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The logo for Blackwolf Run and the 2012 USGA U.S. Womens Open Championship.

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"To collaborative team members, completing one another is more important than competing with one another."
By John C Maxwell, 1947- American Author, Speaker and Pastor
This quote by Maxwell reminds us to use the slower winter months to enhance our skills building our departments team as well as building valuable relationships with other departments.

THE GRASS ROOTS

is the bi-monthly publication of the Wisconsin Golf Course Superintendents Association. No part of the THE GRASS ROOTS may be used without the expressed written permision of the editor.

EDITOR
David A Brandenburg, CGCS
Rolling Meadows Golf Course
PO 314 Theresa, WI 53091
grassroots@wgcsa.com

2012 WGCSA OFFICERS AND DIRECTORS
Front Row: Colin Seaburg, Chad Harrington, Jeff Millies, Jim Van Herwynen. Back Row: Brett Grams, John Jensen, Scott Sann, Jon Canavan Kevin Knoblauch, Aron Hogden
Not Pictured: Scott Bushman

Finding Reasons Why You Can

By Jeff Millies, Certified Golf Course Superintendent, Edgwood Golf Course

The holiday season is over and we are into the year 2012. Many of us have already given up our New Year resolutions and are just hoping for a good and prosperous year. "Hope" might sound good in a speech but it's not a strategy for success and "wishing" is not a plan. If you are going to succeed you need real goals and a real plan.

The challenges we faced last year are most likely going to carry over into 2012. In fact, I think it's safe to say that some of these challenges will even get worse along with a few new ones being added. Our nation's economy seems to be heading down a destructive path with very few reasons to believe its going to get better.

During these uncertain times, the need for networking, education, and exposure to new ideas is more valuable than ever. Granted these opportunities may come with a cost, but are necessary for us to develop new skills and ideas which could potentially save money in the long run and re-enforce the value you bring to your organization.

Upcoming events include the Assistant Superintendents Seminar February 15th in Fond du Lac, The Golf Industry Show in Las Vegas is February 27 – March 2, with the WGCSA Hospitality Room Feb. 29th at El Segundo located at 3200 Las Vegas Blvd. And don't forget the Spring Business /Education Meeting in Fond du Lac March 12th. Please make an effort to attend these events.

During these uncertain times, the need for networking, education, and exposure to new ideas is more valuable than ever.

WGCSA 2012 membership renewals are due. If you haven't sent it in yet, please due so ASAP. Late renewals prevent the membership directory from getting finished and into your hands before the season starts. Or even worse, you may not be included in the directory.

The 3rd Annual Par 4 Research Auction will be taking place again during the Masters week April 1st-9th. Donations need to be confirmed by March 21st. Please donate a foursome with carts or any other golf related item and help support turfgrass research at UW – Madison. Currently this auction has raised and donated over $19,000.

Remember, it is easy to find reasons why we can't attend or contribute, but successful people look for reasons why they can. I look forward to seeing many of you at these upcoming events. Please feel free to contact me or any of the board members if you have any questions or concerns. We are here to serve you and we value your input.

WGCSA MISSION STATEMENT

The Wisconsin Golf Course Superintendents Association is committed to serve each member by promoting the profession and enhancing the growth of the game of golf through education, communication and research.

WGCSA VISION STATEMENT

The Wisconsin Golf Course Superintendents Association is dedicated to increase the value provided to its members and to the profession by:

- Enhancing the professionalism of its members by strengthening our role as a leading golf organization in the state.
- Growing and recognizing the benefits of a diverse membership throughout Wisconsin.
- Educating and promoting our members as leaders in environmental stewardship.
- Offering affordable, high value educational programs at the forefront of technology and service.
- Being key to enjoyment and the economic success of the game of golf.

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Winter Worries of a Different Kind

By Paul Koch, Turfgrass Diagnostic Lab Manager, O.J. Noer Turfgrass Research and Education Facility &
Dr. Jim Kerns, Department of Pathology, University of Wisconsin - Madison

The date is January 6th, 2012, a Friday. Outside, the temperature is 48°F. Yesterday, the high temperature was 51°F. A perfectly average January stretch of weather for Atlanta, GA. Except these temperatures weren't being experienced in Atlanta, GA they were being experienced in Madison, WI and all throughout the upper Midwest. Since December 1st, Madison has experienced just 8 days with high temperatures less than 32°F. Over that same period, Madison has had 16 days with high temperatures over 40°F. Total snowfall in Madison this winter has been 4.4 inches, more than 15 inches below normal.

For many residents of the Midwest these numbers are cause for celebration. No bundling up on the way to work, no slipping and sliding amongst icy highways, no backbreaking shoveling to clear the driveway. And at first glance, this should also be good news for golf course superintendents. Less snow equals less snow mold, right?

Whoa there pardner, not so fast. It is true that extended periods of snow cover are required for Typhula blight to occur, and snow does provide optimal conditions for Microdochium to infect as well. But what happens when the snow returns? Most of the fungicides we're relying on for protection of our turf (and jobs) were applied prior to Thanksgiving, almost 2 months ago by the time you read this. Do we expect 2 months of dollar spot control from the propiconazole or boscalid we apply in June? Of course not. Should we expect 2, 3, 4, or even 5 months of snow mold control from our fall fungicide application in the winter.

The answer, maybe surprisingly, is yes in most cases. In a 'normal' winter, disease breakthrough is the exception and not the rule. Tank-mixtures of 2, 3 or even 4 active ingredients applied in November routinely provide protection throughout the winter months. But what about a winter such as this, where snow cover has been for the most part absent. Do the fungicides degrade due to exposure to the elements such as sunlight, wind, desiccation, etc?

To answer these questions Dr. Kerns, Dr. Stier, and myself began a multi-year research project in 2009-2010 that has been partially supported by the Golf Course Superintendents of America, the Wisconsin Golf Course Superintendents Association, and the Northern Great Lakes Golf Course Superintendents Association. The research looked to evaluate the degradation of the common snow mold fungicides chlorothalonil and iprodione under snow cover and in the absence of snow cover and to determine at what fungicide concentration Microdochium patch begins to appear. Each fungicide was applied shortly prior to the first significant snow fall of the year, then weekly samplings were taken until snowmelt from plots kept continuously covered in snow and from plots kept free of snow cover (Figure 1 and 2). Samples were analyzed for fungicide concentration via an enzyme-linked immunosorbent assay (ELISA) and Micorodochium patch protection analyzed via the bioassay method.

Figure 1. The fungicide degradation research plot at the OJ Noer center. The non-snow plots are on the inside, while the snow-covered plots are on the left and right side of the plot.

Figure 2. Sampling cores from the snow-covered plots.

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The study is ongoing and all research results are preliminary, but in brief no significant differences in fungicide degradation were observed between snow and non-snow plots in either 2009-2010 or 2010-2011. Rather, fungicide degradation appeared to correlate more with soil temperature than the presence of snow. Once soil temperatures increased above 32°F, fungicide concentration fell rapidly (Figure 3) and disease severity increased rapidly during approximately the same time period (Figure 4). This suggests that microbial or plant metabolism of the fungicides, governed by temperature, is the driving force behind degradation of fungicides in a winter environment. Photodegradation of fungicides in our research did not appear to be a significant factor.

How do these preliminary results apply to the current situation? It suggests that with our without snow, fungicides will remain relatively constant if soil temperature remains at freezing or below. Along the same lines, if soil temperatures are consistently above freezing then fungicides will degrade and protection against fungal infection may be compromised after a prolonged period of warm soil temperatures.

With how mild most of Wisconsin and the upper Midwest was during November and December, a significant amount of fungicide applied in fall likely degraded. Whether enough remains to offer protection against snow molds if and when the snow returns is debatable, and depends on what product(s) were applied, at what rates, and the specific environmental conditions at that site.

Maybe the more pressing question though is not "Do I have enough fungicide remaining?" but rather "What do I do about it?" Many will consider a second fungicide application, but this should be done with great caution. As many superintendents learned from past ice-removal efforts, traffic on the course in winter can do more harm than good. And any fungicide applied should be a contact fungicide, as penetrant fungicides will need to be actively absorbed into the plant which is something not easily done in the winter.

As is usually the case, there is no one answer because of the unique conditions that exist at each golf course. The best response is likely one that is calculated, well thought out, and well communicated. In the next year the results of our research should be able to assist you in making more-informed decisions with regard to winter fungicides, information you can use to defend your decision to others at the facility. Peering out my window at the brown expanse of the OJ Noer…it looks like we might be one year too late.

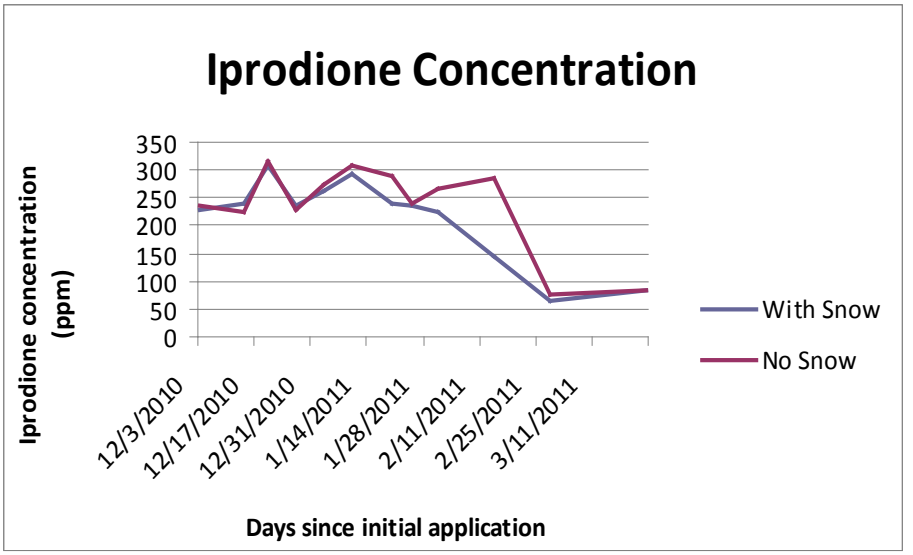

Figure 3. Iprodione concentration as measured by a commercially-available enzyme-linked immunoassay (ELISA) kit from Horiba, Ltd in 2010-2011.

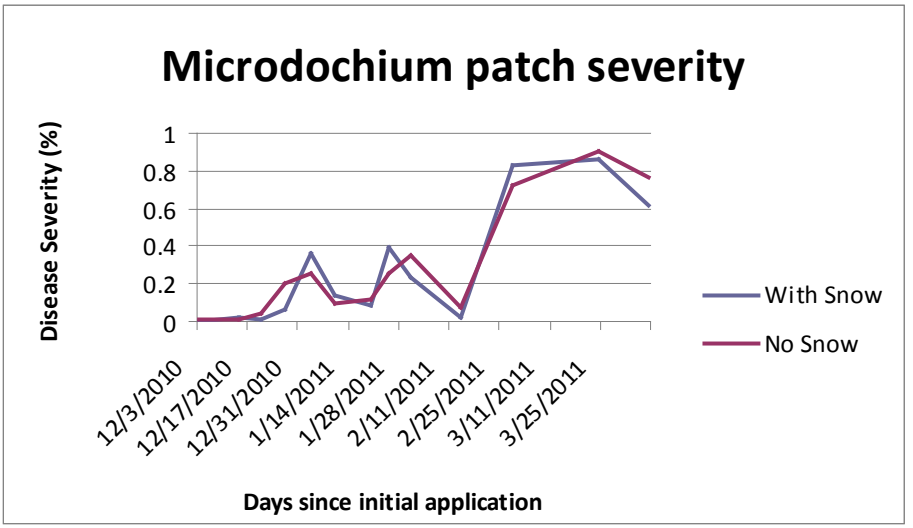

Figure 4: Microdochium patch severity in the growth chamber on cores sampled from the field and inoculated with M. nivale in 2010-2011.

Turfgrass Diagnostic Lab

OJ Noer Turfgrass Research & Education Facility
Paul Koch, Lab Manager
2502 County Hwy M
Verona, WI 53593

608-845-2535
Email - plkcoch@wisc.edu
Website - http://www.plantpath.wisc.edu/tdl

Thank you to the 2011 TDL contract members!!!

Names in bold are $1000 contract members

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Spring Valley Turf
Syngenta
Tripoli CC
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Watertown CC
Westmoor CC
Wistl Sod Farm

Agrium Advanced
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South Hills CC
Summit Seed
The Legend at Bristleone
Twin River Turf
Volkening Consulting
West Bend CC
Whistling Straits GC

How Growth Regulators Change Putting Green Nitrogen Requirements

By Dr. Doug Soldat, Department of Soil Science, University of Wisconsin - Madison &
Bill Kreuser, Ph.D. Candidate, Cornell University

Editors Note: Bill Kreuser received his B.S. and M.S. under Dr. Soldat at the Soil Science Dept. of UW-Madison. His research was funded by the Wayne R Kussow Distinguished Turfgrass Fellowship which was created and is supported by the WTA. Bill is currently a Ph.D. candidate studying turfgrass physiology with Dr. Frank Rossi at Cornell University.

Application of nitrogen (N) is a cornerstone of successful and sustainable putting green management. It is well known that an adequate amount N fertility sustains turfgrass color, stand density, and allows for recovery from stress and wear. However, determination of the amount of N to apply is not a simple task. Dr. Carrow et al. (2001) has outlined many of the factors that need to be considered to estimate how much N fertilizer should to be applied during a growing season (i.e. weather conditions, site conditions, level of play/wear, soil N mineralization, etc.). Many of these factors are difficult, if not impossible, to predict. Therefore, historical experience is commonly used to both estimate and schedule N applications during a growing season.

The reason we apply N is to replace N that has been made unavailable to the turfgrass plants. Nitrogen is made unavailable by losses of N from the soil (removing clippings, leaching, denitrification, and volatilization) and N immobilization by soil microbes. Nitrogen immobilization is often overlooked by turfgrass professionals. It's easy to think that every bit of N applied as fertilizer is available to the turfgrass plant when we take care to minimize leaching and other losses (except removing clippings). However, a majority of applied N fertilizer is quickly tied by soil microbes up (immobilized and unavailable to plants). This pool can eventually be mineralized (made plant available) later in the growing season or during future growing seasons. Unfortunately scientist have not yet determined a method to estimate how much N is immobilized within a particular soil or when and how much N will mineralize into plant available forms.

Direct N loss for the system is much more intuitive. Processes such as N leaching, denitrification, and ammonia volatilization are pathways of N lose that are very difficult to estimate and measure, but are normally minimized by routine management practices such as spoon feeding and not applying before large rain events. Nitrogen loss during mowing and clipping removal is the largest, and most consistent pathway of N loss. Removal of clippings during mowing doubles the N fertility requirements of Kentucky bluegrass lawns (Heckman et al., 2000; Kopp and Guillard, 2002). Because of this, most university recommendations state N fertilization should roughly match N removal during mowing. If you've been a regular *The Grass Roots* reader or have attended UW Turfgrass Field Day over the past five years you're probably heard about our GDD system to schedule Primo Maxx applications (trinexapac-ethyl, Syngenta Co.). We found that Primo Maxx can suppress putting green clipping yield for the entire growing season when it was applied every 200 growing degree days (base zero degrees Celsius; for more information reference the Sept/Oct 2009 issue of *The Grass Roots*). In order to complete this research we had to collect clipping yield every other day during the entire growing season. Out of curiosity, we decided to calculate how much N was removed during mowing be multiplying the total dry clipping mass by the average clipping tissue N content. To our satisfaction we found that our fertilizer rate roughly equaled N removal during mowing on plots not treated with Primo Maxx. However, plots treated with Primo Maxx every 200 GDD or less had significantly less N removal per week with enhanced turfgrass quality than the control. This led the question, "How do PGRs reduce putting green N requirement?" To answer this question we designed a three year study to better understand how growth regulators affect putting green N fertility requirements.

Experimental Design

This design of the study was simple. The study was conducted on a two year old 'Memorial' creeping bentgrass golf putting green, mowed six days a week at 0.125 inches and irrigated daily to 80% of potential evapotranspiration. There were a total of six treatments replicated four times for a total of 24 plots. The treatments included three N fertilizer rates of 0.1, 0.2, 0.4 lbs N/M applied every two weeks from urea with or without Primo Maxx. For ease of discussion the 0.1, 0.2, and 0.4 lb rates will be referred to as the half, standard, and double N rates, respectively. Both the urea fertilizer and Primo Maxx was applied with a CO2 powered backpack sprayer equipped with TeeJet AI 11004 nozzles and calibrated to deliver 2 gal/M. Approximately 0.2 in of irrigation was applied to the surface immediately following urea application to reduce potential volatilization. In 2008 Primo Maxx was applied every 3 weeks at 0.125 oz/M. This was amended in 2009 and '10 to 0.25 oz/M every 200 GDD.