



Can Snow Molds Be Controlled Effectively?

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What a winter for snow molds! Although over the past few years, winters have been rather mild, this winter was ideal for snow molds, with the snow cover lasting for many months. Unfortunately, golf courses are being hit hard by snow molds, especially those that did not apply preventative fungicides last fall. However, even some golf courses that did apply preventative fungicides still have some snow mold injury. It is too late to turn the clock back to last fall, so we need to focus on getting the courses ready to play for the eager golfers, and to start strategic planning for snow mold control for this coming winter.

As a snow mold researcher, this year is a "golden opportunity" to study the pathogen. The favorable snow cover has encouraged all types of snow mold pathogens to flourish across Wisconsin and in other states. Last year we analyzed a limited number of snow mold isolates, which were collected by Dr. Steve Millet, and we found that there was considerable variation in these isolates. Thus, we have decided to start a new experiment that involves extensive collection of snow mold isolates from all over the state. Out of the 100 golf courses involved in the study, all of the ones visited so far have had extensive snow mold damage except for some courses that were treated with fungicides. A wide variety of snow molds have been encountered including pink, gray and speckled snow mold caused by *Microdochium nivale*, *Typhula incarnata* and *Typhula ishikariensis* complex, respectively; and probably, *Typhula phacorrhiza* as well. *T. phacorrhiza* is not yet confirmed as to whether it is a pathogenic fungus or beneficial as a

biocontrol agent. Through our mega collection project we will learn more about the geographical distribution of the different snow mold species and more specifically which factors (cultural, environmental, and chemical) are playing a significant role of providing favorable conditions for each of the snow mold species.

Now that spring has arrived and the snow is finally melting, our project is at its crunch point. Thanks to the cooperation from golf course superintendents and the dedication of our researchers who have endured freezing temperatures, hail storms, and late nights, we are currently collecting samples from 100 randomly selected golf courses across Wisconsin. The state was divided into different zones based on historic average duration of snow cover and the average temperature during winter months. Golf courses were then randomly sampled from each area. Collecting the sample itself involved collecting five random samples of infected grass containing *Typhula* sclerotia along a transect from fairways between the greens and the tees.

So why are we doing all of this? The major objective of the collection is to understand the geographical distribution of *Typhula* species, each biological species of speckled snow mold (*T. ishikariensis*) and ultimately what (environment, chemicals, cultural methods) makes one, two, or even three biological species adapt to a particular site. Through all of this we are investigating the fundamental reason/s of inconsistent efficacy of fungicides in controlling snow molds. What is behind the scientific basis of this experiment? We know that some fungicides with snow mold control have different efficacy depending on snow mold species.

For example, PCNB works well for the control of both pink and gray snow molds but not for speckled snow mold. Furthermore, we also have found from our *in vitro* fungicide sensitivity experiment that there are differences in fungicide efficacies among different biological species of *T. ishikariensis*. In addition, more outbreaks of snow molds were reported in northern parts of the state than the southern where both pink and gray snow molds are more predominant than speckled snow mold. Those outbreaks might be due to the biological species of speckled snow mold. If this hypothesis is confirmed through the analysis of this year's collection of samples, then each golf course can apply an effective combination of fungicides depending on which *Typhula* species or biological species of speckled snow mold is associated with the golf course. This could help control future outbreaks of snow molds and prevent superintendents' headaches.✂

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