



# Attacking Anthracnose

A five-year research initiative takes aim at annual bluegrass pests

Photos courtesy Dr. Tom Hsiang

By Dr. John Kaminski and Dr. Tom Hsiang

**A**n annual bluegrass (*Poa annua*) is commonly found on putting greens throughout the temperate regions of North America. While a healthy stand of annual bluegrass can offer an excellent putting surface, managing this species can be challenging. Problems with managing annual bluegrass were widespread during the summers of 2005 and 2006, when temperatures above 30 C (86 F) seemed to become the norm, not the exception.

Besides its vulnerability to environmental stresses, annual bluegrass is also susceptible to a variety of diseases and is prone to damage from routine cultural practices, such as low mowing, topdressing and vertical cutting. One disease in particular has drawn the attention of university researchers: anthracnose basal rot (Fig.1-3).

In response to this situation, toward the end of 2005, some 22 turfgrass researchers from the Northeast and elsewhere in the U.S. and Canada gathered to launch a new multi-state regional research initiative. To make this research effort a success, we are asking golf course superintendents across North America to participate in a survey to provide valuable baseline information for this project. The Annual Bluegrass Pest Survey takes only five to 10 minutes to complete online. Whether or not you have experienced a problem with anthracnose, please help this research effort by filling out the survey.

Both the anthracnose and annual bluegrass weevil (ABW) projects will attempt to answer several questions over the next five years. The four main issues are outlined below.

## **Fill critical gaps in our understanding of the anthracnose pathogen and ABW**

An important component of this project is improving our understanding of the biology and ecology of the major disease pathogen and insect pest that impact annual bluegrass. A first step will be defining the current geographic distribution of anthracnose. Researchers will use various methods to establish differences among strains of *Colletotrichum cereale* (formerly known as *Colletotrichum graminicola*) and will conduct experiments to elucidate important biological aspects of the pathogen. Laboratory and field experiments will establish how and where the pathogen survives unfavourable periods and how and when infection occurs. Knowledge obtained from these basic studies will help strengthen our understanding of host-pathogen interactions.

## **Identify and develop new control options for suppressing anthracnose**

Research will be conducted to increase the list of management options used to mitigate the impact of anthracnose. New biological, biorational and chemical control products will be evaluated. Other studies will focus on improved use of current products through better pesticide combinations, timing regimes and resistance management strategies. The frequency and mechanisms of *Colletotrichum* resistance to commonly used fungicidal active ingredients will also be examined.





Turf infected with anthracnose basal rot looks patchy, with discoloured areas and died back turf.



An individual turf plant showing blackening and rot at the base due to anthracnose basal rot.

In addition to biological and chemical controls, co-ordinated field and greenhouse studies will evaluate the role of cultural practices and the potential for host plant resistance. Researchers will determine the influence of nitrogen rate and source, plant growth regulators and other cultural practices (e.g., mowing, verticutting, irrigation, etc.) on disease severity. A wide range of diverse annual bluegrass cultivars will be assessed to determine their potential benefits on newly established putting surfaces. Other advanced cultivars will be evaluated for resistance to anthracnose. Results from these field and greenhouse studies will provide valuable information for disease management on golf courses.

#### **Develop improved integrated pest management (IPM) decision tools for anthracnose management**

In addition to determining management strategies that directly affect anthracnose severity, researchers will attempt to determine the influence of environmental conditions (temperature, humidity, leaf wetness, etc.) on anthracnose. Using information gathered from field and greenhouse studies, a predictive model for anthracnose will be constructed from environmental variables and key management factors. Results from these investigations will allow turfgrass managers to forecast anthracnose development and implement the appropriate disease management strategies prior to the onset of severe damage.

#### **Develop best management practices for annual bluegrass to help reduce economic and environmental costs**

Following the collection and interpretation of research results obtained from these studies, pertinent findings will be shared directly with golf course superintendents and other turf

managers. Results will be combined to develop a best management practices publication for annual bluegrass. Research findings will also be distributed via other publications, annual meetings, symposium sessions and regional workshops throughout the Northeast.

Ultimately, this project will allow researchers from around the continent to work together to solve a common problem facing superintendents. By combining our efforts, we hope to speed the gathering of information and avoid overlap and duplication of research efforts. Finally, the consolidation of information from all researchers in a single location (visit the project's website listed below) will make it easier for golf course superintendents to find information about relevant research in their region.

Although this project involves numerous turfgrass researchers, the participation of turf managers will be essential to its success. Researchers are optimistic about finding improved management strategies for suppressing anthracnose. Results obtained over the next five years will play a key role in our understanding and managing these pests. ♀

*To complete the online pest survey, visit <http://www.turf.uconn.edu/ne1025.htm>. For a list of researchers involved in this project, visit <http://www.nimss.umd.edu/homepages/outlineAppE.cfm?trackID=7316>.*

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