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Winter To Do List

By Jake Schneider, Assistant Superintendent, Blackhawk Country Club

Everyone knows that golf course superintendents and their staffs spend their winters playing cards and drinking coffee in their shops. There is simply no work that must be done in the “off-season” to prepare for the coming season. Nope, the equipment maintains and sharpens itself, plans for next year take care of themselves, purchasing takes but a few minutes, and the snow always melts before it needs plowing. Obviously, you’ll have plenty of free time on your hands, and I hope that the following suggestions will keep you busy.

Get in Shape! Or, if you’re already in shape, get in better shape! I enjoy running and working out more than most sane individuals but will admit that the only exercise that I have enough motivation for in the summer is managing the staff, occasionally mowing, and dragging a hose. The last thing that I want to do when I get home is hit the treadmill, and I don’t even have kids. But, the fall through the spring offers a good window for those in our profession to get to the gym. Find something that you enjoy (as much as is possible), start slow, and don’t be afraid to meet with a trainer. And, if you choose running, you should absolutely visit a running specialty store to get the correct shoes; trust me, they make a big difference and will help prevent injuries.

Drive the Audubon! Two years ago, we began the process of attaining certification in Audubon International, and this fall, I began preparing certification request forms for four of the six categories that the program is divided into. If you’re just getting started, complete the environmental plan and begin setting goals and making plans for the coming year. I’ll be the first to admit that some of the required tasks are at times tedious and cumbersome, but after seeing the progress that we’ve made in two years, I can

say without reservation that it’s been worthwhile. Plus, it’s no secret that our industry could use some of the good publicity that can accompany certification.

Get Edu-ma-cated! One of my favorite parts only working 40-hour weeks during the dormant months is catching up on the latest research, happenings, and products. This year, the Wisconsin Turfgrass Association EXPO will be held on Tuesday, January 24 at the Kalahari Resort in Wisconsin Dells. The WTA always puts together a terrific educational lineup, and the Kalahari proved to be a great host last year. Of course, GCSAA’s show is heading to Sin City at the end of February through the beginning of March, and despite being too cheap to be an effective gambler, I’m pretty excited to visit Las Vegas for the first time. My dear mother, the patron saint of wholesomeness, had a series of conferences there a few years ago, and she enjoyed the city without either hitting it big or ample liquid encouragement. Oh, and the GIS be there, too.

Spend (a lot of) Time with Friends and Family! Despite living less than two hours away, I think that I made it back see my family twice this summer. Luckily, they’re used to it by now, and I’m sure that you’re in the same boat with your family and friends. During the heart of the season, most of us are too consumed with work for anyone’s good, and these are certainly the months to build up the equity that quickly disappears in summer. Personally, my equity should be at an all-time high by the middle of January, as I’m finally making an honest woman out of my fiancé and giving Scott Schaller the chicken dinner that he’s been hounding me about for the past three years. Have a good winter, everyone.

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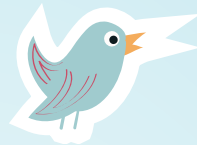
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How Do Plants Defend Themselves from Pathogens?

By Dr. Jim Kerns, Department of Pathology, University of Wisconsin - Madison

With the development of fungicides claiming to induce natural plant defenses as a means of disease control, I thought it might be nice to review how a plant defends itself naturally. Yes plants do have a natural defense system, but it is nothing like a mammalian immune system. There are some commonalities, but plants do not have an intricate army of specialized cells to combat microbial invaders. Rather, plants use specific molecules such as proteins, organic molecules such as salicylic acid, or individual elements like calcium to signal an invasion from a pathogen.

What's confusing about plant defense is there are two different pathways plant pathologists believe to be responsible for alerting the plant to pathogen infection (Figures 1 and 2). The two terms commonly used are systemic acquired resistance and induced systemic resistance. These are not the same pathway nor do they affect all pathogens. Systemic acquired resistance refers to the phenomenon that an infected leaf sends a signal to the rest of the plant prior to pathogen infection, which in turn confers resistance to the pathogen. This particular pathway relies on salicylic acid as a key molecule to induce this phenomenon. Specifically researchers have found this pathway to primarily affect biotrophic (pathogens that require a living host) pathogens such as viruses, rust fungi and powdery mildew fungi. However, the dollar spot fungus responds to this pathway as well.

Research from our lab indicates that removing the salicylic acid pathway makes the model plant, an Arabidopsis, more susceptible to the dollar spot fungus. Renee Rioux is currently conducting this work in my program. Our goal is to use this plant (think of it as the white mouse of the plant world) to glean more information about the interaction the dollar spot fungus has with a host and to see if we can apply what we learn from this dicot plant to a turfgrass system. At first we were skeptical of using a dicot to make inferences to a monocot system, but after carefully documenting the infection process in both species an Arabidopsis maybe a good tool. Furthermore, a new product called Daconil Action from Syngenta is hitting the market next year. This fungicide combines chlorothalonil with acibenzolar; the latter induces the salicylic acid pathway in plants. Daconil Action has performed well in our trials at the OJ Noer.

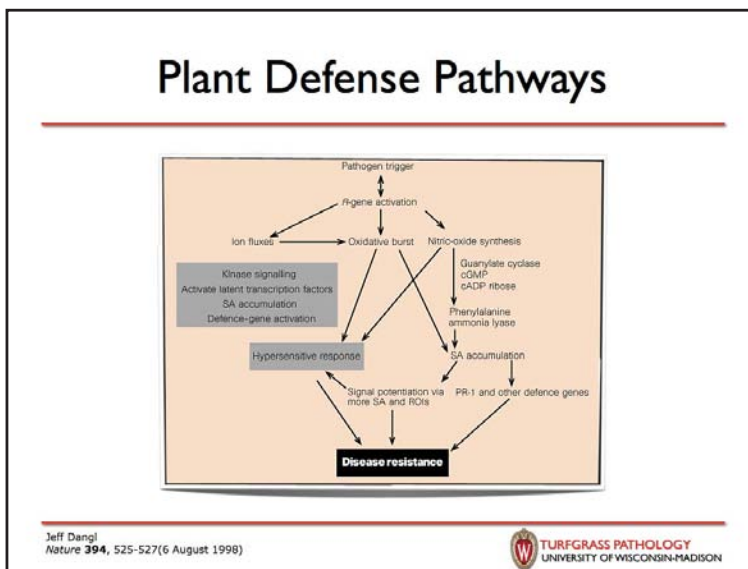


Figure 1. Flow chart of how a plant defends itself. Notice the importance of salicylic acid (SA) in the flow chart.

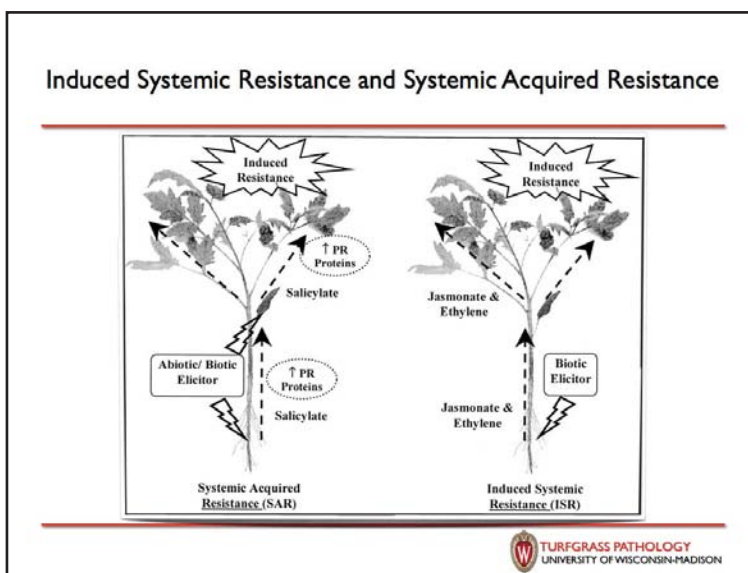



Figure 2. Comparison of systemic acquired resistance to induced systemic resistance in plants. Both are considered key defense pathways for plants and currently the thought is they are almost interchangeable. Yet there still is a difference in the types of pathogens these pathways are effective against.

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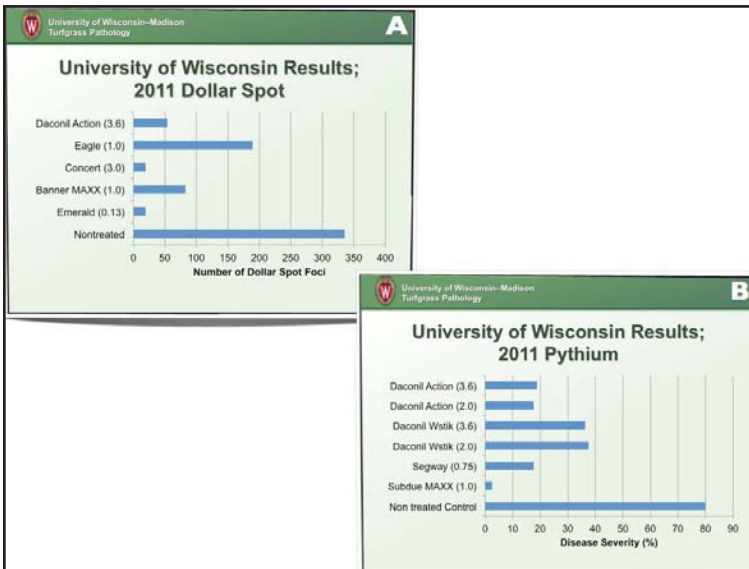
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WISCONSIN PATHOLOGY REPORT



We have seen dollar spot control extended from 7 to 10 days with regular Daconil to 14 days and we also observed decent Pythium suppression (**Figure 3**).

Currently there is a lot talk about this product and some of the talk is incorrect. In particular this product is not going to extend the residual efficacy of chlorothalonil to 21 days. We observed good control on a 14-day interval, which is a longer residual that we typically see with chlorothalonil by itself (**Figure 3**). Keep in mind that our trials are designed to induce dollar spot and the control windows we observed could be slightly extended or decreased depending on the conditions and management practices at your course. I mentioned that acibenzolar induces the plant innate defense response; well in order to take full advantage of this material the product needs to be applied preventatively! However, applications of this product in any climatic condition did not push turf over the edge. It is possible to see a slight discoloration, but nothing that would be considered injurious to the plant. Finally as mentioned previously, the salicylic acid pathway seems to work only on pathogens that have a biotrophic habit or phase. Thus dollar spot, anthracnose and Pythium blight are all either controlled or suppressed with this product.

Figure 3. A) Dollar spot control with Daconil Action and other fungicides. Daconil Action was applied on a 14 day interval as were the other fungicides (except for Concert which was applied on a 7 day interval) and this rating was conducted on September 20th, 2011. B) Pythium control with various fungicides. All products were applied only once on July 14th, 2011 and each plot was inoculated one day later.

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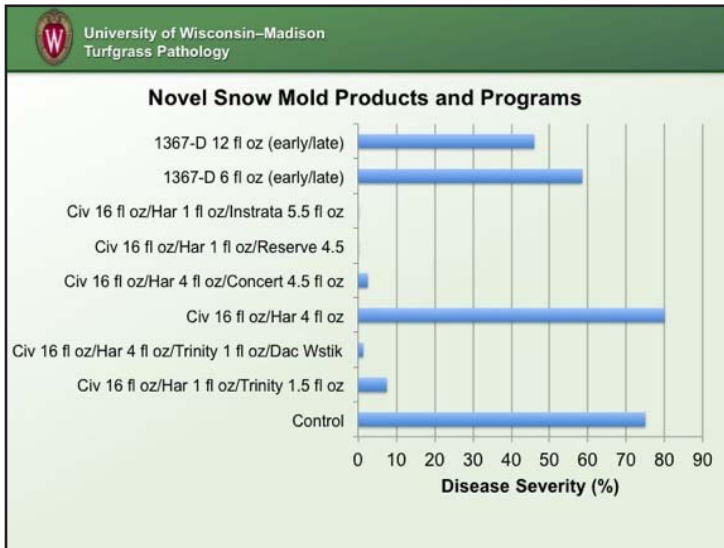


Figure 4. Control of snow mold with novel fungicide products, which included mixtures of Civitas and various other chemistries. Alone Civitas did not suppress snow mold development, but when mixed with standard fungicides, some at fairly low rates, excellent control was achieved.

The brown patch fungus however, does not appear to be affected by the salicylic acid pathway, leaving just chlorothalonil (not strong on brown patch) to control the fungus.

The other defense pathway plants use for defense is the jasmonic acid pathway. It is a very similar pathway to the salicylic acid pathway, but this pathway seems to be more effective against necrotrophic pathogens like *Rhizoctonia solani* (brown patch). The difference between these two pathways is the molecules used for signaling. The phenomenon triggered by jasmonic acid is induced systemic resistance (ISR). The product Civitas is thought to induce the jasmonic acid pathway in plants. Currently Dr. Tom Hsiang at the University of Guelph is investigating the effects of Civitas on ISR and has shown that when applied early enough ISR is activated. This could be an explanation for the results we observed with tank mixtures of Civitas and lower rates of fungicides for snow mold control (Figure 4).

Plant defense is an extremely complicated process that involves an intricate system of signaling molecules and proteins. It is important for golf course superintendents to start understanding the natural plant defense systems because products are on the market that stimulate these defenses. The more you know about the plant and how it defends itself will help you make an educated decision on the value of some of these products.



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Assistants Meet at O.J. Noer for Fall Round Up

By Brett Grams, WGCSA Chapter Manager

Engaged, professional, and inquisitive... That is how I would describe the attendees of this year's Inaugural Assistants Fall Round Up.

I am happy to report that the newly formed Class C Committee is working hard at trying to serve the Assistant Members of our association. The assistants met October 25th at the OJ Noer Research Center. The education portion of the meeting was presented by Dr. Jim Kerns. He gave a one hour presentation on the history of fungicides. This presentation was a good review of how the majority of fungicides in use today came into existence.

The advances of research and development of technology driven by WWII played a pivotal role of many of the products that we still use today. Dr. Kerns pointed out some pivotal points in the evolution of the fungicides we used including the creation of the first systemic fungicides introduced in the 1950's. He also explained that when golf began to be watched on television and especially color television in the 1960's the demand for disease free turf became even more intensified.

Today's fungicide offerings have evolved into safer and more effective products but the impact of cost per treatment is now more important than ever. The future of fungicides for golf turf will continue to evolve as the cost of meeting regulatory approval and getting a product from R and D to the market are substantial. As these costs continue to rise it will continue to impact how many products will be brought to market or even

remain available in the coming years.

After the presentation the group was able to tour the rest of the OJ Noer facility including the Turf Diagnostic Lab, the equipment storage area, the new pesticide storage and mixing building and the research plots. Dr. Kerns was kind enough to explain the various trials that are conducted on the multiple plots.

Research projects of all kinds are always being conducted at the facility. Plots range from USGA type constructed greens grown on sand based rootzones and maintained at greens height to native soil plots growing turf at rough height. Shade studies, wear tolerance, nutrient runoff, NTEP trials, private studies for companies, as well as research funded by the WGCSA are just some of things taking place at this time. As so many things are going on during the annual field day each July I liked having the time to see the facility at a much slower time of the year.

All of us who attended learned a little more about what goes on behind the scenes at the facility. Thanks to a dedicated staff and a highly qualified group of researchers and the strong backing of the turf industry in Wisconsin the OJ Noer Facility has become and will continue to be one of the leading turfgrass research facilities in the country if not the world.

Lunch was provided compliments of Nicholas Strain of Barenbrug who took time out of his busy schedule to cook brats on the grill for lunch. The casual atmosphere, good food, and great conversation were a great way to end the morning education. After lunch the majority of the attendees went next door to play 9 holes of golf at the University Ridge Golf Course. The golf event was coordinated by host Superintendent Aron Hogden. I was not able to play in the golf event but Class C Committee Co-Chair Kevin Knoblauch reported the course was in great condition and very nice to play.

Currently the Class C Committee is planning for the annual Assistants Meeting held on February 13th at Whispering Springs Golf Course in Fond du Lac. Please be on the lookout for more information as it develops.

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EDUCATIONAL SPEAKER:

DR. JIM KERNS

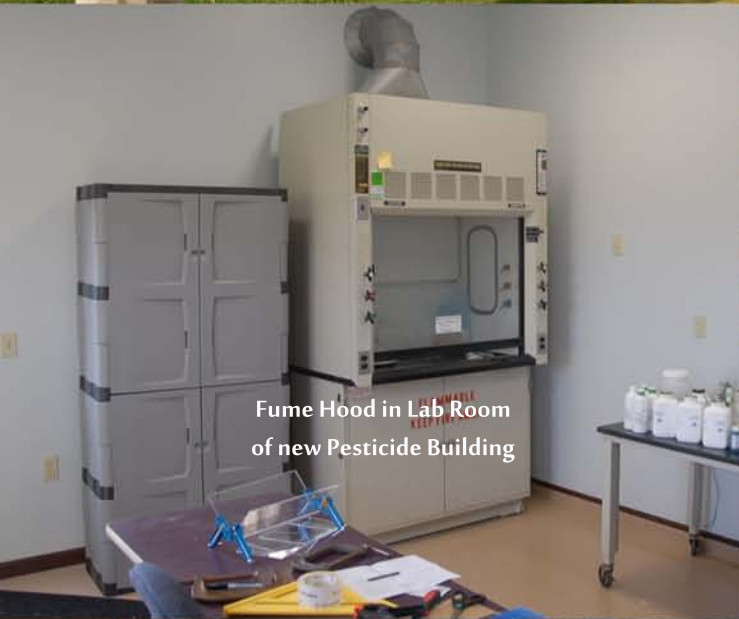
10/25/11 ASSISTANT FALL WRAP UP

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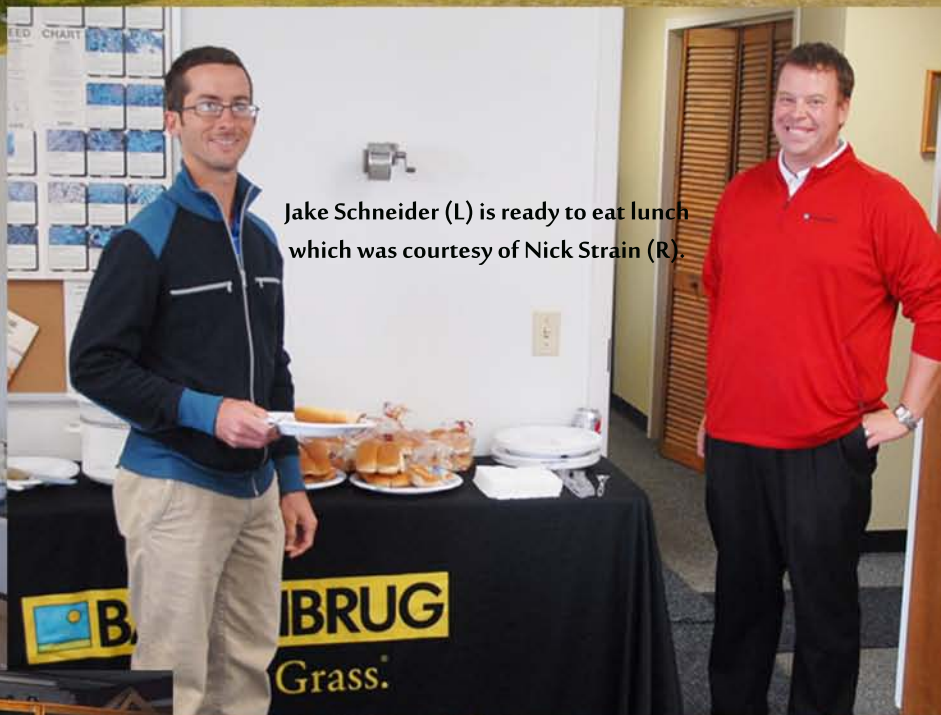
HISTORY OF FUNGICIDES



Dr. Kerns explaining some of the research being conducted at the OJ Noer Research Facility



Fume Hood in Lab Room of new Pesticide Building



Jake Schneider (L) is ready to eat lunch which was courtesy of Nick Strain (R).



Shop talk...



Interior of mixing bay in new Pesticide Building

Food, Fun and Friends at the Couples Outing

By Brett Grams, WGCSA Chapter Manager

The annual couples weekend was held Oct 7th and 8th in Minocqua. Near record high temperatures, fair skies and the beautiful fall foliage made the longer travel to the Northwood's of Wisconsin pleasurable Friday afternoon.

Friday evening was a simple hospitality gathering at the AmericInn Hotel in downtown Minocqua. Thanks to the generous support of the Company Members we were able to cater in some excellent appetizers, sandwiches, and deserts for Friday evening. The reception is always a great way to see old friends meet new members and their spouses. Like in past years the ladies were able to play cards and join in the laughter. A special thank you to Dean Musbach and John Jensen of Reinders who helped with bartending and hosting the Friday evening gathering.

Saturday morning was a bit cooler but still a fantastic day for fall golf. This year's event was again a 9 hole couples alternate shot format at the Minocqua CC. Host superintendent Bill Stein and his staff had the course in excellent condition for the very last event of the season for the club. My wife and I had an enjoyable round as we

were paired with Asst. Superintendent Andy Brownlow. I wish we could have used all of the "inside knowledge" that Andy provided during the round to improve our score.

It has been approximately 10 years since Minocqua CC was completely renovated from a 9 hole to 18 hole championship layout. Ron Garl was the architect for the renovation and utilized the beautiful trees, sandy soil, and hilly topography to make an impressive but fair course. Minocqua CC is a private club with a shorter season than most Wisconsin courses and is a combination of a modern and challenging course and the tradition of the nostalgic clubhouse which has the feel of the old Northwoods.

The results of the fun event were impressive and close. This year winners were 1st, 3rd, and 5th place receiving pro shop credit. Winners of this year's Mr. and Mrs. Mow traveling trophy was Jeff and Nicole Millies with a score of 43. Taking second was Mark and Karen Kienert (score card playoff), 3rd place winner was Jay Pritzl & Heidi Karns with scores of 44. Fourth place was Steve & Cheryl Schmidt (45), and 5th place winner were Greg & Lynn Kallenberg (46). The rest of the field had fun and were fairly close behind except for my wife and I who finished dead last with a 55 but still had a great time!

Participation was up from last year but we hope to grow the numbers even more. If you have never attended the event before or have skipped several years please join us next year! You do not have to be a good golfer to enjoy this relaxing event and we have condensed things to just Friday evening and Saturday. Pencil the dates of October 5th and 6th, 2012 when our host will be defending champions Jeff and Nicole Millies at Edgewood Golf Course in Big Bend, WI.


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