Gearing Up For Snow Mold Damage

By Paul Koch, *Turfgrass Diagnostic Lab, University of Wisconsin - Madison*

In Wisconsin, March and April is the time of year when cabin fever really starts to set in for most people in the turfgrass industry. Every piece of equipment has been maintained, all the ball washers and tee blocks are painted, and more than enough time has been spent in close confines with the year-round staff. These sentiments are increased tenfold this winter throughout much of the state, especially in southern Wisconsin. Madison has easily set a record for snowfall in a single season, and many other communities have also done so or are on the verge of doing so. The interstate on the southeast side of Madison has been closed twice, the roads have gone weeks completely covered in ice, and many communities are running out of road salt. Suffice it to say everyone is looking forward to spring.

But be careful what you wish for, a deep and prolonged snow cover on unfrozen ground will likely bring widespread snow mold damage this spring to southern Wisconsin for the first time in years. While the spring of 2007 brought minor and mostly superficial snow mold damage to certain southeastern Wisconsin golf courses (Koch 2007), conditions are so conducive this winter for snow mold development throughout the state that damage is possible from Superior to Kenosha. What can we do in anticipation of significant damage, and of more concern to most is what can we do to recover from the damage as quickly as possible?

Before even contemplating your plan of attack for recovery in the spring, it is important to educate yourself on the optimum infection conditions for the different snow molds seen in Wisconsin as well as how to identify and differentiate them from ice damage. Snow mold is actually a complex of different diseases that usually includes gray snow mold (*Typhula incarnata*), speckled snow mold (*T. ishikariensis*) and Microdochium patch (*Microdochium nivale*). Microdochium patch can oftentimes be differentiated from the Typhula diseases by the presence of a reddish ring around the outside of the patch or the lack of sclerotia embedded in symptomatic turfgrass leaves (Smiley *et al.*, 2005). Sclerotia are small, hardened masses of mycelium that act as resting bodies for the fungus. Sclerotia of *T. incarnata* are comparatively large and red, while those of *T. ishikariensis* are smaller and black in color (Figure 1). Snow mold symp-

Figure 1: The sclerotia of gray snow mold (Typhula incarnata) are comparatively large and red in color, while those of speckled snow mold (T. ishikariensis) are smaller and black.

toms can appear similar to ice damage, but ice damage will never have sclerotia present and will often take on a more irregular shape than snow molds (Figure 2). Be aware that all four of these conditions may be present at the same site under conditions of prolonged snow cover, and samples may be sent to the Turfgrass Diagnostic Lab for definitive diagnosis.

The optimum infection conditions are different for each fungus. Microdochium patch (pink snow mold) does not require snow cover for infection, but is most severe under snow cover or in wet conditions on unfrozen turf with temperatures between 32-46°F. Gray snow mold is most severe under extended periods (>60 days) of snow cover on unfrozen turf with surface temperatures under the snow cover at approximately 32°F. Speckled snow mold is most severe under similar conditions as gray snow mold, but does the majority of its damage when consecutive days of snow cover extends beyond 90 days (Millett and Maxwell, 2000). For this reason, speckled snow mold is responsible for the majority of the damage to turfgrass in northern Wisconsin, with gray snow mold more common through central Wisconsin and Microdochium patch usually the largest concern for the southern part of the state. But this winter nearly all of Wisconsin has had snow cover since December 1st, a span approaching 90 days at the time of this writing. Even with this extended period of snow cover I would be surprised to see widespread speckled snow mold in the southern half of the state, but gray snow mold pressure could be very high all the way down to the Illinois border.

Since nearly every golf course in Wisconsin applies fungicides for the control of snow mold on at least their putting greens and tees, the main questions will be which fungicides are most effective at controlling snow mold under these conditions and how quickly the turf can recover where fungicides were either not applied (i.e. roughs and possibly fairways) or not effective. For how effective different fungicide combinations may be under heavy snow mold pressures you can view the 2005-2006 Snow Mold Trial at Gateway Golf Club in Land O' Lakes, WI included in the 2006 Wisconsin Turfgrass Research Reports on the Wisconsin Turfgrass Association website (www.wisconsinturfgrassassociation.org). Snow mold pressure was extremely high during the trial at this location, and differentiated those treatments effective at high pressures and those that broke down. In general, those treatments that included three different active ingredients were the most effective at controlling snow mold under heavy pressures. With the unusually high disease pressures this winter in southern Wisconsin it is possible that golf courses throughout the state that applied only one or two active ingredi-

Figure 2: Ice damage oftentimes takes on a more irregular pattern than snow molds. Photo courtesy of Steve Abler.

ents, or even low rates of a three way mixture, could observe some disease breakthrough.

Once the snow starts to melt, and damage can begin to be assessed, a plan for recovery should be implemented. Severe infections of gray and speckled snow mold can affect the crown area of the turfgrass and kill the plant, but the great majority of cases result in only the foliage being killed. To determine if the turf is actually dead or not, simply take 2-3 cup cutter plugs from affected areas as you would for ice damage and put them either in a local greenhouse or in an office window in a container with water. If the turf does not begin to green up and sprout new shoots within 2-3 weeks then the turf is likely dead and reseeding or resodding may be needed depending on the extent of damage. If the turf does begin to recover, some light fertilizer applications containing high amounts of soluble nitrogen may be applied once the soil dries out to speed up the recovery process of the plant. Be aware that even as the plants begin to recover, the loss of foliage due to snow mold can be a severe setback and will weaken the plants heading into the growing season. But too much nitrogen in the spring can cause serious problems later in the growing season, and nitrogen fertilizations in the spring will make the turf more susceptible to infection by some diseases and may require added fungicide protection.

Whatever your plan for recovery will be, the two most important things you can do during what may be a difficult spring is to communicate with others at the facility and exercise patience. Educate others at your facility about possible damage before the snow melts, be it from ice, snow mold, or both. As many learned from the ice damage of 2005, trying to be proactive and remove the ice may have done more harm to the turf than good. Still others believe they reduced turf loss and accumulated public relations points with others at their facility. Every place is a little bit different, but hopefully everyone learned from this winter that snow molds can still be a serious disease throughout the entire state of Wisconsin.

Generous Industry Support Continues

As a non-profit lab that receives no state or university aid, the support of the turfgrass industry from Wisconsin and surrounding states is paramount to the survival of the Turfgrass Diagnostic Lab. I am entering my third full year managing the lab and the unrelenting industry support continues to amaze me. Nearly 80 contract members for 2007 from all walks of turfgrass

management were listed in the November/December issue of *The Grass Roots* and form the foundation of the lab. While some members are very active in sample submission and lab interaction, others are members simply to support the TDL for a later time when they may need it. Product testing with chemical cooperators provides large financial support for the entire turfgrass pathology program at UW, which includes the TDL. Research grants from the Wisconsin Golf Course Superintendents Association and Northern Great Lakes Superintendents Association support useful research to local superintendents while at the same time supporting the lab.

Aside from these research grants, the WGCSA and NGLGCSA also provide additional gifts totaling thousands of dollars in support of the lab. Most recently, Dennis Robinson of Horst Distributing graciously donated the proceeds of Aquatrols 'Turfbucks' program earmarked for research to be presented to the TDL, a gift in excess of $1,700! 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.

For further information on how to become a contract member with the TDL or for other forms of support please visit our website at www.plantpath.wisc.edu/tdl or contact me directly at plk@plantpath.wisc.edu or 608-845-2535.

References:

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