Basal Rot Anthracnose**

A review of the literature reveals that superintendents have struggled with different forms of Anthracnose diseases for many, many years. Often thought of as a disease of minor importance, Foliar and Basal forms of Anthracnose are now considered major problems for today's turf managers. Generally considered a weak pathogen, Anthracnose occurs on a wide range of both cool season and warm season grasses throughout the world. Furthermore, research has also indicated that Anthracnose can work together with other pathogens to form complexes that are just as devastating to the turf. There is also a general link to overall plant vigor and the severity of this disease. Historically, it is most serious on annual bluegrass and bentgrass species.

#### **Disease Cycles And Symptoms**

Anthracnose diseases in turfgrasses are caused by the pathogen *Colletotrichum graminicola*. The expression of Foliar and Basal forms of Anthracnose are different and occur under different climatic circumstances. In fact, many pathologists treat them two separate diseases. *C. graminicola* survives unfavorable climatic periods as saprophytic mycelium in infected plant debris. This is the main source of inoculum for initial leaf and crown infections the following year. The primary conditions necessary for infection are those that stress the plant, including periods of temperature extremes, compact soils, inadequate nutritional levels or physical damage to the crown. This pathogen also requires a moisture film on the foliage or roots for infection.

During cool, wet weather periods, the pathogen may cause a basal stem rot. This can

occur at any time of year, but most outbreaks take place in the early spring and mid summer when day time air temperatures are between 65-75°F. Studies indicate that infection occurs in the root and stem tissue just below the crown. The pathogen then moves into the crown and gradually works its way up into the stem region. Stem lesions are initially water-soaked. The central tiller of the infected plant detaches easily and the blackened base is visible. Masses of black mycelium, forming spurs, may be observed with a hand lens. The leaves then turn yellow progressing from the tips to the sheath giving the appearance of general leaf senescence. Irregular patches of disease ranging from ½ to 6 inches in diameter may develop in dense stands of annual bluegrass and up to 18 inches on bentgrass.

The foliar form develops during warm, wet weather, especially when the soil is dry and the turf canopy and atmosphere are wet or very humid. When air temperatures reach between 85 - 95°F, the pathogen readily lives on older leaves and increases leaf and tiller senescence. Visual symptoms are similar to those seen in the Basal form.

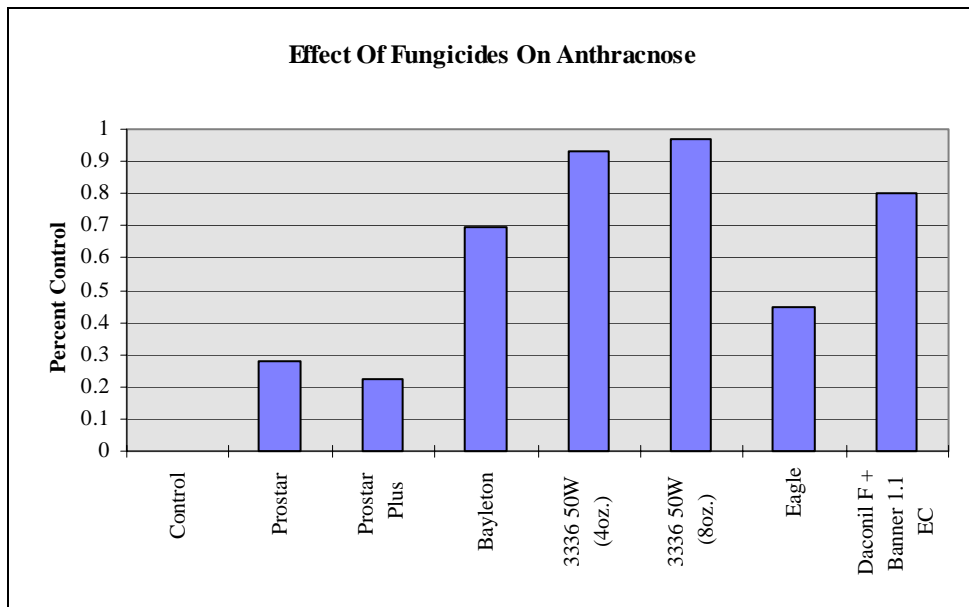
#### **Cultural And Chemical Control**

The information presented so far indicates that the Anthracnose pathogen lives in the thatch layer, survives year round, and infects health plant tissue that has declined in vigor due to a variety of climatic, physiological, or physical stresses. Knowing this, there are a varied of cultural and chemical measures that can be used to prevent and manage this disease. Control measures are especially necessary during hot, humid weather on courses with large amounts of *Poa annua*. Cultural measures include proper fertilization, reduction of soil compaction and excessive traffic, removing excessive thatch, cutting height, and adequate watering are important measures for reducing disease severity. Fertility programs should utilize

balanced fertilizers with adequate amounts of phosphorus and potassium.

### Anthracnose Control With 3336

Chemical control measures were once believed to be of little or no benefit for the control of Anthracnose. However, it is now believed that preventative and suppressive application can be effective when used with prediction modeling. Recent research conducted at Michigan State, Univ. of Rhode Island, and Rutgers University indicated that Cleary's 3336 was very effective at providing disease control of both forms of Anthracnose. The following graph is a summation of the results.



From N. Jackson, URI 1996

### Results

Two treatments were applied at 14 day intervals in late July and mid August. These results indicated that Cleary's 3336 did an excellent job of stopping the disease. In this study, the foliar Anthracnose was the primary disease symptom. Climatic conditions earlier in the year were dry and the development of the basal symptoms did not occur as they did in 1995.

Fungicide control are similar for the basal form; however the superintendent must shift his management approach. First, remember that this disease will be found in similar areas as the previous year because of how it survives inactive periods. With this in mind, preventative applications are key beginning 2 to 4 weeks prior to the onset of disease. Monitoring of local climatic conditions will be essential for the timing and duration of control measures. Application intervals should follow labeling instruction for the product used. However, remember that contact fungicides must be applied more frequently and that research has indicated the best results with a maximum of 2 week intervals for DMI fungicides

and Cleary's 3336. This is due to the acropetal (upward) movement of the fungicides away from the crown tissue after root absorption into the plant. A store of fungicide must remain in the root zone for continuous root uptake into the plant. This is what keeps the crown tissue protected from basal rot Anthracnose.

Finally, remember that both

the foliar and basal forms of Anthracnose are weak pathogens that are constantly present, waiting for the turf vigor to decline below an activity threshold. Management of additional turf stress and the preventative use of Cleary's 3336 and other products can be the best defense against this destructive disease.