

The GRASS ROOTS

AN OFFICIAL PUBLICATION OF THE WISCONSIN GOLF COURSE SUPERINTENDENTS ASSOCIATION

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"As my father taught me, and he drove home that point, he said, 'Just remember something. You don't need to tell anybody how good you are. You show them how good you are.' And he drove that home with me. So I learned early not to brag about how good I was or what I could do but let my game take that away and show them that I could play well enough"

By Professional Golfer and Architect

Arnold Daniel Palmer, 1929-2016,

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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 permission of the editor.

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PRESIDENT'S MESSAGE

A River Runs Through It

By Josh LePine, Certified Golf Course Superintendent, Maple Bluff Country Club

It is currently mid-March and we are experiencing the rapid disappearance of snow and ice from the golf course here in Madison. The local news is bouncing from town to town covering the varying degrees of flooding around the state as rivers swell, snow and ice melts, with some help from the rain, all on deeply frozen ground. Many of our WGCSA members in the northern part of the state have been under thick ice cover since late December/early January. It is currently too early to tell if some will experience winter damaged turf but I understand it is on the minds of many of our fellow turf managers. I know firsthand how much added stress this additional concern puts on us all. I don't have the answers for you. I can only tell you, and myself, that you are not alone. Communicate well, be visible, reach out to neighbors for support and take it one day at a time.



Our Association work is progressing nicely. We appreciate all of the continued support for the Par 4 Research campaign. Our Committee attempted to contact everyone this offseason, via the good old fashioned phone call, to say hello, thank you for your membership and promote this great initiative.

All money raised by the online auction is donated to UW Turf Research. Thank you to all that donated. You will be receiving a thank you from our UW Turf Doctors highlighting the research that this initiative has helped fund over the past 10 years.

BMP Best Management Practices

Where Leadership & Action Intersect




The BMP Committee is currently reviewing our rough draft Best Management Practices for Wisconsin Golf Courses manual. We desperately need a variety of photos. Please take a moment to review the photo list on our WGCSA website and submit any photos to wgcsabmp@gmail.com We need your photos now in order to meet our goal for a completed manual by this fall.

Finally, please consider attending some of these quality upcoming WGCSA events at these fantastic venues.

April 24th: Super Pro at Blackhawk CC

May 13th: Morning Golf Meeting at Racine CC

June 18th: Golf Meeting at Hidden Glen GC

I wish everyone the best as we transition from shop work to pumping, cleaning and opening our golf courses. 



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.

PRESIDENT'S MESSAGE



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A Most Critical Year: A State of the UW Pathology Lab Update

By Paul Koch, Ph.D. Department of Plant Pathology, University of Wisconsin – Madison

It gets said all the time, but time really does fly. This is my 6th year since starting as a faculty member and my 15th (!) as a member of the UW Turfgrass Program running the Turfgrass Diagnostic Lab. If you want to get really picky and add the 3 years during my undergraduate days that I was part of the turf program, I'm at 18 years of involvement with the UW turfgrass program...that's exactly half my life so far! In the academic world, your 6th year is, as the title suggests, a most critical year because it's your tenure year. By the end of 2019, we should know whether I have been granted tenure or given the boot. Either way, putting together my tenure package has forced me to think of all the things we have accomplished over the last five years. Since I know it's hard to keep the various projects we have going on straight, I have provided a quick summary on all of our main projects below.

Iron Sulfate Impacts on Dollar Spot

This project is a collaboration between Wisconsin and Minnesota and is being funded by the Wisconsin GCSA, the Minnesota GCSA, and GCSAA. Last summer was the first year of the two-year project and despite numerous challenges from the summer flooding at the OJ Noer we observed some interesting results. First and foremost, iron sulfate was much more effective when applied every 7 days rather than every 14 days no matter the rate or the volume of applied water (**Figure 1**). Second, combining iron sulfate with higher rates of urea really didn't provide any added benefits compared to the iron sulfate alone. Third, water volume (0.75, 1.0, and 1.5 gal per 1000 ft²) didn't really impact the ability of the iron sulfate



Figure 1: A picture from July 18th, 2018 at the OJ Noer. The plot on the right receives 6 oz of FeSO₄ every 7 days in 1.5 gal of water. Compare that to the non-treated plot on the left.

to suppress dollar spot. We will be repeating this study in both Wisconsin and Minnesota this upcoming summer. Come to Summer Field Day to see the results for yourself!

Quantifying The Dollar Spot Pathogen

To date, most research on dollar spot has involved how many individual dollar spots were produced. This makes sense since from a practical standpoint this is what we care about. However this has left our knowledge of how the fungus actually works greatly lacking, and we received 3 years of funding from the United States Golf Association to help address this. We are collaborating with researchers from Rutgers and Massachusetts to develop an assay that can quantify the fungus itself in the soil even before symptoms have developed. That

assay was developed last year during the first year of the study and now in year 2 we will use that assay to see how things like temperature, soil moisture, and fungicide usage impact how the fungus progresses. We hope the results gained from this study will help us develop more effective, targeted dollar spot control strategies.

Success of Our Dollar Spot Prediction Model

We launched our Smith-Kerns model to the public last spring and from all appearances and feedback it was highly successful for those that used it. It's difficult to gauge how many people actually used it, but the website we created to explain the model received nearly 4,000 visits between the creation of the site in late 2017 and March 1st, 2019.

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WISCONSIN PATHOLOGY REPORT

In addition, the 'Greenkeeper' website reported 1,166 users accessed the model in 2018 through their website. Just this spring Syngenta announced they are offering the model as part of their suite of tools for superintendents, which will only increase the ease of use and exposure to the model. If you're looking to use the model in your operations this spring visit the webpage (<https://tdl.wisc.edu/dollar-spot-model/>) or give me a call to discuss the best way to implement it! We have several additional research projects using the dollar spot model planned for 2019, including collaborations with the USGA, Toro, Syngenta, and Winfield.

Snow Mold Fungicide Timing and Propiconazole Uptake

When should I apply my snow mold fungicides? It's one of the most common questions I get, and there are many different theories about what is best. Last winter we wrapped up a 3-year study funded by the Wisconsin GCSA and GCSAA conducted at Timber Ridge GC in Minocqua, WI and the OJ Noer Facility in Madison, WI. Look for more detailed results in a future Grass Roots article, but fungicide application timing had a huge impact on product efficacy and there are some promising environmental variables to help time that perfect application (**Figure 2**). We are currently looking for additional funding to continue this study for another 2 years.

Impact of Snow Cover and Anti-transpirants on Fungicide Persistence

This follow-up to our past work researching the impacts of snow cover on the persistence of chlorothalonil and iprodione, investigates the impact of snow cover on the persistence of propiconazole and chlorothalonil. In addition, we are also testing to see whether the addition of an anti-transpirant such as Transfilm® can help prolong the persistence of these fungicides. We have conducted this



Figure 2: Picture of the snow mold fungicide timing research plot in spring 2018 from Timber Ridge GC in Minocqua, WI. As should be pretty obvious from this picture, product timing plays a large role in product efficacy.

research the past three winters and in all of them observed that both fungicides degraded rapidly regardless of snow cover and regardless of the inclusion of an anti-transpirant. These results corroborated many of the same findings we observed in the previous study done with chlorothalonil and iprodione. This 3-year study is being funded by the Canadian Allied Turfgrass Research Office, the WGCSA, Syngenta Professional Products, and PBI Gordon and the results are currently being analyzed for final publication.

The Turfgrass Microbiome

The microbiome is the entire community of various microbes that interact in a given environment. The phytobiome is the microbial community associated with plants, and has recently become an area of intense study. We have initiated multiple research projects investigating the impacts that various pesticides have on the turfgrass microbiome using recently developed molecular techniques that allow for mapping of microbial communities with great detail. The goal of this research

is to 1) gain knowledge of the impact that pesticides have on the turfgrass microbiome and 2) to develop methods that will encourage healthy microbiome development that may improve plant health. Recently completed projects include one led by postdoctoral researcher Dr. Michael Millican (who has since moved on to the University of Minnesota) and M.S. graduate Emma Buczkowski (who has since moved on to Washington State University) who researched the effects of pesticide applications on the diversity of soil microorganisms. Another project included assessing soil microbial diversity immediately after a fumigation event and assessing how the microbial community reestablishes over time. This particular project was conducted at Knollwood Country Club north of Chicago following a renovation by Superintendent Drew Barnett and was repeated last summer at North Shore Country Club near Chicago following their renovation led by Superintendent Dan Dinelli. Analysis of these projects has been slow to come but we expect the publications will be submitted on all these projects within the next year.

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We have three additional microbiome-related projects in progress. One is led by Ph.D. student Lily Gonzalez-Vazquez and is studying how pesticide degradation is altered by changes in the microbiome. We also have a study underway looking at the response of soil microbiomes in golf courses to repeated pesticide applications and the implications for biological disease resistance. Finally, we are also investigating the role that soil bacterial communities play in the production of chemicals that naturally suppress dollar spot. Funding for this work comes from multiple sources, including Hatch Act funding, SciMed Graduate Research Scholars Program, and the UW-Madison Fall Research Competition.

Adoption of Low Input Fine Fescues

This large, federally funded project, is a joint collaboration with a number of institutions including the University of Minnesota, Rutgers, Purdue, Oregon State, and others. The scope of the project is large but seeks to address the problems with more widespread implementations of fine fescue and address them through a series of agronomic, breeding, and economic/marketing factors. Our specific role in this project is to help screen for more disease resistant fine fescue cultivars, develop rapid assays for detection of various root-infecting pathogens on fine fescue, and install a fine fescue demo plot on the University of Wisconsin – Madison campus (**Figure 3**).

The Common Ground Initiative

I haven't spoken much about The Common Ground Initiative since unveiling it to the industry in 2016. To briefly recap, The Common Ground Initiative is designed to provide incentive for turfgrass managers to reduce the non-target impact of their pest management programs. I wrote about the initiative at length in the November/December 2016 issue of The Grass Roots. While many sup-



Figure 3: A fine fescue demo plot on the UW-Madison campus is part of a United States Department of Agriculture research project. The plot is right along the Lakeshore Path near Bradley Hall dormitory and was installed by the campus grounds to see how it would handle student traffic flow.

port the initiative and have offered positive feedback, it has been the most controversial thing I have undertaken since I've been at UW. We have made numerous updates to the initiative in response to thoughtful feedback from many of you, these include considering a name change (there will almost certainly be a name change before we launch), considering different models to measure pesticide impact, providing more flexible options to the turfgrass manager, and conducting field studies to ensure disease control can still be achieved with lower pesticide impacts. The field study from 2018 showed again that no decrease in dollar spot control or turf quality was observed with environmental impact reduced by as much as 75% of the statewide average. This effort is currently being entirely funded by inter-

nal turf pathology program funds.

Thank You and Looking Ahead

Conducting the amount of research I have laid out above requires a lot of support, and I remain continually humbled by the support we receive from the Wisconsin turfgrass industry. This includes funding from the WGCSA, Turfgrass Diagnostic Lab contract memberships, hosting of research projects, or through simply providing us with feedback on things you like or areas we can address. Finally, none of our work would be possible without a dedicated staff, and I'm very lucky to say I have one of the best (**Figure 4**). Best wishes on the start of the 2019 season and I look forward to seeing you at meetings or out on the course to continue our work improving our state's great turf industry. 🌱



WISCONSIN PATHOLOGY REPORT



Figure 4: A huge thanks to all of the staff and students who made 2018 such a successful year for our program. Here we are, in order of finish, at the end-of-the-season mini-golf grudge match. From left to right: Audrey Simard (from entomology!), Kurt Hockemeyer, Paul Koch, Michael Millican, Emma Buczkowski, Sarah Arndt, Shane Sommers, Afona Irabor, Lily Gonzalez-Vazquez, and Jonathan Cors.



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Bringing a Putting Green Back To Life

By Jim Skorulski, USGA Green Section, New England and Eastern Canada Agronomist
Addison Barden, USGA Green Section, Southeast Region Agronomist

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Success is measured as much by one's response to a crisis as one's ability to avoid a crisis.

Putting greens are living systems. Like all living systems, they are impacted by biological factors and a variety of stresses. Despite even the greatest efforts from superintendents, putting green turf occasionally does die. Every superintendent who has been in the business long enough will have dealt with the trauma of experiencing putting green damage. The pressure to restore damaged greens can be immense; after all, putting greens are the lifeblood of any golf course.

Successful recovery programs do not happen by chance. The recovery process requires a well-thought-out plan of action that is appropriate for the level of damage, but the plan must also be successfully executed. This article will take a closer look at different levels of putting green damage and the processes used to formulate and implement a successful recovery plan.

SEVERITY OF DAMAGE

Estimating the severity of damage can be challenging, but it is an important part of formulating a recovery plan.

The level of damage will determine the appropriate recovery strategies. For the purpose of this article, putting green damage has been categorized into three levels. Appropriate recovery strategies for each level also are recommended:

LEVEL I

Size of damage: Small areas — i.e., no larger than a foot in diameter — of turf decline and loss. The damage does not directly impact putting quality near hole locations. Several areas may be damaged, but each area is small.

Potential causes of damage: Animal foraging, fallen tree or limb, equipment, golfer divot, aggressive scalping of the turf canopy, etc.

Recovery options: Various forms of plugging, sodding with a manual sod cutter, spiking and seeding, or natural regrowth if the damaged area is small enough.

Closure and traffic management: Likely not needed because the damage is small and reparable with relatively non-disruptive recovery methods. However, seeded areas will require special care prior to mowing.

Special considerations: Depending on the turf species, areas that are plugged might be visible for several months. Repair tools such as manual sod cutters, spikers, and hex or small diameter pluggers should be on hand for quick repair. Plugs can be taken from a nursery green or the perimeter of a putting green to maintain turf uniformity.



After saltwater flooding from Hurricane Sandy, Bill Morton and Dean Bozek assess damage and begin to formulate recovery plans for the 13th green at Misquamicut Club in Watch Hill, R.I.

USGA GREEN SECTION



Small-diameter damage can be quickly repaired with plugs and sand topdressing without disrupting play.

LEVEL II

Size of damage: Areas larger than a foot in diameter or width and impacting less than 50 percent of hole location areas. Also includes small areas of damage that are widespread across a putting green.

Potential causes of damage: Cold-temperature injury, disease, insect injury, abiotic stresses, vandalism, etc.

Recovery options: Sodding, large-scale plugging, spiking, and seeding.

Closure and traffic management: Anticipate some disruption to play. Avoid placing hole locations in damaged areas and treat them as ground under repair (Rule 16) until fully healed. Minimize traffic in the damaged areas for as long as possible.

Divert traffic with rope lines or provide a plywood walkway in heavily trafficked areas such as entry and exit points. In some cases, placing ball retrievers near recovering areas can help golfers retrieve their balls without stepping on newly sodded or seeded turf.

Special considerations: Source enough sod to patch all damaged and thinned areas to achieve surface consistency.

Large areas that have been repaired from seed or sod will be visible and more susceptible to stress until they fully mature. If Level II damage occurs, the entire putting green should be treated with care until the recovering areas are fully established.

LEVEL III

Size of damage: Large areas of turf loss or damage to more than 50 percent of available hole locations.

Potential causes of damage: Cold-temperature injury, flood damage, summer decline, etc.

Recovery options: Sod, seeding, or sprigging.

Closure and traffic management: Putting greens with

Level III damage will likely require complete closure because of a lack of useable hole locations. Even in situations where half of the hole locations are still useable, increased traffic in areas that have not been damaged will likely lead to additional turf decline or loss. For proper recovery, temporary greens are recommended for this level of damage.



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USGA GREEN SECTION

DEVELOPING A PLAN

Once damage levels and recovery options are defined, a recovery plan that addresses common turf loss situations should be developed. Include recovery plans in standard operating procedure documents so procedures and expectations are clearly communicated.

The formulation of a recovery plan will depend largely on the degree of the surface damage and the time needed to bring the greens back in play. It is critical to estimate the extent of the damage as early and as accurately as possible. This may require early sampling in some areas where turf has not yet broken dormancy. Recovery plans for Level II and Level III damage usually involve seeding programs or the use of sod or sprigs. Each option has its pros and cons, so it is important to determine which is best suited for your situation as early as possible.

PLANNING A SEED RECOVERY PROGRAM

Seed germination and establishment are mostly driven by temperature. Include methods that promote favorable soil temperatures — i.e., 60 degrees Fahrenheit or higher — in recovery plans. Methods to raise soil temperature could involve the use of clear plastic drop cloths, permeable agricultural or turf covers, or darkening agents. Plan ahead to ensure that you will have access to enough cover material should damage occur. Check to see if covers can be borrowed from other golf facilities or consider purchasing some covers as an insurance plan. Also, check with your topdressing suppliers to see if they provide darkening agents such as black topdressing sand. If you decide to use a darkening agent, determine how and when it will be used.

Seed placement is also critical to achieve good germination. Recovery plans should provide the steps used to prepare a seedbed and outline seeding procedures. Include the equipment and personnel that will be used in the plan. If seeding cannot be accomplished with the equipment you have available, check in advance to see if it can be borrowed.

You may also be able to identify contractors in your area that provide seeding services.

Often, more than one seeding event is required to achieve complete recovery, so recovery plans should account for multiple seedings. Plan to use less-disruptive spike or drill seeding equipment or hand spiking tools to minimize damage to establishing plants.

PLANNING A SOD RECOVERY PROGRAM

Sod offers the fastest route to recovery and is usually the most practical choice for greens with Level II and Level III damage that need to be put back into play quickly. However, using sod can be difficult. Complications of using sod include difficulty maintaining surface uniformity and potential for soil-layering issues. Whether patching isolated weak areas or repairing extensive damage, using sod requires considerable planning.

The first and most important consideration when using sod is its source. Sod can be sourced from a putting green nursery, existing greens, or a commercial grower. Using sod from a well-maintained nursery is desirable for patching or plugging work. An effective recovery plan should reflect the amount of sod available from on-site nurseries. It should also include contingencies for sourcing sod from other greens or commercial growers in the event of extensive damage.

Commercial sod may be the only viable option when widespread damage occurs. Selecting sod is a critical component of any such recovery plan. Factors to consider include the availability of sod and the grass species and cultivars that are offered. It is also important to consider the parent rootzone material of any available sod. If the sod's rootzone is incompatible with that of your playing surfaces, it may need to be washed. Ideally, sod should not have an excessively thick thatch layer. Quality sod can be in high demand, so it is advantageous to establish relationships with sod growers before you experience severe damage.



Diffuse areas of damage away from hole locations or small areas of damage in areas used for hole locations can sometimes be repaired with minimal disruption to play.



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USGA GREEN SECTION

Plans for recovering from Level III damage may involve regrassing entire putting greens. Such extensive work provides an opportunity to address other deficiencies in a green complex, so consider including drainage projects, green expansions, surface restorations, regrading work, or even complete green reconstruction in recovery plans. At the very least, remember to plan adequate time and resources for sod removal, surface preparation, and sod installation should Level III damage occur. Also, make sure to establish in your plan an appropriate timeline for plugging and patching work that identifies who will be responsible for completing the work. Plans for large-scale regrassing projects should also consider the potential scope of any work that may need to be done. The plan should provide guidelines for determining what can be accomplished in-house and what is best achieved using a contractor.

PUTTING GREEN CLOSURE AND TRAFFIC MANAGEMENT

Deciding to close a putting green or control traffic can cause controversy, but these decisions are important components of any recovery plan. Ultimately, the level of damage and the recovery method employed will help dictate decisions about putting green closures and traffic-management measures. Unfortunately, unpredictable weather conditions make it difficult to define recovery periods. When seeding, anticipate a minimum of 60 to 80 days before a severely damaged surface is mature enough to tolerate traffic.

Although variable, expect approximately four to five weeks before sod repairs can be subjected to normal traffic.

Pressure will mount to reopen putting greens as they begin to show signs of recovery. In your recovery plan, provide some basic guidelines that establish when damaged greens can be reopened and how traffic should be managed over newly sodded or seeded surfaces to minimize the risk of further injury. Consider the number of rounds to allow on recovering greens and establish plans to proactively close putting greens if the recovering turf show signs of decline or stressful weather occurs. Traffic problems associated with prematurely opening recovering putting greens are common causes of delays and failures. Clearly identify in your recovery plan who will be given the authority to make decisions about opening and closing putting greens.



Widespread damage that affects more than 50 percent of hole location areas requires significant recovery efforts. Severely injured greens will likely need to be closed for major recovery work using seed or sod.



USGA GREEN SECTION



Sod harvested from an on-course nursery or another putting green is preferable for patching and repair work in areas where surface uniformity is important.

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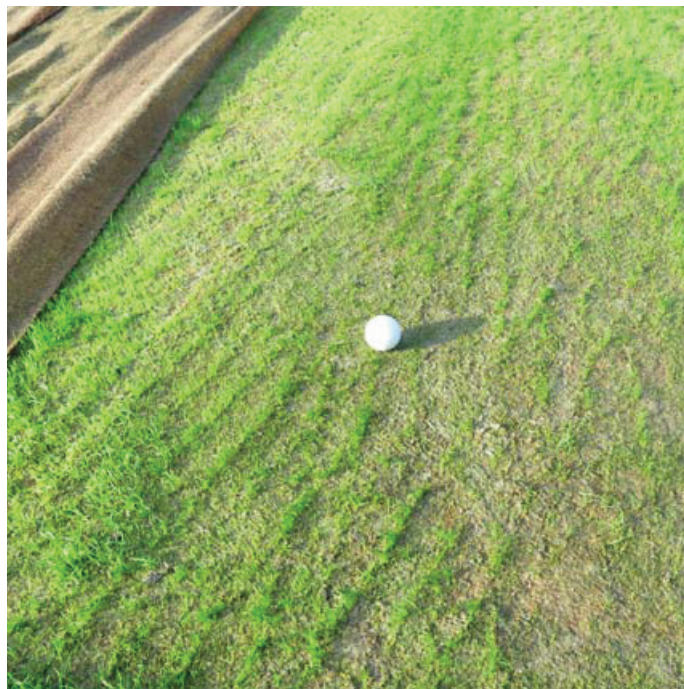
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COMMUNICATION

Arguably, the most important component of a successful recovery is communicating before and during the recovery process. Putting green closures are never desired, but clearly defining the purpose behind closures will help facility managers communicate their occasional need to golfers. During the recovery process, weekly memos to golfers can help update them on the recovery progress and when to expect recovering greens to be reopened. Remember, there will always be pressure to open greens as early as possible. However, stay strong and focused on completing the recovery program. Avoid prematurely opening greens to ensure the best quality and most durable playing surfaces going forward. Recovery is one time when patience truly is a virtue.

TIPS FOR RECOVERY SUCCESS

- Evaluate and categorize the level of damage on each putting green as early as possible.
- Determine which recovery methods are most practical for each putting green.
- Secure seed, sod, covers, seeding and cultivation equipment, or other materials as early as possible.
- Work some level of flexibility into the recovery plan for poor weather and other unforeseeable events.
- Try to establish quality temporary greens and establish guidelines to determine when and how to reopen putting greens.
- Include post-establishment management procedures for juvenile turf established from seed or sod in the recovery plan.
- Provide regular updates on the recovery progress.
- Try to make a positive out of a negative situation by using the recovery process to address other issues that contribute to poor putting green performance. Doing so will provide long-lasting benefits.



Plastic drop cloths, permeable covers, and darkening agents may need to be included in a recovery program to elevate soil temperatures and promote seed germination in cold climates.

CONCLUSION

Unfortunately, putting green turf loss is something that can happen despite your best efforts. Remember, successful recovery programs do not happen by chance. The recovery process requires a well-thought-out plan of action that is appropriate for the level of damage, execution of the plan, and regular communication with course officials and golfers. Take advantage of the opportunity and stay positive. Repairing damaged putting greens provides you with an opportunity to demonstrate your expertise and value at a golf facility. 🌱

USGA Course Consulting Service

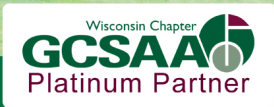
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Snow Mold Ratings Coming To A TDL Website Near You

By Kurt Hockemeyer, Turfgrass Diagnostic Lab Manager, O.J. Noer Turfgrass Research and Education Facility

We are finally getting a thaw here in Madison in the second week of March. This is by far the most snow I've seen in Madison in my 4 winters here. Despite the warmest temperatures since Halloween this week, I still think this amount of snow will be sticking around for a while. Traditionally, we have rated the Madison snow mold site right about now, in mid-March. But it looks like we might be waiting a bit longer. In my few years here at UW-Madison, we have never had any snow mold pressure at our Madison snow mold site. And based on the lack of snow cover in December and early January, I don't

think snow mold pressure will be high again this year, but maybe with the extended length of snow cover since mid-January, we may get something this year. Our smaller snow mold trials that we conduct at the OJ Noer have had better luck with getting snow mold damage. This can probably be attributed to the smaller size of the trials, therefore making it easier for us to control environmental factors affecting snow mold development (e.g. winter covers and inoculation). Due to the size of our large snow mold trials, we cannot fit all of the treatments on an area large enough that is made up of the same bentgrass cultivar.

As we look north to our central Wisconsin snow mold trials, there has been a lot of concern about ice cover in that area. Therefore, I have received several questions about ice cover damage and whether it is worth removing ice. I personally don't have a lot of experience with ice cover, but I reference other turfgrass scientists who do have that experience. Dr. Kevin Frank at Michigan State has focused some of his research on the different types of winter damage, including ice cover. He says that many times, ice cover is blamed for damaging turf, when in fact it is more likely that crown hydration is the real culprit.

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Both of these types of winter damage will occur in the same spots, low lying areas where water collects when snow melts, making it harder to distinguish between the two. Bob Vavrek published a good article this winter about winter damage. You can find his article on usga.org. Another thing to consider when thinking about removing ice, is that you can cause more damage than you mitigate. Exposing the turf to the cold and dry air can dessicate plants and the forces of removing the ice can damage putting surfaces as well. One thing that is generally accepted, is that creeping bentgrass is much more hardy under ice cover than annual bluegrass.

If we move further north, we look at our Minocqua and Marquette, MI snow mold sites. These two sites

have almost always given us the best research data every year. By testing at sites that consistently get disease, we can collect the data that will be most meaningful to you, the turfgrass manager. I keep seeing pictures from Marquette on Twitter, and every time I am awed by how much snow cover is there. Last year, the snow mold plots in Marquette were under snow cover for almost 6 months! This led to pretty much 100% turf death in the non-treated research plots. This year, I believe they are at about 4 months of snow cover right now. It will be interesting to see how much longer that snow lasts up there.

So as we start to warm up and the snow and ice start to disappear, Dr. Koch and myself will not be far behind, rating the snow mold plots.

Then I will start compiling and analyzing data, making the reports, and then publishing them on our website. As always, we love to hear from the practitioners themselves who are actually out in the world using our data. By hearing from you about your concerns, your successes and your failures, we get ideas of where scientific knowledge is lacking. Then we can customize our research priorities to help answer those questions and increase the scientific knowledge where it will be most impactful. ✓

Kurt Hockemeyer
Turfgrass Diagnostic Lab Manager
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tdl.wisc.edu



Figure 1. Snow mold damage after the 2017-2018 winter in Marquette, MI. The most snow mold damage Dr. Koch and myself have ever seen. We have yet to see if any of our snow mold sites will have anywhere near this much damage.

Bored of Education

By Jake Schneider, Student, Trondheim, Norway

Food Science 120: The Science of Food

Geology 331: The Science Behind the Sparkle

Geology 333: The Age of Dinosaurs

Animal Science 200: Biology and Appreciation of Companion Animals

A short but handsome guy, that I admire in the mirror multiple times per day, took the above list of courses during his final undergraduate semester of college, and as you can see, they had a strong correlation to the Soil Science Degree (with a Turfgrass Management emphasis) that I obtained. As evidence: 1) it was necessary to have a proper understanding of how the food that I ate during work breaks was constructed, 2) you never know when you might come across a random gemstone when digging an irrigation hole, 3) or find dinosaur bones while digging, and 4) it was helpful to be able to properly identify the unleashed dogs that were illegally running around on the golf course. Safe to say that it wasn't exactly a stressful semester, but considering that I just needed to fill some of the basic requirements and that tuition wasn't being paid out of my pockets or those of my parents, I didn't see the point in taxing myself too much. Mission accomplished.

I'm fairly certain that I wasn't the first or last college student to take elementary electives simply for the sake of checking off the boxes that the higher-educational institutions developed for the sake of broadening our minds and collecting our money, and to be honest, I would do the same thing over again if given the chance. Don't get me


wrong, the knowledge that I gained in the UW-Madison classrooms was invaluable to my career, and many of the more respectable electives that I took were enjoyable and enlightening to the sheltered, small-town kid that I was. And, maybe more than anything, the college "experience" is something that I can't imagine not having. However, it's obvious that much of what goes into getting a Bachelor's Degree is not only unsuitable for some, but also not necessary for professional success in many fields. Frankly, I think that Americans would be better off if there were less focus on this educational goal and if more opportunities and emphasis were put into vocational training for those who realize early on that they aren't interested in pursuing higher education in the form of traditional 4 year degree.

Frankly, I think that Americans would be better off if there were less focus on this educational goal and if more opportunities and emphasis were put into vocational training for those who realize early on that they aren't interested in pursuing higher education.

The textbooks that are most commonly used to teach Norwegian do a good job of integrating relevant information about the country (which is especially helpful since the actual language seems to be just about impossible), and the public education system is a topic that we recently covered. Here, high school kids, are given the option to choose study paths that are divided between vocational and general studies. The general studies option is similar to the traditional American high

school regimen of classroom work, but with the vocational path, the students have two years of school training followed by two years of apprenticeship work. To me, this is brilliantly logical and a great way to customize education for those who have no interest in going to college. It also explains why I saw two baby-faced kids no older than 16 working on a construction site during a weekday.

The golf course maintenance industry is further evidence that spending four years earning a degree in drinking cheap beer in pursuit of a diploma isn't always necessary. There have been many extremely successful and well-paid superintendents who have gained all of their knowledge either on the job or through a condensed certificate program. With this, I was excited to hear about the partnership between the UW-Madison Short Course Program and the Turf Department, and I hope that it ushers in a new era of success and higher enrollments. Getting to learn from the likes of Drs. Soldat and Koch without getting swamped in student debt sounds like a winning proposition.

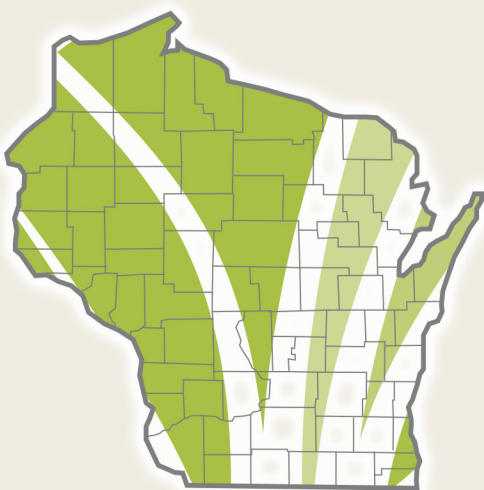
All of this isn't to say that I think that turf professionals shouldn't pursue Bachelor's Degrees as I do believe that a well-rounded knowledge of business and communication along with the ABCs of agronomics are extremely helpful with the increasing responsibilities that many golf course superintendents' jobs call for, but with declining enrollments in turf programs throughout the US, it's clear that innovation (and higher pay for assistant superintendents) is needed to maintain Wisconsin's place as a renowned institution of turfgrass research and education. 

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MEMBER SPOTLIGHT

Neil Radatz

By Josh Lepine, Certified Golf Course Superintendent, Maple Bluff Country Club and
Ben Labarre, Golf Course Superintendent, The Legend at Bristlecone

Author Note: Thank you to everyone who participated in the Membership survey. The information and feedback obtained was invaluable. The requests for more member spotlight stories inspired us to produce this column. We hope to randomly highlight a few members each edition from all geographic areas, facility types and membership classifications. It may take us 20 years to get to everyone in the directory but please be ready for that phone to ring and be prepared to share stories, photos and information about YOU!

Name: **Neil Radatz**

Company Position: **Certified Golf Course Superintendent, Hawks Landing Golf Club, Verona**

Years as WGCSA Member: **21**

Membership Classification: **A**

Bio: I graduated from The Ohio State University in Turfgrass Management. I worked as an Assistant Superintendent at Inverness Club for 10 years. During my time there we hosted a PGA Championship and one of the most prestigious amateur events in the country at the time.

My first superintendent position was a new grow-in at an Arthur Hills designed course near Toledo, which opened as a top 10 new course in the country. Mike Oliphant hired me in 2000 as the new Superintendent for the grow in of Hawks Landing Golf Club.

I have been fortunate to be involved in many of the advances in our industry in what we all consider the norm today. I was involved in one of the first installations of the E-Osmac irrigation systems in the county, One of the first clubs to work on the transition to soft spikes golf shoes, topdressing with bagged sand using fertilizer spreaders and the implementation of lightweight fairway mowers.

18 Holes With Neil Radatz

1. How did you get started in the turfgrass industry? I was attending University of Toledo, which wasn't going so well and needed a change. Looking for a job I pulled into a very unassuming chain link fenced off property, which ended up being the Inverness Club. The club was ranked 30th in the country at the time and got the job. I knew absolutely nothing about golf. After 2 seasons I went to OSU graduating #1 in the turf program. I stayed at Inverness for a total of 8 years as an Assistant.

2. What is the most rewarding part of your career? I have been involved in 3 very successful grow-ins; greens at Inverness Club and 2 full course planning, construction

and grow-in projects as a Superintendent.

3. What would you consider to be your greatest career challenge? There have been a few but this past August has to top them all. We had over 10 inches of rain in 5 hours which caused our shop to flood with 3 feet of water. We had a lot of damaged equipment including our irrigation computer and our grinders.

4. Which three adjectives describes you the best? Tireless, passionate and a little headstrong

5. Tell us about your family. I met my wife Shelley in High School. We have been married for 27 years. She has been there from the beginning, and I have to give her a lot of love and thanks for everything she has been through. We have 2 children, Ashley graduated from UW-Madison and is an accomplished horse trainer and rider. My son Matt is my Equipment Manager here at Hawks Landing.

6. Any pets? We have 2 cats and 2 border collies, The dogs usually go with me every day. I trained them to herd sheep as well as geese on the course.

7. What drives/motivates you every day? To do better than the day before.

8. Who Do You Admire? Tom Walker the Superintendent at Inverness Club. He was the most intense and smartest man I think I will ever have the privilege to work for.

9. Who is the person in history you'd most like to meet? A course walk with Donald Ross



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MEMBER SPOTLIGHT

10. What's a fun fact that people don't know about you?

I worked personal security in the early 90's. The 2 most interesting nights were with Mr. T's and Dennis Rodman's detail. I won a major herding competition with one of my border collies a few years ago.

11. What do you do in your spare time, favorite hobbies?

I have no real hobbies but I wish I had more time to compete and train my dogs in herding. I also enjoy watching my daughter compete at horse shows.

12. If you could go anywhere in the world on vacation, where would you go? Any island.

13. What is the one thing you would like to learn/accomplish someday? Become fluent in Spanish

14. What is your favorite turf management related tool or technique? Right now it has to be our new Foley grinder. The time it saves and the quality of grind compared to our old manual grinder is amazing. This grinder will not only provide better turf conditions but free up valuable time for our equipment manager. Our old grinder was damaged in the flood and had to be replaced.

15. Favorites:

TV Show: NCIS

Movie: The Jason Bourne Movies

Food: A Good Steak

Sports Teams: The Ohio State Buckeyes but becoming a Badger Fan

16. Do you golf? Handicap? Best shot or golf story? I enjoy the game but don't play enough. I am really good with the putter and a wedge not so good with the rest. I would say a good round for me would be low 90's.

My best golf story comes from working with Bill Sharp from Toro installing the first E Osmac system at Inverness. He somehow brought up every sprinkler on the 18 hole with 6 groups of ladies playing. To this day he doesn't forget the aftermath.

17. Top Bucket List Item? I wish I could visit more National Parks.

18. If you could provide one piece of professional advice, what would it be? Communication. 



Neil and the course maintenance staff at Hawks Landing Golf Club

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Did You Do That Thing I Told You To Do This Morning?

By **Bruce Schweiger**, Manager, O.J. Noer Turfgrass Research and Education Facility

As I sit in my office pondering what this article should be about, ice damage, snow mold, hiring staff, winter maintenance or what we really do during the winter (I bid four spades). This is all too dismal so I am going off the rails and talking about a seminar that I took last fall; "How To Be The Best Manager You Can Be."

First and foremost, I am not that manager. Although I strive to be, some of what they taught was familiar but I am not in that category. What did I learn?

The most important things I learned was that being a manager does not mean you know everything about all things. Being a good manager does not mean your reason to do things are because I said so, as managing by fear does not provide long term success. The best managers in the world have areas of deficiencies. These managers admit their shortcomings and find ways to balance both capacities. They attempt to hire people that are very good at a particular aspect of the operation that they admit they are deficient at. Then there are the dictator managers. They get things done but might find themselves always in search of new staff. These people can be successful but they create many casualties in their wake. Often times it is not a harmonious work environment when the staff is afraid to express their ideas.

A golf course superintendent might be fairly good when it comes to equipment but the wiser choice is to hire the best equipment technician. Sure, the superintendent may know the maintenance schedule or when a machine is not

running correctly but does he/she know how to troubleshoot and repair the issue? In my case, I cannot build a wooden box, so when I hire people I look for someone that has good woodworking skills. I know when you turn on a light switch the light is supposed to turn on, but when it does not, a qualified person needs to fix it. In short, don't pretend you're an expert on everything, you are not. Hire qualified people and when in doubt hire licensed contractors to do the work.

For the last twenty years, when employees were surveyed, their highest needs from a job are not money. Wages tend to fall down the list to number four or lower. I know a few people will leave for a little extra money but most do not. Employees are looking for a place to work that cares about them personally. A company or manager that respects the idea that family comes first, knowing they can have time off when they need it and the manager gets to know them as a person. Management relates to them in a way that is significant to the employee and more important they feel respected.

How do you respect your staff? When there is an issue that comes up, do you involve them in the planning process? Do you ask questions and gather input from your entire staff? If they have a good idea, do you make sure they get credit within your crew and within the entire operation? These things build employee loyalty so when XYZ Country Club, which is just down the street, is offering \$ 1.00 an hour more that employee feels comfortable coming to you and asks if you can help them stay in their present job.

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NOTES FROM THE NOER

The key statement is to treat everyone as you would like to be treated. When you make demands of your employees consider how this will affect your whole staff. Acting as if you know everything and you don't need input from anyone, builds animosity in your staff as they feel disrespected and not valued. At times you need to make hard decisions that will ruffle someone's feathers. Take ownership of that decision and when things calm down, meet with your staff and explain why you made the decision you did and understand how it might have made them feel. Meetings like this go a long way in building a positive team attitude, which in turn creates an excellent workforce for years and years to come.


One of the biggest issues for managers is communication. My class spent a large portion of the morning discussing communication. One point they stressed was that communication is a two-way street, you deliver the message and someone receives that same message. True communication only happens when the receiver understands the message that you are delivering. Too often people speak and the receiver does not fully understand the message. This causes issues and the receiver may not complete the task the way you wanted it done. They may not have understood what you really desired or when you needed the task completed. If this happens, the issue is a failure to communicate and that breakdown falls on both participants, not just the employee. Everyone we encounter on a daily basis has different life experiences and this can lead to a diverse interpretation of messages. When the best managers get to know their employees, they begin to understand some of these different life experiences. With this understanding, the manager can work on how they deliver the message to the employee so true communication is achieved.

Some employees are doers. When you tell them what you are thinking they jump at the chance to get it done.

While others are people pleasers and they will do whatever they think you want without asking questions (good or bad). A third group is information seekers, that need to know who, what, where, why. This group has a desire to fully comprehend what the desired result is before they can climb onboard and accomplish a task. The great managers spend much of their interaction time trying to find the best way to communicate with each member of

their staff.

A wise man once told me: "Frustration occurs, when over the long term, people feel their time and position are not respected."

This summer when the year heats up and the work becomes overwhelming, step back, take a deep breath and investigate how your staff can help you keep the standards that have evolved over time and work to generate a better work environment. 

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25 and 50 Year Members for 2019

By **Garrett Luck**, Certified Golf Course Superintendent, Hidden Glen at Bentsdale Farms

One of the highlights at this year's Spring Business Meeting was the presentation of the 25 and 50 year membership awards. The five individuals receiving their 50 year awards and the two individuals receiving their 25 year awards have certainly stood out as industry leaders throughout their careers and by their continual commitment to the Wisconsin Golf Course Superintendents Association.

50 Year Awards

Don Steinmetz

Don is a native of the Madison area and has lived his entire life within Dane County. He began his career after high school when he was hired by the city in 1967 and assigned to the Glenway Golf Course in Madison. After two years he was promoted to a greenskeeper at Glenway. Seven years later he advanced to greenskeeper position at Yaharra Hills GC. He maintained the 36 hole complex until his retirement in 2002. Don's entire career was spent working for the City of Madison and its four courses. He spent his summers on the course and winters maintaining the equipment for the city. Don is married and is currently on a tour of Europe with his wife. He has two daughters that live within 15 minutes of Madison and he still enjoys playing golf with them on a regular basis. Don is honored to be recognized for his 50 years of membership and still reads every issue of the Grass Roots "cover to cover". He wishes all members a successful 2019 season.

Jeff Bottensek

Jeff started working in the golf industry while still in high school. He spent several summers helping the Murgatroyd family build and grow in the The Ridges GC in Wisconsin Rapids. Jeff graduated from high school in 1965 and spent two years in the Army. After his service he completed the two year turf program at Penn State and in 1969 accepted the Assistant Superintendent position at Beloit CC under Fritz Reinhart. In 1971, Jeff was hired as the Golf Course Superintendent at Waupaca Country Club. In 1980, Jeff accepted the Superintendent position at Stevens Point Country Club until he retired in 2015. Jeff also served on the WGCSA Board of Directors and also as interim editor of the early Grass Roots newsletter in the 1980's. Jeff has had numerous employees over the years and at least 15 of them have gone on to become golf course superintendents. Today, Jeff resides in Stevens Point and is enjoying retirement and continues to help his son Tom Bottensek with his Landscaping and Turf Consulting business.

25 Year Awards

Scott Bartosh

Scott began his career in golf in 1988 at Wakonda Club in Des Moines, Iowa. He worked under Nick Dunn, CGCS who encouraged Scott to look for assistant positions in a large market like Chicago. In the spring of 1989, Scott took Nick's advice and began working just outside of Chicago at Woodmar Country Club in Hammond, Indiana for Kerry Blatteau, CGCS. Inverness Golf Club in Palatine, Illinois provided Scott his next opportunity in 1991. Under the tutelage of Mike Bavier, CGCS, Scott learned the vital role that interpersonal relationships play in our industry. Kenosha Country Club was Scott's first Superintendent position in 1994, a position which he considers the highlight of his career. Scott attained his CGCS status while at Kenosha Country Club in 2002 and hosted many tournaments including the State Open and the Governor's Cup. In 2007, Scott accepted the Superintendent position at Meadowbrook Country Club in Racine. In 2011, Scott became a sales representative with Arthur Clesen and three years later began consulting for three golf courses. Scott would like to thank the WGCSA and especially Jim VanHerwynen who has been a great friend and mentor.

Cameron White

In 1994, Cameron accepted the position of Head Mechanic and Assistant Superintendent in his hometown at Platteville Golf and Country Club. In March of 1999 he obtained the Head Superintendent position at Prairie du Chien Country Club where he has spent the last twenty years. Cameron is especially proud of the club's ability to reduce significant debt, while still purchasing new equipment and making course improvements. The retirement of this debt allowed the club to build a new clubhouse in 2018. Cameron cites Rob Udelhofen, Superintendent at Platteville Golf and Country Club for 35 years, as his mentor. Rob was his first boss in the industry and pushed him to further his education and apply for his current position.



Steven Specht

Steve started his career at Town and Country Club in Sheboygan picking range balls when he was 14 years old. At the age of 16, he moved to the grounds crew for two summers. In 1981, he was hired full time as an Assistant Superintendent under Ralph Hechel until he took over as Superintendent in the mid 1990's. In 1981, Steve was involved with building a third nine at Town and Country Club. Steve's leadership was instrumental in improving conditions at Miller's Glen and Riverdale Golf Course following their acquisitions in 2008 and 2016. At present, Steve's job duties include overseeing all three courses. Steve credits his staff for his success. He would like to thank his entire staff including the seasonal employees and retirees. He especially credits his Superintendents, including his son, Steven Jr. and Gary Reha, and his assistant Brad Steinhardt for his success. Steve also thanks the owners, Guy and Kay Miller, for having trust and faith in all of his decisions. While he certainly appreciates all dedicated sales representatives that call on him, he notes that Steve Wasser has been a good friend and colleague throughout the years. Last, but not least, he gives special thanks to his wife and daughter for putting up with all of his long hours and days of work.

Jim Poitz

Jim spent five years at Camelot Country Club and six years as an assistant at Tuckaway Country Club before becoming the Superintendent at Tuckaway, a position that he has held for the last 25 years. Jim includes being a part of a PGA tour event, the GMO, while he was the Assistant Superintendent as a career highlight. He notes "watching Greg Norman and the like walking down the fairways was incredible". Jim has overseen two irrigation system renovations during his time at Tuckaway. Jim credits Pat Shaw, who served as Superintendent at Tuckaway while he was assistant, as a mentor. He would like to thank his past assistants, Jaime Staufenbeil and Scott Miller, as well as his current assistant, Ben Scharf, for their efforts.

Paul Bastron

Paul graduated with honors from Michigan State University and has been a Golf Course Superintendent since 1984 and a CGCS for the last twenty five years. He served as Superintendent at Ottumwa Country Club from 1984-1987, Glen Flora Country Club in Waukegan, IL from 1987-2013, and is currently at Kenosha Country Club where he has been the Superintendent since 2014. Additionally, Paul held the position of sales representative for Midwest Turf Products from 2011-2013. Many of us likely know Paul as a co-founder of the Wee One Foundation, where he currently serves as Vice President. Paul is married and has two sons.



Above: Garrett Luck presents Steven Specht with his 25 year membership plaque. Steven has worked at Town and Country since he was 14 years old.

Below: Garret Luck presents Paul Bastron with his 25 year membership plaque. Paul started his career in Illinois but has been the Certified Golf Course Superintendent at Kenosha Country Club since 2014.





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Layout by Brett Grams

Photos by Brett Grams and Nicole Brogren

2019 Scholarship Winners

By Scott Anthes, Golf Course Superintendent, Brown County Golf Course

As a member of the WSCGA I feel one of the great ways we show support for our future industry leaders is by providing financial assistance to our student members or family members. The WGCSA has five scholarships that our members are eligible for and, as of 2018, we reimburse four students attending the Great Lakes Turf School their tuition after they have completed the course. Please, if you are attending school or have a family member attending school look into these scholarships. I am proud to announce this year's Scholarship winners for three of the five scholarships and the Great Lake Turf School.

The J.R. Love Scholarship

This scholarship is 100% funded by the WGCSA annually and is a \$1,500.00 scholarship that is awarded to an excellent undergraduate enrolled in Turfgrass Management at UW-Madison. The Professors and instructors at UW-Madison select the student chosen. This year's winner is Mitchell VanHerwynen. (Mitchell was shown in the Jan./Feb. 2018 issue and received the award at the WTA Research day)

Monroe S. Miller Literary Scholarship

This scholarship is awarded annually to the top student written article, graduate or undergraduate. A committee made up of the WGCSA board of directors and Monroe S.


Miller chooses this \$1,000 scholarship winner that is presented at the Spring Business meeting. This year's article was "From Hobby to Profession" written by Mitchell Linerud and was published in the Nov./Dec. 2018 issue of the Grassroots.

WGCSA Turf Scholarship

This scholarship is awarded annually to a WGCSA student member attending any accredited turfgrass management, or related program. A committee made up of the WGCSA board of directors chooses and presents the \$1,500 scholarship at the spring business meeting. This year's winner is Michael Bekken, Graduate Student, Department of Soil Science, University of Wisconsin – Madison.

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John Kaiser – Milwaukee County Parks
Boe Jentree – Maple Bluff Country Club
Jonathan Earl – Hawks Landing Golf Club

Lastly, the two WGCSA Legacy Scholarships are awarded to any child, grandchild or stepchild of an active WGCSA member. These \$1,000 scholarships are awarded in July, but the applications are due by May 1st. The application and more info can be found on the WGCSA website. 

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Above: Scott Anthes congratulates Mitchell Linnerud for receiving the Monroe S. Miller Literary Scholarship for his article "From Hobby To Profession in the Nov./Dec. issue of The Grass Roots.



Above: Scott Anthes presents Michael Bekken for receiving the WGCSA Turf Scholarship. Michael is a graduate student in the Department of Soil Science.

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2019 Spring Business Meeting

By David Brandenburg, Certified Golf Course Superintendent, Rolling Meadows Golf Course

The 2019 Version of the WGCSA Spring Business Meeting was hosted by Jim Vanherwynen and the staff at South Hills Golf and Country Club. It is a central location and a good venue and as a bonus this year during our breaks we watched construction equipment working on an addition to the clubhouse and taking up the pool deck. Watching a project take shape is a highlight for our group.

With education before and after lunch and the business meeting during lunch the day really moved along quickly. Less people leave before the final speaker, or before the business meeting which used to be last on the agenda. Nothing drives out a crowd like business meeting talk so the move to lunch forces the members to hear some valuable association news!

During the meeting Chapter Manager Grams highlighted his busy spring activities with membership renewals being normal so far and he was pleased to see more Equipment Managers joining the group.

In his Presidents report, Josh LePine reminded us they need photos for the BMP website and publication and would prefer to use our members photos rather than stock photos from another state.

Brett Grams presented the Treasurer's Report and reviewed the expenditures and expenses for 2018. All numbers were as expected and the association is in good financial shape.

Brett also covered the golf and arrangements committee as Chair Bonelender was vacationing in Mexico before the season started. The sched-

ule can be seen on page 51.


Garret Luck presented the 25 and 50 year member information and that article can be found on pages 30-31. Congratulations to all of our long time members especially those reaching the 25 and 50 year milestones.

Scott Anthes presented the Scholarship winners to the group and his article is on pages 34-35 highlighting the winners and their accomplishments.

Tim Schmidt gave a recap of governmental regulations that are changing or that we should keep an eye on. Changes to WOTUS (Waters of These United States) continue under the Trump administration. For those that use temporary workers from other countries H-2B non-agricultural visa quantities is capped at 66,000 for the year with over 81,000 asking for visas. Other things to keep an eye on include the Farm Bill and how that effects budgeting and rules for research. Tim reminded everyone about the GCSAA Ambassador Program and how we can help by working with a local legislature or senator.

Under New Business, Graduate Student Michael Bekken discussed the "Wisconsin Resource Efficiency Survey" he is working on. He would like to study resource use on at least 15 golf courses to show our industry is sustainable and our inputs are justified by the end product. Along with this he expects to show the benefits of golf to both the environment and the community as a whole.

Michael is being advised by Dr. Soldat and the participants of the study will present their information online and individual course information will be kept private and used only for the research project.

Contact Michael at bekken@wisc.edu for more information to be included. 




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Todd Quinto (Above), Sr. Project Manager for Lohmann Quinto Golf Designs and Greg Wolterstorff (Below), VP of Natural Resources at V3 Companies gave a presentation titled “Golf and Water: Fast Tracking and Funding for Improvements in Floodplains”.

The two discussed projects at Westmoor Country Club in Brookfield, Reid Municipal in Appleton and Deer Path Golf Club in Lake Forest, IL. The projects used different methods to create win-win projects with government agencies to improve the golf courses and help municipalities with water drainage issues.

Golf courses often have open areas to act as storm water ponds to collect and filter run off water to hold and clean the suspended solids before releasing it downstream.

Often these projects are full or partially funded by the governmental body saving the golf course money.



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Chapter President Josh LePine gives his President's Report to the group at the Spring Business and Educational Meeting held at South Hills Golf and Country Club.

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Austin Wright, Grounds Complex and Equipment Manager at Sand Valley Golf Resort gave a two part talk focusing on the building of Sand Valley Golf Course and Maintenance Facilities along with Operational Communication.

The first half of his talk focused on the property that has become and continues to expand with new golf courses and other features to attract players to the 7,000 acre property. Located in the Nekoosa area the large property is made of sand and dunes some of which are 60 feet deep.

The 18 hole Mammoth course is set on 346 acres but only has 80 total acres of turf.

The staff is working on the 4th course now and they have lodging of different varieties for up to 120 people to date.

Austin was able to be in on the ground floor to help design and develop the maintenance and storage facilities.

Recently Sand Valley has added 15 grass tennis courts with some 100% fine fescue and others a rye/fescue blend. 9 courts are used at a time to allow one set to recover from traffic.

The maintenance fleet is comprised of 250 pieces of equipment to care for the 3 finished golf courses, tennis courts and grounds.

Wright gave an informative look into the building, developing and caring for a large golf property.

In the second half he discussed the communication methods they use at Sand Valley to keep managers and operators informed and organized. Austin was a good start and finish to our educational day.



Mike Skopik, Service Manager for Leibold Irrigation, Inc. gave a talk on Irrigation Communication Basics. He focused on 2-line and radio controlled systems along with suggestions for maintaining reliable communication.

Although radio can be a more reliable communication method for irrigation systems, trouble shooting problems can be difficult. This is due to the many possibilities of damage or disfunction with the sender, receiver, antennae and the communication boards.

Skopik gave the group a good list of Best Management Practices to keep either wired or radio systems working well.



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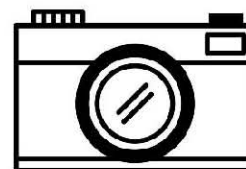
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Wisconsin BMP Photo Call: By Josh LePine, BMP Chair

The WGCSA and NGLGCSA are currently working with Kingsbury Consulting and UW Madison to complete a Best Management Practices (BMP) manual for Golf Course Management in Wisconsin. The rough draft is complete. We are currently in the review and editing stage. We would like to incorporate photos from our great state, specifically, your golf courses.

We need your Photos! Please consider being a part of the new WI BMP efforts by submitting photos of your day to day operations. Please review the list below and submit what you can. Include the name, location and brief description. Any and all are welcome to submit photos from this list.

CALL FOR PHOTOS



Send your photos via email to wgcabmp@gmail.com
Submit photos using [WI BMP LIST](#) (as a reference)

We cannot accept .pdf files. Please use .jpg or .jpeg files (preferred)

Planning, Design and Construction

- Construction:
 - Photos of construction activities in progress
 - Erosion & sedimentation control measures, such as fencing, erosion socks, hydro-mulching, etc.
 - Grow-in photos of seeding or sprigging, newly planted turf, hydro-seeding, sodding etc.
 - Photos of a renovation project – before and after would be great
- Habitat/wildlife-related photos, including:
 - Bluebird boxes, bat houses, Martin houses, wildlife on the golf course etc.
 - Removal of nuisance/exotic/invasive plants
 - Native species plantings, such as grasses, prairies, wildflowers

1. Irrigation

- Irrigation system maintenance activities, such as inspecting the system, irrigation audits, photos of leaks, broken or misaligned heads, etc.
- Catch can/uniformity coefficient testing/calculation
- Weather station, soil moisture meter use
- Hand watering, wetting agent use
- Hydrophobic turf

2. Groundwater/Surface Water Management

- Vegetated buffers, filtration strips, bioswales,
- Lakes/ponds – ideas include showing aeration devices, emergent vegetation, dredging of a lake/pond, etc.

3. Water Quality Management and Monitoring

- Collecting a water quality monitoring sample
- In-stream microbenthic invertebrate survey
- Rain garden
-

4. Nutrient Management

- Fertilizer application
- Photo of a person calibrating
- Covering drain covers during application
- Blowing off fert granulars from hard surfaces
- Soil/Tissue testing

5. Cultural Practices

- Photo of any cultural practice, such as mowing, rolling, seeding, topdressing, cultivating, etc.
- If you have an example of a cultural practice done as part of an IPM program, such as tree thinning to reduce pest pressure, removing morning dew, etc.
- Clipping management (such as a pile of composting clippings; sorting clippings from washwater, spreading clippings)
- Soil profile testing

6. Integrated Pest Management

- Scouting, monitoring
- Soap drench for cutworms
- Biocontrol measures

7. Pesticide Management

- Pesticide applications in progress
- Someone mixing/loading pesticides
- Safe transporting, updated storage facility, premix tanks for efficiency and safety.
- Building/pesticide storage placards.

8. Pollinator Protection

- Photo of any pollinators
- Wildflower areas planted specifically for pollinators – before/after photos for renovation projects with pollinators in mind would be great
- Nest boxes for wild pollinators
- Managed bee hives
-

9. Maintenance Operations

- Equipment washing
- Blowing clippings off a mower before washing

10. Landscape

- Landscaped beds
- Native plant landscaping

11. Safety

- MSDS/ Right to Know area
- Safety training at your facility

12. Golf and the Community

- Golfers enjoying your course
- Photos of charity outing
- hosting boy scouts, school groups, course tour
- course being used for other approved purposes: Cross country meet, cross country skiing, foot golf....

New Membership Classes Approved by Membership

By Shane Conroy, GCSAA Field Staff - Great Lakes Regional Representative

The GCSAA Annual Meeting took place this past February in San Diego, CA. During the meeting, there were a few items on the ballot which required a membership vote. There were two new association membership classes up for vote: Facility Membership and Friend of the Golf Course Superintendent, as well as a bylaw change, dues increase and the election of the GCSAA Board of Directors.

The first items up for vote were the two new membership classifications. Both membership classifications were voted through by the chapter delegates and are now official classifications of GCSAA. If you are not familiar with the new classifications, they are as follows:

Facility Membership: *To qualify for Facility Membership, an applicant must be a golf course facility that employs no current GCSAA member. Facility Members shall have all rights of the Association as the Board of Directors may specify in the Standing Rules, except those of voting and holding office.*

The Facility Membership is geared towards golf courses across the U.S. which do not currently employ a GCSAA member. The Facility Membership will target lower budget facilities to offer the facility employee(s) limited benefits and privileges. The Facility Membership will be in the name of the facility, and not in the name of the individual member.

Friend of the Golf Course Superintendent: *To qualify for Friend of the Golf Course Superintendent membership, an applicant must be an individual who supports the course and does not qualify for membership in any other class. Friends of the Golf Course Superintendent shall have all rights of the Association as the Board of Directors may specify in the Standing Rules, except those of voting and holding office.*



The Friend of the Golf Course Superintendent classification will target golfers, potential advocates, teachers involved in First Green field trips and supporters of the game and industry to name a few. This classification will help create GCSAA brand awareness and allow us to promote the profession to a new audience.

Delegates also voted to approve this wording for Article II, Section 1:

The annual dues shall be sums fixed by the Board of Directors, except for Classes A, B and C. Annual dues for Classes A, B and C shall not exceed the sum fixed at any annual meeting of the Association, as decided by a balloting conducted under regular voting procedures set forth in the Standing Rules of the Convention established by the Board of Directors, in accordance with Article V of these Bylaws. Dues shall be payable in advance of the member's annual renewal date.

Making this small bylaw change will now allow GCSAA to offer loyalty program discounts and incentives to current and new GCSAA members. This gives GCSAA an exciting opportunity to create loyalty programs for existing members who have supported the industry and association over their career. The GCSAA board is finalizing the details on these programs; additional information is forthcoming.

Delegates also approved an annual dues increases for Class A and Class B from \$380 to \$400, and an increase for Class C members from \$195 to \$205. This dues increase is brought to


the membership for a vote every two years and is based on the previous two year's CPI (Consumer Price Index); this term the CPI was 4.5%.

To round out the Annual Meeting, the election of the GCSAA Board of Directors took place which saw Rafael Barajas, CGCS, officially become the association's 83rd president. Barajas, director of golf course maintenance at Boca Grove Golf & Tennis Club in Boca Raton, Fla., and a 33-year GCSAA member, replaces 2018 president Darren Davis, CGCS.

John R. Fulling Jr., CGCS, grounds and facilities manager at Kalamazoo Country Club, was named vice president, and Mark F. Jordan, CGCS, superintendent at Westfield Country Club in Westfield Center, Ohio, was elected secretary/treasurer.

Jeff L. White, CGCS, superintendent at Indian Hills Country Club in Prairie Village, Kan., and T.A. Barker, CGCS, superintendent at Fore Lakes Golf Course in Taylorsville, Utah, were both re-elected. Paul L. Carter, CGCS, director of agronomy at The Bear Trace at Harrison Bay in Harrison, Tenn., was elected to the third open director position.

Best of luck as the season continues to progress. As always, please don't hesitate to reach out for additional information or if I can help with anything moving forward.

Shane Conroy can be reached at sconroy@gcsaa.org or by calling GCSAA at 1-800-472-7878 extension 3635. 

Quantifying the Impact of Soil Type and Moisture Content on Soil Compaction by Golf Carts – Field Observations

By Doug Soldat, Ph.D. and Nick Bero M.S., Department of Soil Science, University of Wisconsin – Madison

Golf carts represent a major source of revenue for golf courses and many golfers in the US will only play golf when carts are allowed for use. Therefore, there is a strong desire by those that benefit from cart revenue to open the course to golf cart traffic as soon as possible following a rain event. Golf course superintendents are often making difficult decisions that balance soil compaction with revenue and customer satisfaction, among other considerations. In addition, the precise impact of cart traffic on soil properties has not been well studied. There is a need to develop data that demonstrates the impact of golf cart traffic on a variety of soil types under a variety of moisture levels. In the September/October 2017 edition of the Grass Roots, we summarized the laboratory results from a study looking at golf cart compaction. In that article, we reported that the soil moisture level that was most ideal for compacting soil was 20-29% across a wide range of soil types and organic matter levels. This was a discouraging result, because 20-29% moisture is near ideal conditions for managing fairways. However, because golf isn't played in a lab, we also looked at actual golf cart compaction from fairway turf in Wisconsin. This article will focus on the findings from the field study.

The field component of this study was conducted on fairway turf at the O.J. Noer Turfgrass Facility in Madison, Rolling Meadows Golf Course in Fond du Lac, and The Wisconsin Club's Country Club in Milwaukee. The study was designed as a randomized complete block design with three treatments (moisture levels) and four replications. The individual plots measured 8 × 8 feet. Treatments were designed to evaluate the effect of moisture content on compaction when driven over repeatedly by a standard golf cart.



Qiyu (Ada) Zhou measuring resistance to penetration at Rolling Meadows Golf Course

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Three soil moisture levels were categorized as “dry”, “field capacity”, and “saturated.” The “dry” plots had the same moisture level as the rest of the fairway which was determined by the golf course superintendent and mother nature. Two days prior to the cart compaction event, the “dry” plots were covered by a tarp and the irrigation system was run for 30 minutes to saturate the remaining plots. Two days later, just prior to the compaction event, the “saturated” treatment was watered by hand to bring moisture levels back close to saturation. The “field capacity” treatment therefore had two days of drainage after a saturating event, and the “dry” plots remained at a moisture content maximized for playability just prior to the compaction event. Soil moisture of the plots was measured using a Spectrum TDR 300. Next, a golf cart containing two passengers and weight in the rear to simulate golf bags made 15 passes down the center of each plot. The golf carts used weighed between 700-800 lbs (brands included Yamaha, E-Z GO, and Club Car) before being loaded with people and cargo.

Following the compaction, 1.25 inch diameter soil core samples were collected and saved for determination of bulk density. At the O.J. Noer station, 10 core samples from 0-9 inches were collected from each plot, with 5 samples from the “trafficked” area of the plot and 5 samples from the “non-trafficked” area of the plot. At Rolling Meadows and Wisconsin Club, 6 samples were collected from each plot, with 3 from the “trafficked” area and 3 from the “non-trafficked” area. These samples were assessed for moisture content and bulk density. Cores from all location were returned to the lab, separated into 3” segments, and weight when wet and dry. Additionally, cone penetrometer readings were taken using a SC-900 compaction meter (Spectrum Technologies, Inc.).



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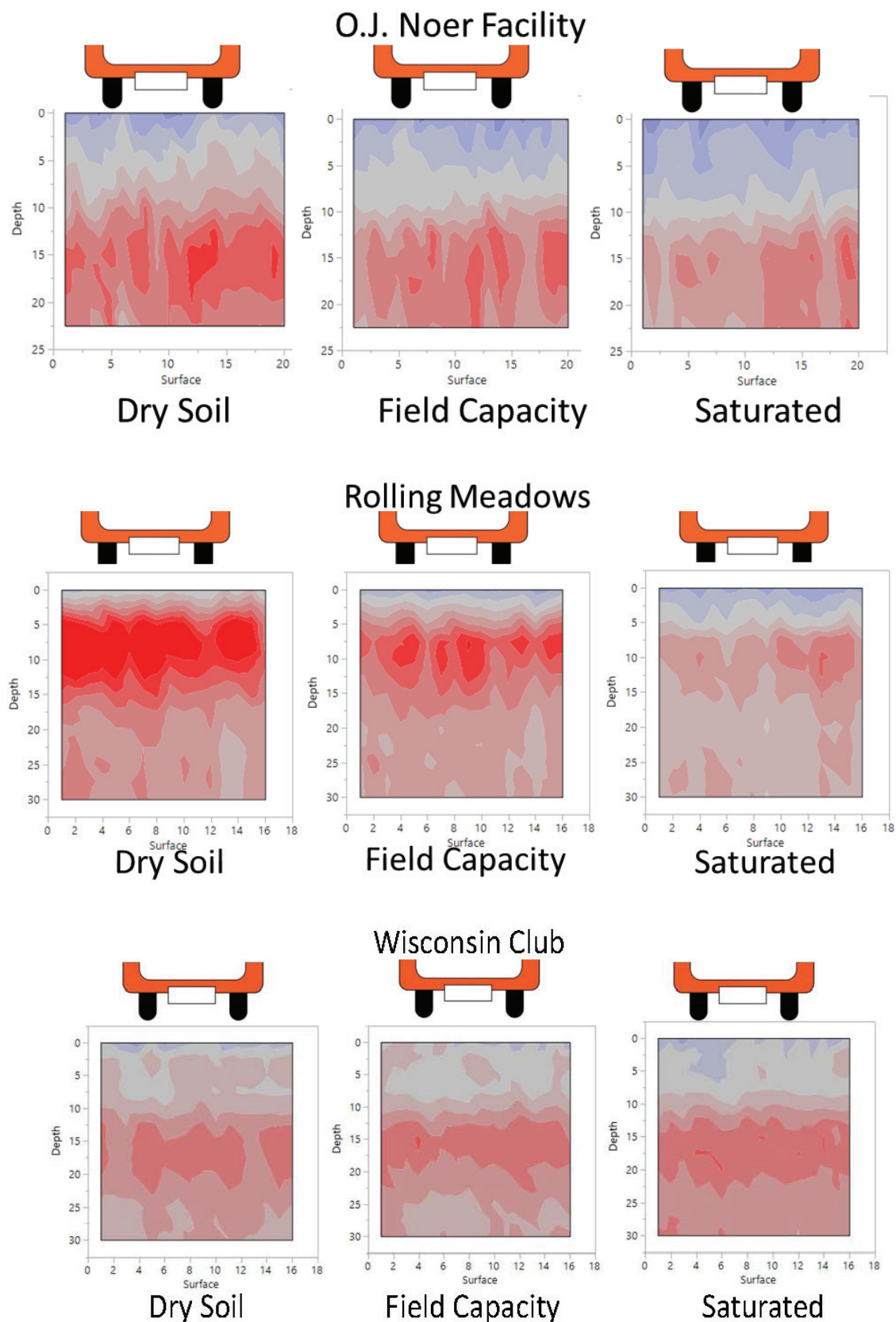


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WISCONSIN SOILS REPORT

Figure 1. Cone penetrometer maps from the three different moisture levels. Carts indicate the approximate location of the wheel tracks across the surface. Blue colors indicate little resistance to penetration, while red colors indicate strong resistance. The depth of the soil is shown in centimeters (1cm = 2.5", 30 cm = 1 foot).



WISCONSIN SOILS REPORT

At the O.J. Noer, 20 readings were taken moving across each wheel path to a depth of 9". At Rolling Meadows and Wisconsin Club, 16 readings were taken moving across each wheel path to a depth of 12". Using this data, bulk density and gravimetric water content were determined and volumetric water content was calculated.

Ample moisture in 2018 led to fairly wet conditions even in our "dry" treatment. However, our water management did allow for some differences in soil moisture levels. We found about 4 to 5% difference in surface moisture between our driest and wettest treatment with each site, and about a 10% difference across the three sites (**Table 1**). Smaller (if any) differences in soil moisture existed at deeper depths within sites. Despite an intense level of cart traffic, we did not find any clear increase in soil bulk density directly under the wheel tracks (**Table 2**). Similarly, our penetrometer readings (which measures the soil's resistance to a probe pushed in the ground) did not reveal clear differences associated with the wheel tracks (**Figure 1**). Though there appears to be very small increases in penetration resistance under the wheels at the O.J. Noer site and the field capacity level at Rolling Meadows, these trends were not very strong and not observed at other locations suggesting they may be random anomalies. These results are encouraging and suggest that golf cart traffic is not responsible for much compaction even at soil moisture levels that are most sensitive to compaction.

In conclusion, in the laboratory portion of this study we found that soils were most sensitive to compaction near agronomic optimums (20-29% soil moisture). However, we found no strong evidence that golf cart traffic produced



Tarps were used to keep low moisture plots dry during rain and irrigation.

detectable compaction across a similar soil moisture range (23-32% soil moisture). The pressure exerted from the carts used in our study was approximately 5 PSI – this is similar to the pressure exerted by a golfer standing on the turf. This is not to say that carts aren't damaging to turf. Turning tears leaves and create wear damage, and wet turf is more prone to wheel slippage which will further amplify wear damage. Driving a cart on saturated turf can result in soil displacement (rutting). Therefore, decisions on when to restrict carts should be made by determining the likely hood for rutting and soil displacement and other forms of damage, but those decisions should not be guided by soil moisture levels that are optimum for compaction.

A special thank you to David Brandenburg (Rolling Meadows) and Mike Bremmer (Wisconsin Club) for their assistance with the study. ✓

2019 Event Schedule!

May 1 - National Golf Day GCSAA - Washington DC

May 13 - (Monday) May Meeting (Morning Start) - Racine CC, Racine

June 3 - (Monday) Minnesota GCSA Golf Meeting - Eau Claire CC

June 4 - (Tuesday) NGLGCSA Rounds for Research Outing - Golden Sands Golf Course, Cecil, WI

June 18 - (Tuesday) WGCSA June Meeting - Hidden Glen at Bentdale Farm, Cedarburg

July 24 - (Wednesday) WTA Summer Field Day - O.J. Noer Research Facility, Madison (CHANGED DATE)

August 19 - (Monday) Joint NGLGCSA/WGCSA Member Guest - Fox Valley GC, Kaukauna, WI

September 16 - (Monday) Wee One Fundraiser - Pine Hills CC, Sheboygan

September 30 - (Monday) WTA Golf Classic - Tuckaway CC, Franklin, WI (Tentative)

TBD - Couples and Guest Evening - Madison

December 4 & 5 - 54th Golf Turf Symposium - American Club, Kohler

Visit our website at www.WGCSA.com for the most up to date calendar and registration forms.

WISCONSIN SOILS REPORT

Table 1. Volumetric soil moisture content of core samples taken immediately following the compaction event. Different letters indicate statistically significant differences ($p = 0.05$)

Depth	Treatment	O.J. Noer Silt	Rolling Meadows Clay	Wisconsin Club Sandy Loam
----- $\text{cm}^3 \text{H}_2\text{O cm}^{-3} \text{soil}$ -----				
0-3"	Dry	28.3 c	26.3 c	23.2 b
	Field Capacity	30.1 b	28.6 b	25.0 b
	Saturated	32.1 a	30.8 a	28.1 a
3-6"	Dry	29.1 c	23.3 b	37.7 ab
	Field Capacity	30.5 b	26.6 a	36.5 b
	Saturated	31.5 a	26.2 a	39.2 a
6-9"	Dry	30.8 b	26.3 a	32.2 a
	Field Capacity	31.6 ab	27.8 a	32.7 a
	Saturated	32.0 a	27.4 a	32.3 a

Table 2. Bulk Density under traffic of core samples separated by depth and location. Different letters indicate statistically significant differences ($p = 0.05$)

Depth	Treatment	O.J. Noer	Rolling Meadows	Wisconsin Club
----- g/cm^3 -----				
0-3"	Dry	1.08 a	0.89 a	0.97 ab
	Field Capacity	1.10 a	0.86 a	0.98 a
	Saturated	1.09 a	0.84 a	0.93 b
3-6"	Dry	1.20 a	1.11 a	1.06 a
	Field Capacity	1.21 a	1.13 a	1.04 a
	Saturated	1.22 a	1.15 a	1.01 a
6-9"	Dry	1.22 a	1.11 a	1.20 a
	Field Capacity	1.22 a	1.13 a	1.18 ab
	Saturated	1.19 a	1.09 a	1.16 b



DEPARTMENT OF
SOIL SCIENCE
University of Wisconsin-Madison

Wisconsin Turfgrass Association

Summer Field Day, Tuesday, July 23rd, 2019

We have received .30 GCSAA education points for this event

O.J. Noer Turfgrass Research and Education Facility in Verona



A birds eye view of the many research plots that are at the O.J. Noer Turfgrass Research and Education Facility.



Learn from vendors during the trade show as they demonstrate how their equipment can make your daily work more efficient and successful.



Learn new ideas for old issues and new ideas for the future that can help you.



Hear the UW – Madison professors and researchers talk about the current projects they are working on.

The registration form and additional details are on the back of this flyer. You may go to www.wisconsinturfgrassassociation.org to register and pay online.

WISCONSIN TURFGRASS ASSOCIATION

Field Day Schedule

8:00am – 9:00 Attendee Registration/Trade Show open
 9:00 – 9:30 Welcome Session & Honored Guest
 9:30 – 11:00 Lawn Care & General Turf Tours
 11:00 – 1:30 Trade Show Only time
 12:00 – 1:15 Lunch
 1:30 – 3:00 Golf Turf Tours

Lawn Care & General Turf 9:30 – 11:00

- Abiotic Turf Issues
- Glyphosate Alternative Demo
- Robotic Mowers
- Plant Growth Regulators for General Turf
- Jumping Worms
- Effects of Guttation Water on Pollinators (Bluegrass)

Golf Turf 1:30 – 3:00

- Precision Disease Management
- Clipping Volume to Mass Conversion
- Golf Resource Use Efficiency Survey
- Soil “P” Deficiencies
- Effects of Guttation Water on Pollinators (Bentgrass)
- Nitrogen and Traffic Effect on Putting Green Growth



O.J. Noer Turfgrass Facility Directions
 2502 County Highway M
 Verona WI 53593 phone 608-845-6536

From Madison Beltline US-12 & 18
 Take Mineral Point Road exit
 Go West on Mineral Point Road 0.7 mile
 to Pleasant View Road roundabout
 Exit roundabout going South on Pleasant View Rd
 Continue 2.5 miles to O.J. Noer Facility

Registration Includes

- *Donuts & coffee in the morning
- *Wisconsin style lunch
- *Morning and afternoon turf education
- *Become a brand new WTA member & get free admission to Field Day.

Contact Audra for details at audra.anderson@wisc.edu or 608-845-6536.



cut here and return registration form with payment

Registration Form

Mail registration form and check payable to **WTA** by **July 16th** to **O.J. Noer Turfgrass Facility / 2502 Highway M / Verona / WI / 53593** or register online at www.wisconsin-turfgrass-association.org.

Add \$5 per person after July 16th postmark.

Name of all Registrants _____

Company _____ email _____

Mailing address _____

City/State/Zip Code _____ phone _____

WTA member ----- \$40 = _____

Additional employees from same WTA member organization ---- -\$25 each x # emps _____ = _____

Not a WTA member - ----- \$45 = _____

Additional employees from same Non-WTA member organization - -\$35 each x # emps _____ = _____

WTA membership (New member, get one free registration) - - - - - \$150 = _____

GRAND TOTAL = _____

Spring Doldrums

By David A. Brandenburg, Certified Golf Course Superintendent, Rolling Meadows Golf Course

Spring is a time of renewal. A season of change from the cold of winter to the warmth of summer. It is a season of hope and expectation. It provides golfers a feeling of excitement for a new season playing their sport on their favorite courses and country clubs.

Spring is a season of battles as the cold of winter and the heat of summer clash for superiority. As turf managers and golfers we know it is going to warm up eventually and we know not every day is going to be perfect. Spring is supposed to provide April showers to bring May flowers.

For the Midwest golf industry, spring has become an extension of a cold wet fall. Hopes of good growing conditions have not been fulfilled as snow and rain have continued to wet our grounds and the days of sunny warmth to help evaporate excess moisture have been few and far between.

High school baseball and golf events have been cancelled and postponed en masse for the second year in a row. Spring is supposed to be a time of joy as we enter a new golf year but to be honest it has just been frustrating as we deal with wet grounds, empty parking lots and challenged employees.

As I write this, I am hoping for a dry start to May, but the 14 day forecast from Meteroligix has rain on 10 of the next 14 days. For all our sakes, we can hope they are wrong.

I have written about change in the past, how it should be embraced and accepted. That is easy to say when someone else is going through the change.

For us at Rolling Meadows, in a reorganizational move, I have gone from 70% grounds and 30% clubhouse to 70% clubhouse and 30% grounds. I moved my previously private office a mile across the property to a very public office in the clubhouse. The simultaneous positive and negative is being intimately involved in every conversation that takes place with a customer in the golf shop. To be honest, it was easier to have an open door policy when no one knew where my office was and visitors were few.

This move is only possible because both departments have great long time employees including Assistant Manager James Juoni who is now running the day to day grounds operations with assistance from our Equipment Manager Jeremy Ruppinger.

My main tasks on the golf course will be changing cups to force me to see the property, plant protectant applications and helping to maintain the irrigation system.

It should be a interesting golf season as I learn some new skills. No matter what your role at your facility I wish you the best of luck as we move towards the summer season. 

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EDITOR'S NOTEBOOK



Artist extraordinaire Gene Haas sent me this drawing he did of President LePine. Gene was the long time and now retired Executive Director of the Wisconsin State Golf Association and can be reached at ehaas4@WI.RR.COM. Gene has been contributing drawings for many years. Thank you Gene.



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Super Pro Visits Blackhawk Country Club

Left: Winning the traditional division of the WPGA / WGCSA Super Pro sponsored by Premier Golf & Utility Vehicles was the Bishops Bay Country Club Team of John Shipshock and Adam Wepfer. The team carded a gross 73 in the net modified chapman alternate shot format. Their net 65.95 was 1.4 shots better than the South Hills Golf and Country Club Team of Luke Scharf and Jim VanHerwynen.

In the second division, the team of Steve Cashore and RJ Budd from Sand Valley, posted a gross 74 and net 71.5. That beat out the net 72.6 from the team of Peter Meyer, National Golf Graphics and Jeff Ellingson, Edelweiss Chalet.

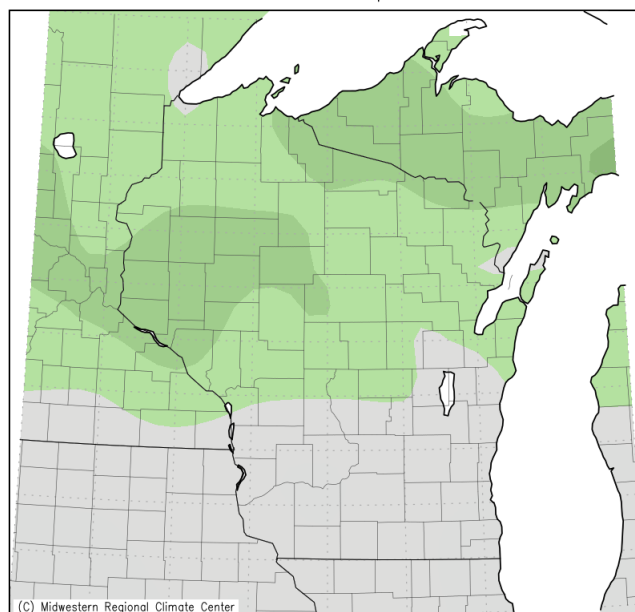
The Super Pro is a great team building experience and is a fun start to the golf season.

EDITOR'S NOTEBOOK



Jeff Churchill, Sales Manager for Smithco Manufacturing, presents Dennis Robinson, Horst Distributing, with the second place National Sales Award for Smithco Unit Sales. Congratulations Dennis.

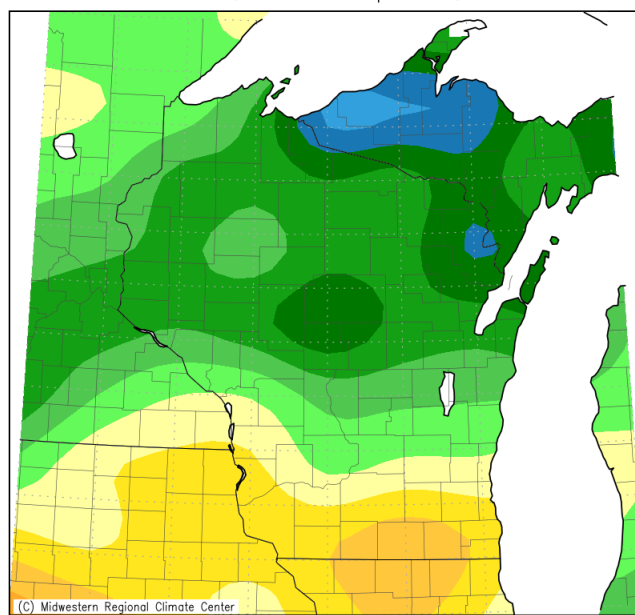
**Average Temperature (°F): Departure from Mean
March 29, 2019 to April 27, 2019**



Wisconsin State Climatology Office www.aos.wisc.edu/~sco
University of Wisconsin–Madison stclim@aos.wisc.edu

These departure from mean maps show that we have enjoyed close to normal temperatures and mixed precipitation amounts over the past 30 days.

**Accumulated Precipitation (in): Departure from Mean
March 29, 2019 to April 27, 2019**



Wisconsin State Climatology Office www.aos.wisc.edu/~sco
University of Wisconsin–Madison stclim@aos.wisc.edu



THE 20 MOST IMPORTANT CHANGES TO THE RULES OF GOLF 2019

1. SEARCH TIME - REDUCED FROM 5 MINUTES TO 3 MINUTES
2. BALL MOVED DURING SEARCH - REPLACE NO PENALTY
3. EMBEDDED BALL - FREE RELIEF ANYWHERE THROUGH THE COURSE
4. MEASURING A DROP - USE LONGEST CLUB (EXCEPT PUTTER)
5. DROPPING - DROP FROM KNEE HEIGHT RATHER THAN SHOULDER
6. TAKING STANCE ON WRONG GREEN IS NOT PERMITTED
7. BALL UNINTENTIONALLY HITS PLAYER OR EQUIPMENT - NO PENALTY
8. DOUBLE HIT - NO PENALTY. NOW ONLY COUNTS AS THE 1 STROKE
9. TOUCHING SAND IN BUNKER INCIDENTALLY IS PERMITTED
10. LOOSE IMPEDIMENTS CAN BE REMOVED ANYWHERE INCLUDING HAZARDS
11. DROPPING A BALL OUT OF BUNKER - 2 PENALTY STROKES
12. WATER HAZARDS - NOW CALLED "PENALTY AREAS"
13. TOUCHING GROUND IN PENALTY AREA - NO PENALTY
14. BALL MOVES ON GREEN AFTER BEING MARKED - REPLACE WITHOUT PENALTY
15. BALL ACCIDENTALLY MOVED ON PUTTING GREEN - REPLACE NO PENALTY
16. ALL DAMAGE TO GREEN CAN NOW BE REPAIRED
17. POSITIONING A CLUB FOR ALIGNMENT IS NOT PERMITTED
18. CADDIE ASSISTING WITH ALIGNMENT IS NOW NOT PERMITTED
19. PUTTING WITH FLAG STICK IN HOLE IS NOW PERMITTED
20. BALL WEDGED AGAINST FLAG STICK AND SIDE OF HOLE IS DEEMED AS HOLED

EDITOR'S NOTEBOOK



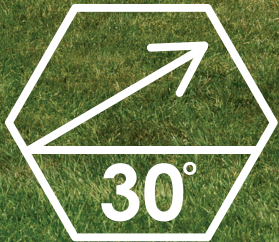
Reinders recently hosted their 24th Green Industry Conference at the Waukesha County Expo Center. The event had 45 educational seminars for the 1,500 attendees. The group was eager to consume 3,000 donuts and 5,000 beverages for the 2 day event. Hosted every other year the Reinders Conference has been a highlight of the spring since 1973. Attendees could have their caricature drawn win a trip to Disney World, enjoy donuts and popcorn and learn from nationally recognized speakers.



Dr. Joe Vargas, Professor of Plant Pathology at Michigan State University has taught at every Green Industry Conference. He has published over 200 articles on turfgrass diseases and given over 1,000 presentations. Dr. Vargas is a treat to listen to due to his years of research and in the field observations.



The Reinders Show often showcases the new purchases of golf courses before the equipment is delivered. Here a smiling Jeff Millies checks out his new piece purchased under a Golf Industry Show Special. The purchase was negotiated with the help of Dustin Riley and Reinders very own John Jensen.



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