When the Bark is Bigger Than the Bite!

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For seven days in mid-June, summer in Wisconsin was nasty. High temperatures reached the mid-90's, dew points stretched into the unbearable 70˚ range, and the only breath of wind came when cruising around on a cart. Even the number most turfgrass pathologists look at, the nighttime lows, were only getting down into the mid-70's. After a cold spring, summer had finally announced its presence.

What this meant for the region's superintendents was a lively, and in some cases panicked discussion on when and what to spray for proper disease control. Most of the talk centered on Pythium blight (*Pythium* spp), which under the right conditions can cause significant damage in a short period of time. According to the Compendium of Turfgrass Diseases, 3rd ed., those optimal conditions are high temperatures between 86 and 95˚F, low temperatures above 68˚F, with oppressive humidities and/or the presence of free water (Smiley *et al.*, 2003). We certainly had those conditions during our hot spell in June, but surprising to some we actually saw little in the way of Pythium blight on Wisconsin golf courses.

During my 4 year tenure here at the Turfgrass Diagnostic Lab, I have observed that Pythium blight is actually one of the most over-diagnosed diseases made on site at the golf course. This doesn't mean we don't see Pythium blight in Wisconsin, we do, but its not nearly as widespread on creeping bentgrass during hot conditions as some might think. Whenever fluffy, white mycelium is observed on turf during the summer it's usually assumed to be *Pythium*. But oftentimes it's actually another disease that we see much more commonly during Wisconsin's summers, and one very few superintendents tend to worry about.

Brown patch in its early stages of symptom development can actually appear quite similar to Pythium blight. The turf can appear purplish or have a reddish cast, start out as small and irregularly shaped

patches, and can even produce the dreaded white, fluffy mycelium. As the disease continues to develop, the patches increase in size and become more circular and tend to look like the "classic" brown patch we all know and love. But not too many of us tend to sit around and let diseases develop to see which destructive disease we might have.

The literature says that brown patch symptoms develop in much the same conditions that Pythium blight does; high humidities and nighttime temperatures above 68˚F. So why then do we normally see more brown patch in Wisconsin than Pythium blight? To give an oversimplified answer, the reason is water. *Pythium* organisms are not true fungi, but instead belong to a related group called oomycetes (or commonly known as water molds). They require ample free water to produce their fast moving infective propagule called a zoospore. Zoospores move quickly in the presence of water, and can infect turfgrass plants before the turf knows what hit them. But in the absence of free water, *Pythium* will usually produce a more long-term survival structure called an oospore. Oospores can infect turf themselves, but don't usually cause the rapid disease progression associated with Pythium blight. Instead, they can produce another structure called a zoosporangium that will produce zoospores once free water returns (Couch, 1995). Since *R. solani* does not produce any spores or other forms of fast moving infective propagules, it doesn't require the ample free water present to infect the turf that Pythium blight does. The lack of free water, along with shorter intervals of oppressive summer weather compared to other parts of the country, are the main reasons we experience more brown patch then Pythium blight in Wisconsin.

When fluffy, white mycelium is observed in the turf immediate plans are usually made to make a fungicide application to control the disease before it spreads (Figure 1). Since white, fluffy mycelium was observed and Pythium blight is thought to be a more destructive disease, usually an application of mefenoxam (Subdue Maxx™) or propamocarb (Banol™) is made. While both of these products are excellent for controlling Pythium blight, they provide no control of any other commonly seen turfgrass diseases. Other fungicides such as azoxystrobin (Heritage™) and pyraclostrobin (Insignia™) provide acceptable control of Pythium blight, but provide excellent control of brown patch and several other patch diseases (Vincelli and Powell, 2007). Since brown patch is more commonly observed instead of Pythium blight anyways, applying a more broad-spectrum fungicide might be the more cost effective move. This situation played out at least one Madison-area golf course, where the superintendent feared Pythium blight damage and made a course-wide mefenoxam application. It was only after a disease outbreak on the course did he send a sample to the TDL for diagnosis, have it diagnosed as brown patch, and make a second course-wide application with a more broad-spectrum fungicide.

Figure 1: While both diseases can produce copious amounts of white mycelium, under intense conditions of heat, humidity, and water Pythium blight will be more damaging. Both these samples were incubated in a moist chamber for two days at 90˚F, and the Pythium sample on the right has caused more extensive damage than the brown patch sample on the left.

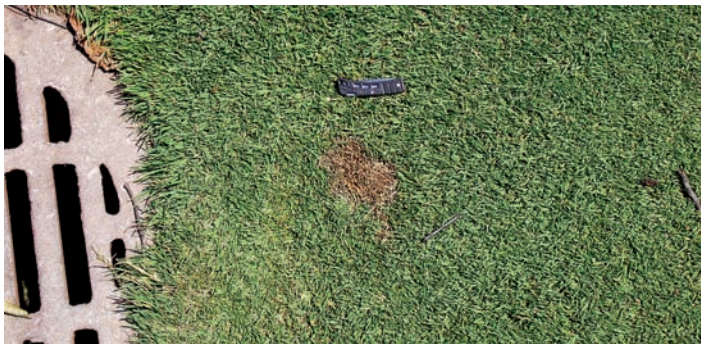

Figure 2: Pythium blight observed near a drain tile, where ample free water will cause optimal infection conditions.

Now this isn't to say that Pythium blight is not a problem in Wisconsin. We did receive several samples of Pythium blight during the June heat wave, but they were oftentimes isolated to certain environments. Pythium blight near bodies of water or near drain tiles (Figure 2) was observed and shouldn't come as a surprise with the pathogen's reliance on free water. Extensive Pythium blight was also observed in many of our newly renovated bentgrass plots (Figure 3), which wasn't surprising either because of the increased susceptibility of juvenile turf plants. In any of these specialized cases, a fungicide such as mefenoxam or propamocarb should be used to provide control under these extreme pressures. To summarize, in specialized situations be ready for the prospect of significant *Pythium* infection, but just don't let *Pythium's* bark fool you into preparing for its bite.

Generous Industry Support Continues

Despite the down economy, where nearly everyone in our industry has seen their business and lives adversely

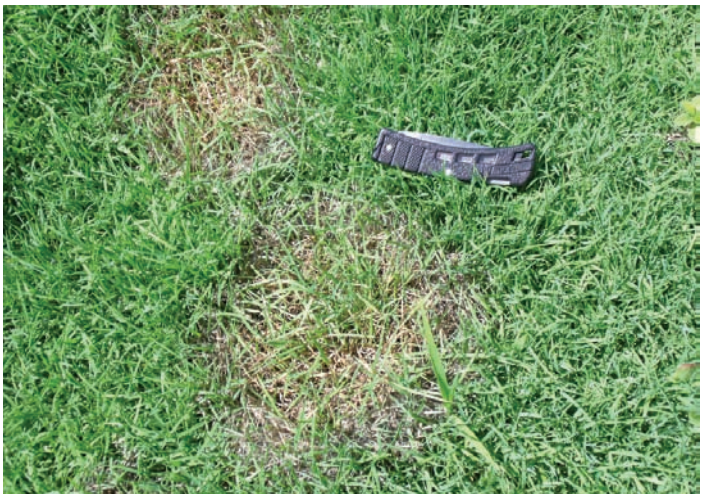

Figure 3: Pythium blight observed on recently seeded bentgrass plants, where their juvenile state, lush state, and ample water make them especially susceptible to the disease.

affected, it is humbling at the level of industry support the Turfgrass Diagnostic Lab continues to receive. I will list each one of our contract members in the TDL Year in Review issue, but in the meantime would like to single out a couple large gifts the TDL has received this year. As they have done for several years, the WGCSA donated $1,500 for general support of the TDL in 2009. The Northern Great Lakes GCSA donated $2,500 in 2009 to the TDLfor general use and to partially fund a study researching disease tolerance of modern bentgrass cultivars to snow molds. For the second year in a row, Dennis Robinson of Horst Distributing has donated the proceeds of Aquatrols 'Turfbucks' program earmarked for research to be presented to the TDL, a gift in excess of $1,300! These gifts are instrumental in keeping diagnostic submission fees low while still maintaining the excellent quality of service you have come to expect and deserve. Please remember these organizations and companies when considering the benefits of membership or purchasing a product, for without their support our state industry would be much less vibrant.

References:

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