



Hole Notes

The official publication of the MGCSA

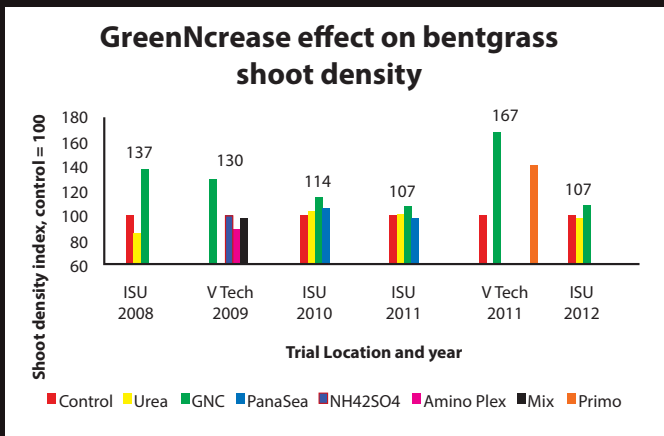
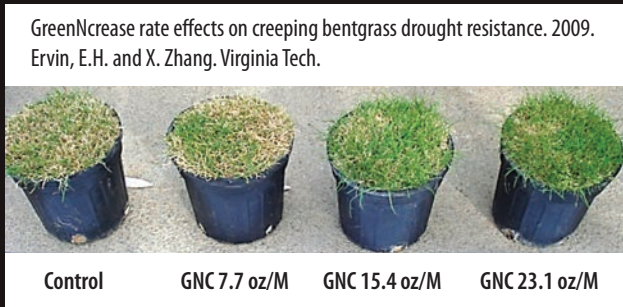
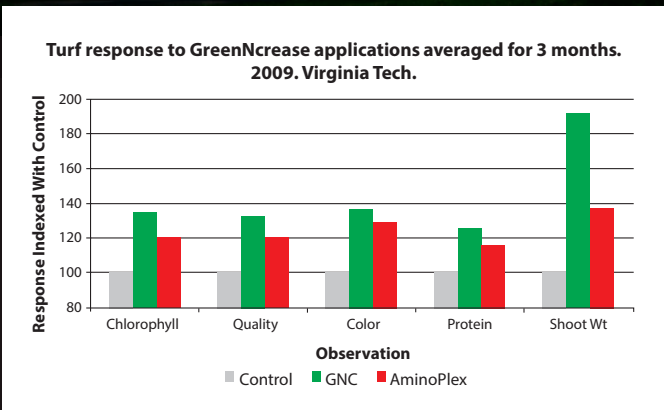
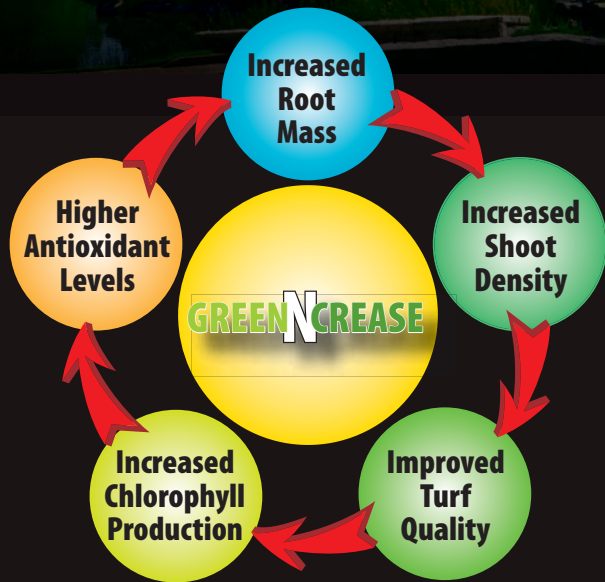
Ice Removal Ideas



Vol. 48, No. 1 January/February 2014

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March 10th

**10,000 Duck Campaign
Assistant's Spring Break
TPC Twin Cities
Host Roger Stewart, CGCS**

March 12

**Equipment Managers
Professional Forum
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Host Shane Andrews**

March 25

**Fargo 10,000 Duck Outreach
Education and Habitat
Fargo Country Club
Host Aaron Porter**

May 12

**Affiliate Appreciation Morning
Golf and Business Meeting
The Lost Spur Golf Course
Host Brandon Gauster**



EDITOR

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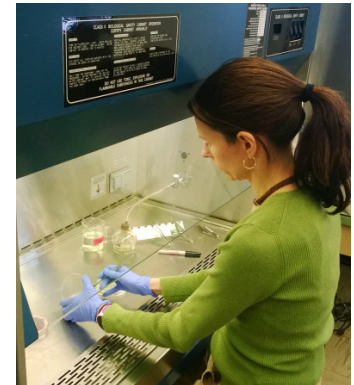
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March 10, 2014
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headed your way. Are you
ready to sing along?

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Presidential Perspective

by Roger Stewart, CGCS Superintendent at TPC Twin Cities

I am very excited to begin my term as President

of MGCSA and I want to thank the membership for their support and confidence during my tenure on the Board of Directors. I also want to thank Scottie Hines CGCS for his leadership and guidance over the past two years in his term as President. Much of the success during his tenure is due to the programs he was able to put in place. I also want to recognize our Executive Director, Jack MacKenzie, who works everyday on behalf of our membership to make MGCSA a leader in GCSAA Chapter management.

I am very fortunate to have very capable board members to work with and they continue to provide innovative and creative ideas that benefit our membership and push MGCSA forward as one of the most progressive chapters in GCSAA. I

am looking forward to continued success in 2014 as we grow MGCSA to provide even more for members and our profession.

One of the initiatives that I feel is most important is engaging our members to participate in their association at the highest level they can. We are going to be more active in recruiting members at large to help MGCSA by participating and serving on committees. I have asked each of the committee co-chairman to enlist our members in serving on their committees. This commitment is minimal in terms of your time and in some cases will involve one or two planning meetings or possibly even participating via email. The more members we engage through the committee system, the more ideas that will be generated and the more connected the Board of Directors and our management will be with our membership. We want committee service to be rewarding for those who participate and it is a great

avenue to give something back to your association and your profession. Naturally we are also hopeful that by serving on a committee you may also become interested in running for the Board of Directors. Please think about volunteering and give any board member or Jack MacKenzie a call and get involved. I guarantee you will not be disappointed.

Ongoing initiatives that were begun in the last two years continue to show good results and ultimately will help continue to grow MGCSA into the future. They include our proactive work with regulators to develop a certification and recognition program for golf courses that may lead to considerations in the event we find ourselves faced with state enacted water restrictions. This process has shown progress but there is much more to be done. Jack has done the lion's share of the work in this area as well representing us with a number of other government agencies and allied golf associations.

We have seen very successful growth and response to our outreach

initiative with our members out state. We have been able to bring MGCSA to them using the outreach events and attendance at those events continues to rise. The Education Committee continues to provide outstanding continuing education opportunities and remains at the core of our association's values. The member driven research has already provided valuable research data on winter recovery and wetting agents and those projects along with the growth regulator study are just hitting their stride this season.

There is so much more that MGCSA is involved with and I will make sure you hear about all of those things in my future Presidents Messages. Perhaps what is most rewarding about what is happening in your association is the noticeable uptick in the interest of our members and the positive feedback we have been receiving about the direction we are headed. My pledge to you from the Board of Directors and as your President is to keep our foot on the pedal and continue to move MGCSA forward into the future.



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In Bounds

by Jack MacKenzie, CGCS

The explosion echoed, and left my nine-year-old ears ringing. Running out from under our deck I yelled loudly, “It wasn’t me!” Mom was smarter than that as she took the book of matches from my hand and grabbed my wrist, tugging me toward the front steps. Fireworks were an explicit no-no in our house because, according to Mom, there had been a serious burn accident involving the daughter of a very good friend.

“Don’t tell Dad, I don’t want a spanking. But you should see what Curt has, a whole bag of firecrackers. He keeps them hidden and I know where they are”, I sniffled through weak tears, my voice crackling with guilt.

“I beg your pardon? (a Mom phrase) Who do you think you are,

first playing with matches, then playing with firecrackers and now blaming your brother? Surely he didn’t force you to light the fuse?” That was just the beginning of the “blame” speech and the “keeping your own house in order” lecture. Soon the fireworks were forgotten as she went on about personal responsibility.

This was a lesson that to this day I sometimes forget.

In this time of increased environmental awareness, isn’t it easy to blame the “other” agricultural industry, our big brothers the farmers, when water quality and quantity, nutrient fate and pesticide management is involved? I have thought and said “...look at their tile lines, look at their field flooding techniques, look at their feed lots, look at, look at look at!”



Wow, talk about deflecting blame. Historically our industry has used some pretty wicked chemistries, drained wet lands, over-watered on occasion and have had our own storage, clean and fill challenges. Yet it has always been easier to look at the perceived “bigger” offender.

Just as the golf course industry has made dramatic changes, so have our brethren in the commodities business. Are you aware of their positive transformations?

The Discovery Farms Minnesota Project is charged with collecting water quality information under real-world conditions to provide credible and practical information to support farmers in better farm management decisions. Discovery Farms Minnesota is a farmer-led effort to gather field scale water quality information from different types of farming systems and in landscapes all across Minnesota. The goal is to

provide practical, credible, site-specific information to enable better farm management. The program is designed to collect accurate measurements of sediment, nitrogen and phosphorus movement over the soil surface and through subsurface drainage tiles.

The Green Star Farms Initiative is a new approach intended to challenge farmers and those who advise them on farming practices to think critically about both agricultural production and resource protection. Aggregation of farm information allows agricultural businesses to compare individual analysis to other farms across the state, within a region, or within a sector. This aggregated information helps identify broader research and education needs, which is of value to the many farm organizations working together to address water quality and stewardship issues.

The Minnesota Agricultural

Water Quality Certification Program (MAWQCP) is a voluntary program designed to accelerate adoption of on-farm conservation practices that protect Minnesota's lakes and rivers. Producers who implement and maintain approved farm management practices will be certified and in turn assured that their operation meets the state's water quality goals and standards for a period of ten years.

Three great programs implemented by our partners in the "green" industry. Agriculture is a gigantic ship, and not unlike golf management, making a change in course takes time, lots of energy and inspired individuals to cause the course adjustment to happen. It is time to give our "brothers" a break and acknowledge their efforts.

Upon the playground during fourth grade, Billy Palmer, a lad competing with me for the ownership of "liking" Mary

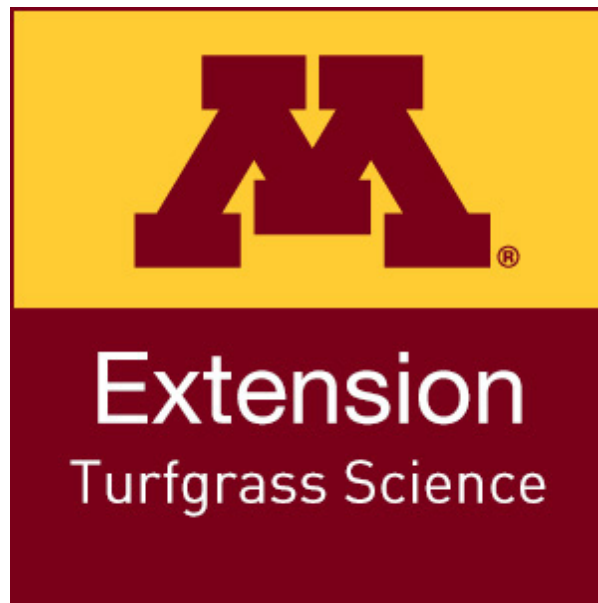
Durham, intentionally pushed my face into a very hard and unforgiving basketball post. The egg sized bump that grew upon my forehead sent me immediately to the nurse's office for an ice pack and then home for a bit of R&R.

Unfortunately for Billy, my older, and very, very much larger sixth-grade brother Curt, supported me in my absence. Needless to say, my "big brother" made it perfectly clear that nobody messes with the MacKenzie clan.

Isn't it time golf course managers quit throwing darts at our agricultural partners and focused upon our own challenges? Are we not in the same family and have the maturity to support one another during crisis and celebrate each other's success stories? The MGCSA should be embracing the farming industry for all of their positive attributes. After all, our Big Brother has a state agency named after them.

MGCSA Winter Outreach





From the U to You; *Survey Says!*

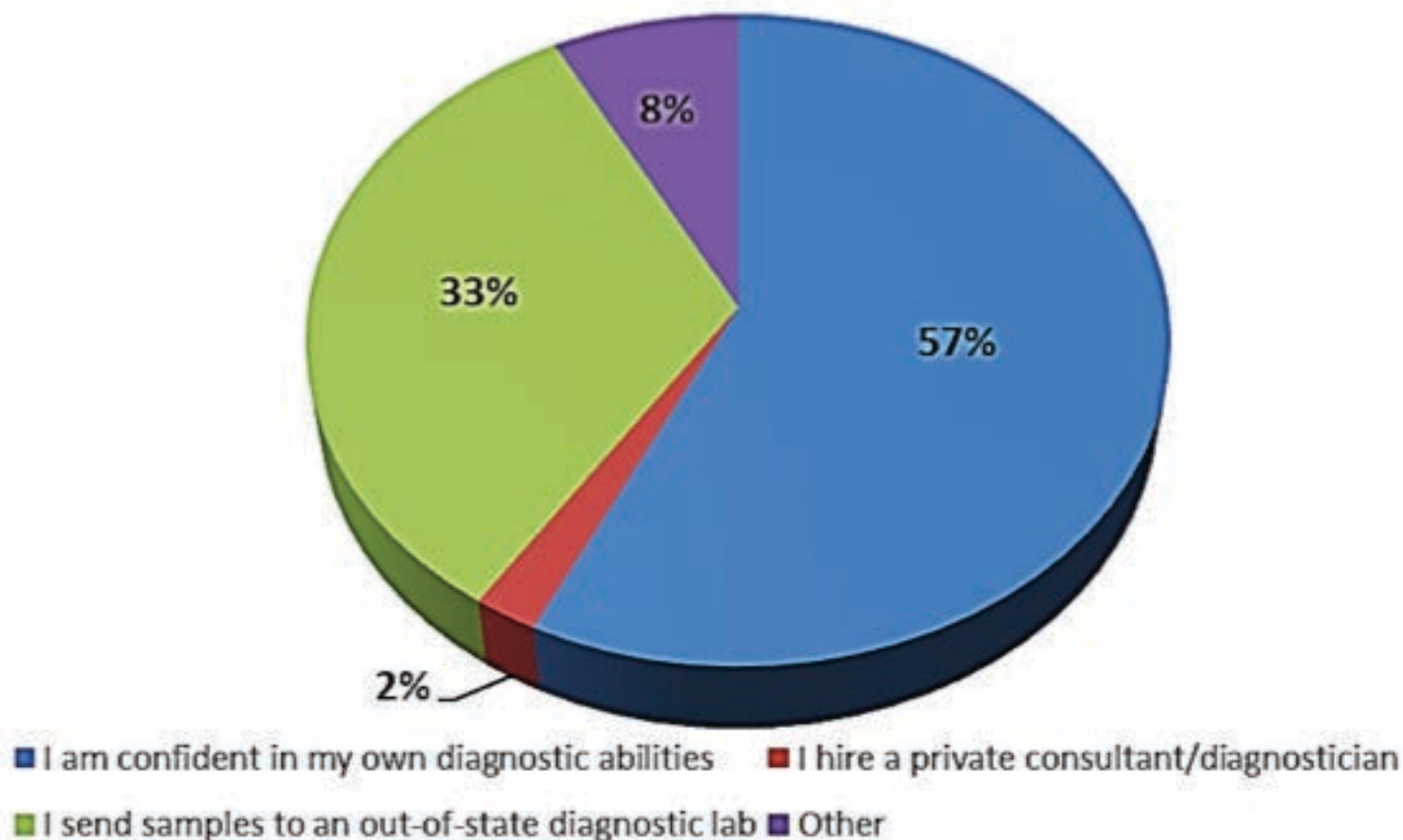
Dr. Angela Orshinsky, Extension Horticultural Pathologist

Thank you! Thank you for your response to the needs assessment survey sent out in November 2013. In a single month, over 140 MGCSA members took the time to answer questions about diseases and disease management. Why did I feel the need to conduct this survey? As a newcomer to this fine state, I needed a starting point. After speaking with some superintendents this fall, I had the distinct feeling that my previous experiences with turf diseases in Ohio were not likely to be the case here in Minnesota. I also wanted to understand your management habits, products that you prefer to use, and your willingness to try newer types of products – such as defense activators. More importantly,

it helped me to identify turf diseases that concern you and where I should put my efforts into developing educational materials. In this article, I'd like to share the results of this survey with you and let you know some of the ways that I plan to use this information to better serve the MGCSA. Much of the results were expected, but, like me, you may be surprised by others.

Almost all of the respondents were superintendents or assistant superintendents, with an average of 25 years of experience working in golf course turf management. The results of the survey were nearly identical for members working on public, resort, and private or semi-private courses- allowing results to be grouped together.

How do you diagnose your turf diseases?



Plant Disease Diagnosis

I was rather surprised to learn that of the 92 golf course superintendents and assistant superintendents that responded to this survey, only one has submitted a sample to the UMN Plant Disease Clinic in the past year. So how are you diagnosing your turf disease?

So 57 percent of respondents are self-diagnosing turf disease. This is not a terrible thing since superintendents have classroom training for turf management, take continuing education credits and have a lot of real-life experience. As mentioned above, on

average you have 25 years of experience!

The survey also told us that your preferred information source for these diagnoses was through an internet search and using online fact sheets, but also with good old-fashioned books. There are a lot of great online sources out there – I completely agree! Michigan State University, North Carolina State University, and Purdue University online fact sheets are among my personal favorite turf websites. Still, I'd like to emphasize that accurate diagnosis is critical to proper management. Diseases like dollar spot and rust are pretty darn easy to diagnose, but other diseases can sometimes be a little

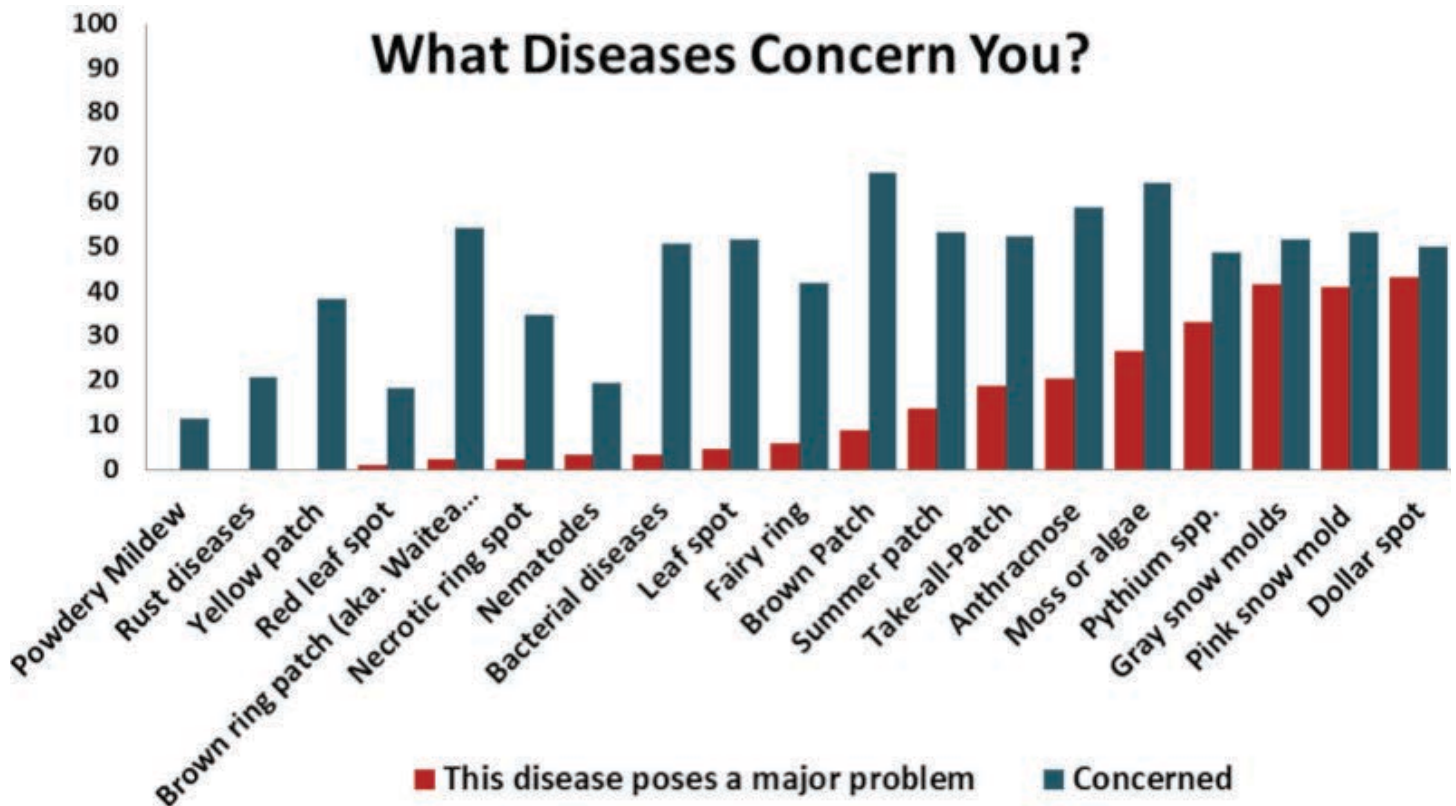
trickier to diagnose correctly. Please remember that the UMN Plant Disease Clinic is here to help if you see something that you are not certain of, or if you have tried everything to no avail.

What are you seeing out there?

Looking out the window at a Minnesota winter, it is absolutely no surprise that snow molds ALMOST topped the list as the disease that concerns you the most. So what diseases most concern you? Had I not asked the general membership to tell me what diseases are most important to them – and relied solely on conversations from my first 4 months here in Minnesota – I would have guessed that fairy ring was a huge issue here. Well, the survey says....

I ordered the results according to the “this disease poses a major problem” in ascending order. So the red bars at the right are the most concerning diseases to MGCSA members. The unsurprising results were that dollar spot was ranked as the most concerning disease with both pink and gray snow molds as close runners up. What did surprise me is that anthracnose is such a problem here in Minnesota as well as Take-all-Patch and moss and algae. I am glad that I asked! The other thing that I noticed is that some of the diseases that are not a major problem still concern many of you. For example, brown patch, brown ring patch, and bacterial diseases are of concern.

Now, I doubt that the reason that



bacterial diseases are of such a huge concern is that you are all suffering from it. My thoughts are that the recent identification and characterization of emerging bacterial diseases of turf may have you wanting more information and, therefore, have you a bit concerned. Of course, my thoughts may be wrong, so I will have to count on you to call me if you suspect that you are battling bacterial wilt or etiolation and decline symptoms. While bacterial diseases have been getting a lot of attention lately, it is important to positively confirm that it is in fact bacteria that are the cause of your etiolation and decline, as there are other suspected causes of etiolation.

Bacterial diseases are one of those cases where we still need to learn more about them to get a handle on contributing factors. In this case, positive confirmation of bacterial diseases by the Plant Disease Clinic would help both you and turf research by giving us more information about the distribution of the pathogens and the conditions under which they seem to be occurring.

Next up on the survey, I asked you where I should focus my basic science program. I was surprised by the results.

Clearly, you would like to see some more basic research done on dollar spot. This delighted me somewhat as I have spent eight of the past ten

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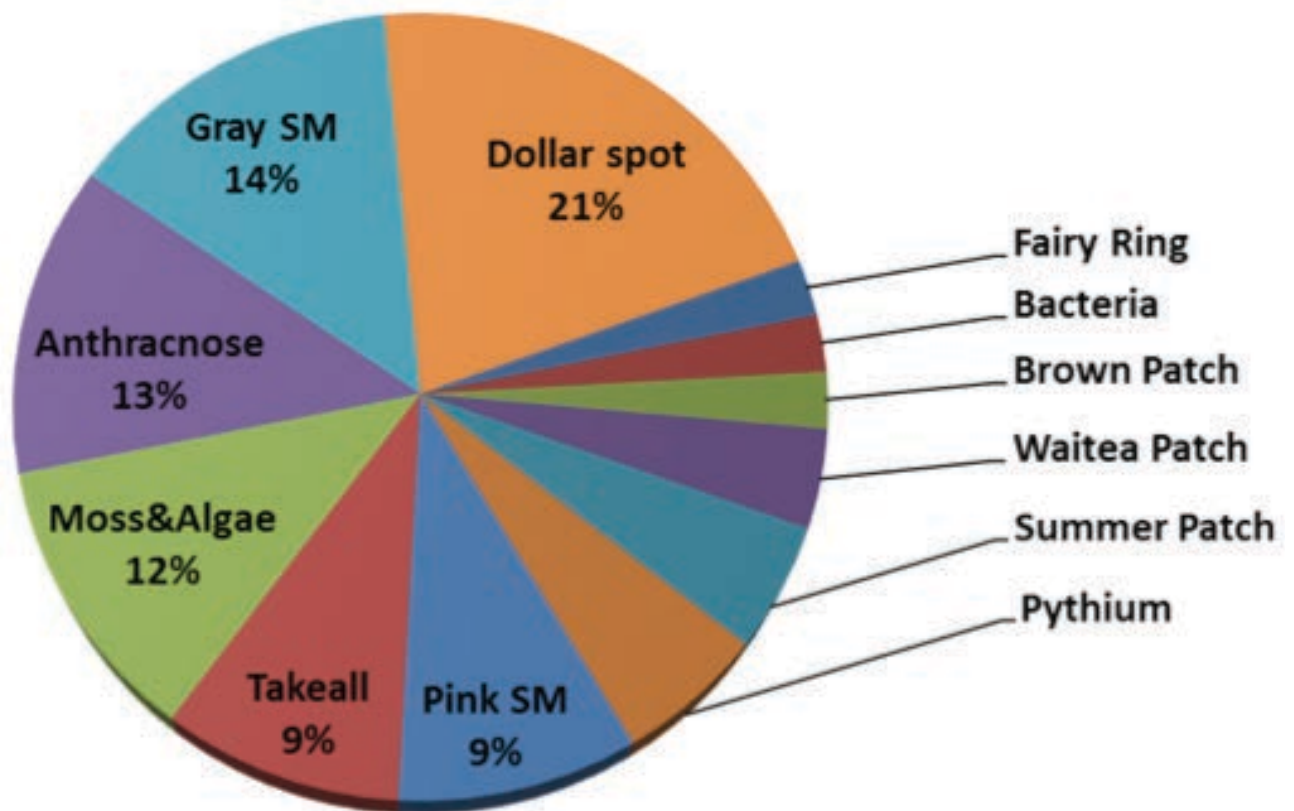
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On what disease would you like to see basic research conducted?



years researching dollar spot disease, and I have several ideas on how to progress from our current knowledge of the fungal pathogen. While anthracnose also seems to be of interest to many of you, there is world-class research done at Rutgers on this disease. Perhaps we can use this interest in anthracnose as a great reason to welcome back Dr. Bruce Clark at another future meeting to share his results with you!

What about gray snow mold? My program has started working with UMN turf grass breeder, Dr. Eric Watkins, to characterize plant defense responses of various fescue species with varying resistance to gray snow mold

pathogens. If we can begin to understand the plant – pathogen interactions in this fescue system, it should be possible to translate these results for the improvement of other grass species as well. I hope to have some interesting results to share with you around this same time next year.

Of course, money matters. So which of these diseases is costing you the most to manage? Of course, dollar spot! In fact, 48 % of you told me that dollar spot was the most expensive disease for you to manage. In second place, we have gray snow mold at 25 percent which is no surprise.

Management Practices

I am happy to hear that most respondents indicated that they have an IPM program in place (75%). This is fantastic. It also sounds like many of you are actively rotating and tank mixing your fungicides, which can aid in preventing fungicide resistance with some diseases.

A question that I found to be interesting was regarding plant defense activators. Most of you have tried them, primarily Daconil Action and Civitas (See figures). What was interesting here is that 37 percent of those using plant defense activators do not

know if they worked. It looks like I have found my first set of field projects!

The final issue of focus was fungicide resistance. Luckily, 65 percent of you have never experienced fungicide resistance. Only 8 percent of respondents said that they have experienced resistance, and 27 percent of respondents suspect they've had resistance issues but never had it formally confirmed.

Dollar spot was the primary disease reported to be demonstrating resistance issues, and the primary fungicide of concern was Thiophanate-methyl. Thiophanate-methyl resistance is well documented with the dollar spot fun-

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gus. Its single site mode of action means that it is very easy for the fungus to become resistant.

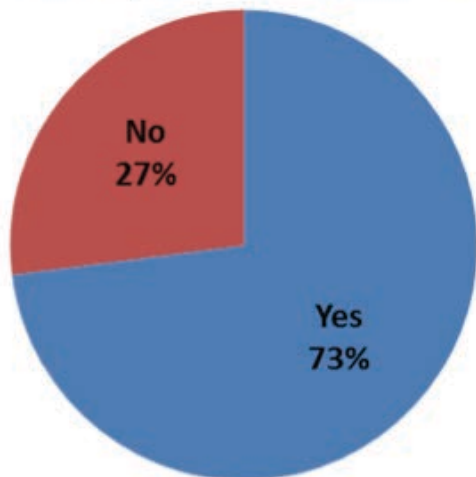
In general, fungicides with single-site of action are best used in a rotation with fungicides of different chemical classes to prevent resistance. Interestingly, several of you suspect that you've had resistance issues with brown patch. Currently, brown patch resistance to fungicides has not been reported. If you suspect fungicide resistance on your golf course, please

contact me so that we can figure out what is going on. Sometimes, what looks like resistance could be a fungicide application issue or a misdiagnosis.

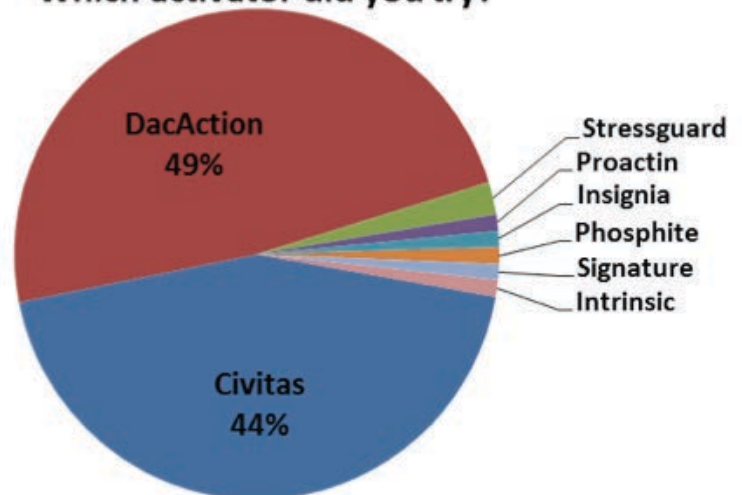
So What is Next?

Based on these results, my lab has already begun to compile information on turf diseases that are of concern to you. We will bring you the most current information on all turf diseases,

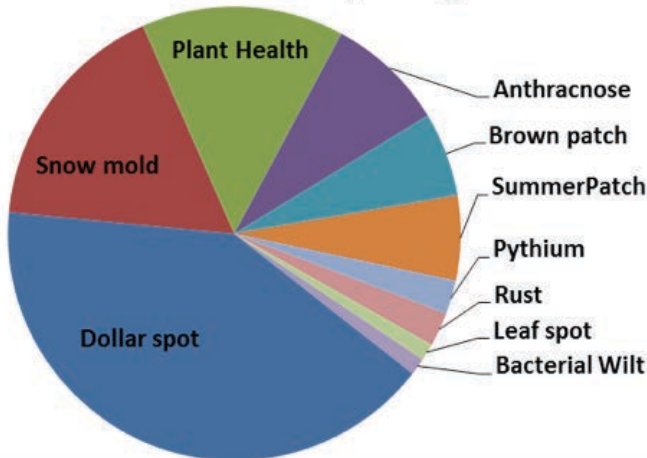
Have you tried activators ?



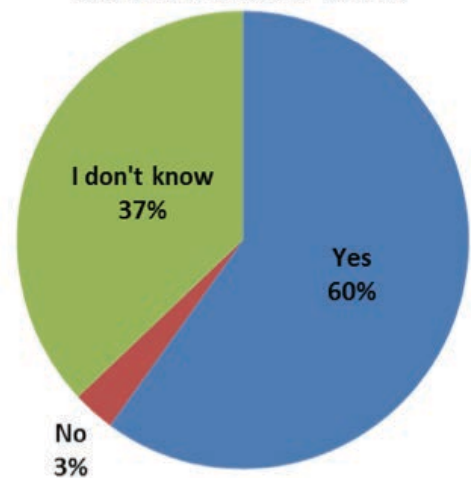
Which activator did you try?



What disease did you target?



Did the activator work?





Bayer Environmental Science

March 10, 2014

MGCSA Assistants Meeting and Hen House Building Event

10,000 Duck Campaign + Education

Lunch provided by Mike Kelly and Bayer Environmental Science

Where? TPC Twin Cities Turf Management Center

Hosted by Assistant Mark Michalski from TPC Twin Cities

On Monday March 10th, MGCSA Assistant members will get together for a morning of agronomic education, learn about duck habitat and build a take home project...a mallard hen house... for placement in a water hazard on their course.

- 8:30-9:00 Registration and Introduction**
- 9:00-10:00 Ken Rost, Frost Services: Maximizing Your Spray System**
- 10:00- 11:00 Aaron Johnsen, Winfield: De-mystifying Moisture Meters**
- 11:00 -11:30 Delta Waterfowl Presentation**
- 11:30-12:15 Lunch provided by Bayer Environmental Science**
- 12:15-? House Building Project with Delta Waterfowl**

Cost of the day including materials to build your own hen house: just \$20

Prior to the Delta Waterfowl presentation and construction project there will be an educational session featuring Ken Rost and Aaron Johnsen. Thanks to Mike Kelly and Bayer Environmental Science for supporting this event.

Please use the Universal Registration form to sign up call or email Jack at 651 324 8873 or MGCSA.org for more information.

It just wouldn't be the same without you.

but we will pay special attention to those diseases for which you expressed concern. We will get this information to you as a professional turf disease IPM manual on our UMN Extension website, the UMN turf blog, and at outreach events. Although this is going to take some time to do well, we anticipate having the information up on the site by the end of this year.

What about management practices? I will be making recommendations based on scientific experiments performed by turf pathology colleagues at universities across the country. If I find that there is not sufficient or consistent information on a particular management issue, then we will conduct tests necessary to get this information for you.

One of the requests made was to have pictures of spores and fungal hyphae associated with our information and diagnostic aids on the website. I think this is a great idea. I have been to several courses that have microscopes and – since microscopy is one of my all-time favorite things – I would love to share what I’m seeing with you.

However, we also have to remember that seeing a specific type of spore, fruiting body, or fungal hypha doesn’t mean that that is what is causing your disease. Many of these fungi are present at low levels all of the time. When I make a diagnosis, I need to see the

organism in the right places, at the right levels, and with the right type of damage to plant parts to be comfortable making a diagnosis. So, I will post pictures of what I see when we look through that microscope, but remember to call if it gets tricky. If there is enough interest, perhaps a turf disease diagnosis workshop using microscopes could be planned in future years. If you see me this summer – let me know if you’re interested.

Finally, it is my hope to conduct an initial survey of golf course diseases this summer. The survey, in addition to results from Plant Disease Clinic submissions, will help us to further understand your disease management needs. After all, in the words of James Horsfall (a famous plant pathologist):

“We must be curious to see if what we see is what we seem to see. We must analyze it, open it up, turn it over, look underneath it, and look behind.”

I’d like to thank you again, for your overwhelming support and participation in this survey. Please contact me at any time to talk about the survey results, turf diseases, or management strategies: Angela Orshinsky, Assistant Professor and Extension Specialist, aorshins@umn.edu, 612-625-9274
Plant Disease Clinic – pdc.umn.edu, 612-625-1275

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Pre-registration closes on February 28, 2014



MGCSA MEGA- SEMINAR



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Host Superintendent: Tom Proshek

The MEGA-Seminar sponsor, John Spaulding with Syngenta, is very excited about this year's format and quality speakers. It is expected this event will be well attended so register early.

Thanks to Jeff Girard and Jake Schmitz, Co-Chairs of the MGCSA Educational Committee for their hard work in planning this great event and Syngenta for their support!

Wednesday, March 5th:

- 7:00- 8:00 Registration/Networking with assorted pastries and coffee*
- 8:00 - 9:00 Dr. Joe Vargas: Black Layer, Wetting Agents, Bacterial Wilt and Bacterial Etiolation*
- 9:00 -10:15 Dr. Joe Vargas: Pesticides; Perception vs. Reality*
- 10:15 - 10:30 Break*
- 10:30-11:00 Dr. Bruce Branham: Why Poa Should Be Eliminated*
- 11:00 - 11:30 Dr. Joe Vargas: Why Poa Should Be Managed*
- 11:30 - 12:30 Lunch and Networking Break*
- 12:30 - 1:30 Dr. Bruce Branham: Poa Annua Control*
- 1:30 - 2:30 Dr. Joe Vargas: Poa Annua Managment*
- 2:30- 3:00 The Poa/Bent Debate and Discussion*
- 3:00 Cash Bar Available*

GCSAA CEUS available for this one day or both days of the Mega Seminar Event.

Cost for this one day event is \$80, both days are discounted at \$140.

Please use [Universal Registration form at mgcsa.org](http://mgcsa.org)

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Registration Closes on February 28th, 2013



MGCSA MEGA- SEMINAR

March 5th and 6th, 2014

Brackett's Crossing Country Club

17976 Judicial Road

Lakeville, MN 55044

Host Superintendent: Tom Proshek

John Spaulding
Regional Representative

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Thanks to Jeff Girard and Jake Schmitz, Co-Chairs of the MGCSA Educational Committee for their hard work in planning this great event and Syngenta for their support!

Thursday, March 6th:

- 7:00- 8:00** *Registration/Networking with assorted pastries and coffee*
- 8:00 - 9:00** ***Dr. Bruce Branham:** Sustainability and Climate Change - How Golf Courses Can Make Proactive Changes*
- 9:00-10:00** ***Dr. Bruce Branham:** Foliar Fertilization*
- 10:00 - 10:30** *Break*
- 10:30 - 11:30** ***Sam Bauer:** Regional Conditions From Across the State*
- 11:30- 12:30** *Lunch and Networking*
- 12:30 -2:00** ***Patrick McGuinness:** How to Handle Problem Employees*
- 2:00-3:00** ***Dr. Brian Horgan:** Practical Use of Growing Degree Days*
- 3:00** *Cash Bar Available*

*Special Name Tag Premium for the first 75 two-day registrations
Please use the Universal Registration form to sign up for this event
at mgcsa.org*

GCSAA CEUS available for this one day or both days of the Mega Seminar Event.

Cost for this one day event is \$80, both days are discounted at \$140.







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PDC

Not Just A Catchy Acronym

by

Brett Arenz, Director Plant Disease Clinic

Greetings esteemed readers! Please allow me to introduce myself, my name is Brett Arenz and I am the new director of the Plant Disease Clinic at the University of Minnesota. Although I was born in the homeland of golf, Scotland, I spent most of my life growing up near Bemidji, Minnesota. I have much respect for those with the skill and dedication to succeed in this sport, but must confess to being bestowed with neither. Indeed, the most time I've spent lately on a golf course is in the winter on skis.

However there is something I'll wager we do have in common: a mutual interest in plant diseases and more importantly, a desire for their effects to be minimized. For any effective and efficient management strategy to be developed and implemented, the first priority must be placed on accurate disease diagnosis. To that end, I feel that the PDC provides an essential component to the long term goal of healthy and

beautiful fairways and greens. With this in mind, I am excited to announce that the PDC will be partnering with Dr. Angela Orshinsky, a new faculty member in the Department of Plant Pathology, in diagnosis of turfgrass samples. To take advantage of her expertise, simply submit your turfgrass sample to the PDC.

At the risk of stating the obvious, it should also be acknowledged that a golf course for which the only plants are grass species would be exceedingly monotonous. High value shade trees, shrubs, flowers and other ornamentals all contribute to an enjoyable day out on the links and make your course memorable to patrons. Don't be resigned to suffer the effects of chronic plant diseases that deplete your time and budget. Accurate diagnosis can allow you to develop a management plan that reduces sleepless nights (perhaps having a 9 month old child is causing me to project here).

The PDC at the University of Minnesota accepts all types of plant samples and utilizes both traditional and cutting-edge molecular techniques in disease diagnosis. In some cases, the combination of signs (visible evidence of the pathogen) and symptoms (damage to the plant) are enough to make a conclusive diagnosis. In other

cases, diseased tissue needs to be isolated on growth media that allow causative pathogens to sporulate and be subsequently identified.

However, there are many other pathogens that require additional steps to arrive at reliable diagnosis.

Bacterial pathogens lack discernible morphological characteristics that can be used to easily separate them from one another. In many of these cases, specialized types of growth media and other chemical tests must be used to distinguish individual species. For example, many bacterial pathogens in the genus *Pseudomonas*

will produce a pigment that fluoresces under ultraviolet light when grown on a particular type of media.

Some pathogens, such as viruses and phytoplasmas, do not grow at all in artificial growth media and more advanced techniques must be used to identify them. In some of the cases, serological tests that work much

like over-the-counter pregnancy tests are available that specifically target antigens of these organisms. Otherwise the DNA itself can be used as a basis for identification and, as sequencing technologies have

dramatically improved in the last two decades, so too has our capacity to accurately diagnose a wider range of pathogens.

When submitting plant disease samples to the clinic, please bear in mind that the accuracy of diagnosis can be very dependent on the quality of samples received.



PDC director, Brett Arenz, analyzing a leaf sample for signs and symptoms.

First, it is almost impossible to diagnose plants that are completely dead as decomposer microorganisms have likely begun to take over the plant material.

Second, if possible, it is always best to submit multiple plants or parts of plants representing different stages of the disease to show the full range of symptoms.

Third, in many cases, above-ground symptoms are caused by pathogens affecting the roots of the plant, but this can't be discovered unless the roots (along with some soil) are also submitted with the rest of the plant. If possible, it is always best to submit the whole plant. Obviously this is not feasible with many tree diseases. In

suspected cases of Dutch Elm Disease or Oak Wilt, symptomatic branches with a diameter of at least 1/2 inch should be submitted.

For instructions on how to submit turfgrass samples, you can refer to Angela Orshinsky's article on

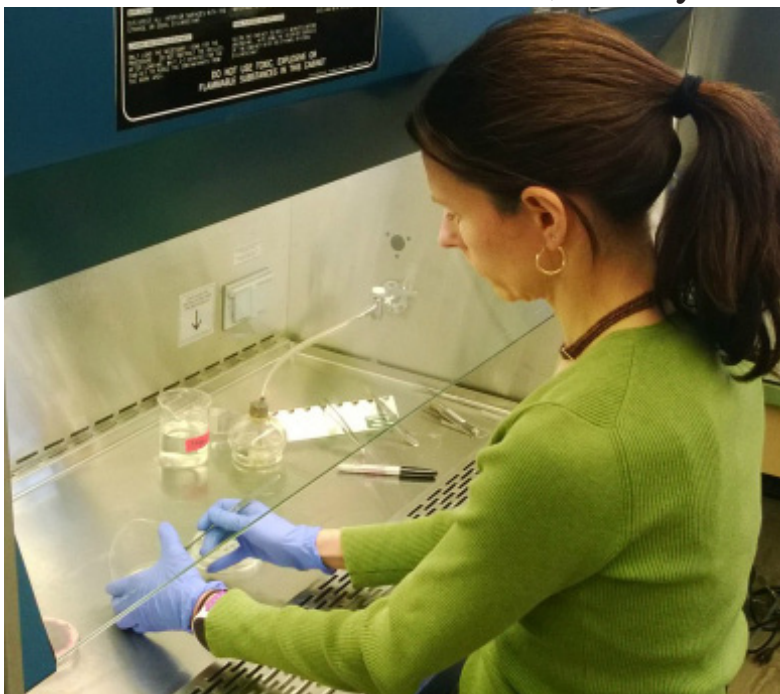
turf grass diagnostics in this issue. You are always welcome to personally drop off samples at the Plant Disease Clinic and our lab is easily accessible on the 1st floor of Stakman Hall just off Gortner Avenue on the Saint Paul Campus of the University of Minnesota.

We also welcome samples sent by mail, but bear in mind that samples can deteriorate significantly if left in the mail system for too long. Avoid sending samples at the end of the week, as they will not be delivered

until Monday. When sending samples by mail it is best to use cardboard boxes and to cushion or wrap above ground tissues in newspaper. Only root tissue should be wrapped in plastic to prevent them from drying out. Wrapping the

whole plant in plastic will cause the sample to decompose rapidly due to high humidity and saprophytic fungi.

Finally, it is important to provide as much background information as possible about the potential disease when submitting a sample. How



Jennifer Flynn, transfers a culture in a laminar flow hood to avoid contamination

long and how many plants have been affected? Are nearby plants of different species affected in a similar way? What types of pesticides and fertilizers have been used recently? All of this information will be considered by the diagnostician and will contribute to the accuracy of the final diagnosis.

For more complete information on available tests, how to submit samples, and the most current rates for service, please visit our website at pdc.umn.edu or feel free to contact us by phone or email. Thank you for your time and we look forward to helping you with your plant health problems!

PDC Contact Information

Brett Arenz, Assistant Professor and PDC Director

Jennifer Flynn, PDC Diagnostician

Phone: 612-625-1275

Email: pdc@umn.edu

Website: pdc.umn.edu

Mailing Address

Plant Disease Clinic

495 Borlaug Hall

1991 Upper Buford Circle

St. Paul, MN 55108

Hand Delivery Address

105 Stakman Hall

1519 Gortner Ave

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Turfgrass Disease Diagnostics at the UMN Plant Disease Clinic; The Price is Right

How do you diagnose your plant? A recent survey says that over 54 % of MGCSA members diagnose their own turf diseases. I know that superintendents are incredibly well educated and can often do this. However, there may be a time when you come across some diseased turf that has ambiguous symptoms, disease symptoms that look similar between two or more diseases, or diseased turf that just won't recover despite your best efforts. That is where we can help.

Beginning this spring, my laboratory will be teaming up with the Plant Disease Clinic (PDC) to provide you with timely turfgrass disease diagnoses and management recommendations. At the PDC, we have the equipment and expertise to perform microbiological and DNA based tests to provide you with accurate diagnosis of your diseased turfgrass samples.

We will also be reaching out

to you with recommendations for your turf disease management. While I will strive to help you manage diseases using primarily cultural techniques, I will also work with you to select the appropriate chemical treatments.

Several members have requested services such as site visits and subscription based services, and that is what we are now able to offer you! We will be offering a subscription fee that will allow unlimited sample submission as well as a site visit and will include molecular diagnostics. Another subscription service will allow for submission of up to five samples and will include molecular diagnostics. The new services and fees are as follows:

Professional Turf Disease Diagnosis Fees:

Diagnosis with a phone consultation - \$100 per sample

Diagnosis with a written report and phone consultation - \$150 per sample

Diagnosis with site visit and written report - \$250 per sample

Subscription 1 – 5 samples including written reports, phone consultations - \$500

Subscription 2 – unlimited samples, written reports, phone consultations, and one site visit - \$1000

All samples and payments will be handled by the PDC. You can find out more about the PDC at the following website: pdc.umn.edu.

How do you submit a sample? This is an important step. Proper sample submission can have a huge influence on our ability to quickly and accurately identify the pathogen.

1. Take an appropriately sized

sample. Samples taken with a cup cutter are perfect! However, if you are using a shovel or spade on longer landscaping grasses, it is still important to take a sample that is at least 6” in diameter (or width x length for square samples). Take samples that are at least 2 to 3 inches deep to ensure adequate roots and soil.



2. If there are several diseased spots, it can be helpful to take several samples (Figure 1, above). If there are different stages of disease present, it can be helpful to submit samples that are at different stages of disease. Taking several samples of both healthy and diseased turf can help us with

difficult samples.



3. When taking the sample, take them from the edge of the diseased area so that both healthy and diseased turf is present. (Figure 2, above). Label the samples to denote the location where they were taken. Pictures of the disease – such as this one – can be very helpful for us to make diagnoses.
4. Fill in the disease submission form in as much detail as possible. Make a note of any conditions (sun, shade, humidity, drainage, temperature) treatments (growth regulators, fertilizers, pesticides) and cultural practices (cutting, aeration, top dressing, rolling). Place this submission form into a plastic

bag to prevent it from becoming wet. If you have printed pictures, these can also go into the plastic bag. Alternatively, you can email a picture of your diseased areas to pdc@umn.edu – be sure to make sure that we can connect this email to your submission by providing your name, date, and mailing date.

5. Package your sample by wrapping the soil portion in foil to prevent soil from getting onto the grass. Package the samples tightly in newspaper and add newspaper to the box to ensure that they do not bounce around inside of the box (Figure 3, opposite page). Do not put any samples into plastic bags as the humidity will encourage sample degradation very rapidly.
6. Sample submission. You can submit samples to the PDC in person (first floor Stakman Hall) or mail them to:
495 Borlaug Hall
1991 Upper Buford Circle



Saint Paul, Minnesota, 55108.

7. Please mail samples with over-

night or one day delivery at the start of the week. If samples are mailed on a Friday, they could degrade as they sit in the courier mailbox over the weekend.

All pictures were provided courtesy of Joe Rimmelspach at The Ohio State University (<http://turfdisease.osu.edu>).

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UNIVERSITY OF MINNESOTA

PLANT DISEASE CLINIC

TURF DISEASE SAMPLE SUBMISSION FORM

Date: _____ Name: _____ Organization: _____

Street Address: _____ City: _____ State: _____

Zipcode: _____ Phone: _____ Email: _____ Fax: _____

Does submission include pictures? Y / N Best method for contact: phone email

Describe Turf Species/Cultivars: _____ Age of stand: _____

Describe Turf Type (greens, fairway, lawn...): _____ Height of cut: _____

Describe the Damage (Patches, streaks, circles, spots...): _____

Approximate size of individual damaged areas: _____

Soil type: _____ When did you first notice the problem: _____

Is this a recurring problem for you? Y / N Since when?: _____

What pesticides have you applied to this turf recently (date, rate)?: _____

Describe cultural practices (aeration, topdressing): _____

Describe environmental conditions of affected turf (temperature, irrigation, rain, drainage, fertilization...): _____

Use this space to provide more details if required: _____

You will be contacted within 24 h for samples arriving Monday to Thursday. You will be contacted the following Monday for samples arriving on Friday.

Take samples from the edge of diseased area and deep enough to include roots. Package samples with the root zone (not leaves) wrapped in foil and firmly pack the sample into a box with newspaper. Do not package samples in plastic bags.

Ship disease samples overnight or early in the week to avoid sample degradation.

Accompanying pictures (with contact information) can help with diagnosis and can be emailed to: pdc@umn.edu

Send samples to:

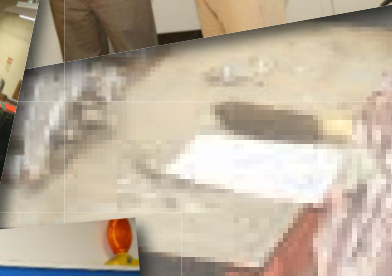
Plant Disease Clinic, 495 Borlaug Hall 1991 Upper Buford Circle, University of Minnesota, St. Paul, MN, 55108

Call 612-625-1275 for questions regarding submissions / samples, subscription services, or payment.

Person Receiving Sample: _____ Date and time received: _____

Response by: _____ Response Date: _____ Response Method: _____

MGCSA Shop Tours



Melting Ice On Putting



Dr. Kevin Frank, Michigan State University (author), Dr. Brian Horgan, Andrew Hollman & Sam Bauer University of Minne

When given lemons make lemonade. When given an ice sheet, conduct an ice melt study. On January 31 at the Hancock Turfgrass Research Center (HTRC) at MSU we conducted an ice melting study in cooperation with Dr. Brian Horgan, Andrew Hollman, and Sam Bauer from the University of Minnesota. We tested 20 products for their ability to melt ice. Conditions during our treatment window which began at approximately 11 am and concluded at 5:30 pm had temperatures hovering around 25 °F and constant cloud cover. The treatments can be broken down into three general categories:

Greens



Standard Chemicals/Salts (all application rates 28 lbs./1000 ft.²)

1. Calcium chloride
2. Sodium chloride
3. Potassium chloride
4. Magnesium chloride

‘Safer’ ice melt products (all application rates 28 lbs./1000 ft.²)

5. Calcium magnesium acetate

(CMA)

6. Sodium acetate (NAAC)
7. Enviro Melt (carbonyl diamide/urea)
8. Safe Paws (modified amide/glycol admixture)
9. Paw Thaw (CMA and fertilizer)
10. Tenderfoot Ice Melter (urea and DeFrost)
11. Ammonium sulfate

Solar Absorption Products (dark colored)

12. Milorganite greens grade (56 lbs./1000 ft.²)
13. Sustane greens grade (40 lbs./1000 ft.²)
14. Top Cut biosolids SGN 90 (53 lbs./1000 ft.²)
15. Top Cut SGN 200 (53 lbs./1000 ft.²)
16. Top Cut + DeFrost SGN 200 (53 lbs./1000 ft.²)
17. BioDac + DeFrost SGN 200 (47 lbs./1000 ft.²)
18. BioDac + DeFrost + Colorant SGN200 (47 lbs./1000 ft.²)
19. Eon 75 humic acid (47 lbs./1000 ft.²)
20. Black sand (100 lbs./1000 ft.²)

We recorded surface ice temperatures prior to treatment application and at intervals following applications using an infrared temperature sensor. We rated ice melt based on observation of standing water on the plots on a scale from 1-5 with 1 = no visible melt, and 5 = visible standing water.

Surface temperatures prior to treatment application were very similar to air temperatures 25-26 °F.

One hour after treatment application the treatments were separated into two groups, the standard salts and safer ice melt products vs. the solar absorption products. The solar absorption products with their dark coloration had surface ice temperatures of 35-37 °F whereas the salts and safer treatments had surface ice temperatures of 27-31 °F. Treatments were still significantly different at 4.5 hours after treatment application although



Solar absorbing products had the greatest melting



Calcium chloride melted holes all the way to the turf surface.

the temperatures for the solar absorption products declined to 30-32 °F, most likely due to the sun setting.

There were also differences in visible melt from the treatments. The following treatments produced the most visible melt: Milorganite, Sustane, Top Cut biosolids SGN 90, Eon 75 humic acid, and black sand. The standard salts and safer ice melt treatments produced very little visible ice melt.

The standard salts were the only treatments we observed that were able to penetrate through the 2 inch ice sheet so they could be effective in facilitating gas exchange with the surface but of course there is the risk of turf burning from the salt properties of these treatments.

Overall, even though temperatures were below freezing and cloud cover persisted the solar absorption treatments were effective at melting the ice surface but were unable to melt to the surface of

the turf given our 2 inch ice sheet. We are planning to replicate this trial again this coming week at both MSU and Minnesota when temperatures are forecast to be above freezing. We will also be assessing turfgrass phytotoxicity from the treatments this spring.

Helping the Melt

Next week most areas of Michigan are forecast to have temperatures above freezing and possibly into the mid 40's in combination with rain. Many superintendents have been

attempting to clear greens down to the ice layer to facilitate melting. Keep in mind that if this melt occurs there is going to be a tremendous amount of water that will be moving off greens. Ensuring the water can exit the greens will be critical to try and prevent water backing up onto the green and refreezing if temperatures drop below freezing at night. Ultimately Mother Nature is going to dictate whether or not our *Poa annua* putting greens have survived the ice sheet and the pending melting and freezing in the next month.



Roger Stewart, CGCS, and 2014 MGCSA President on the left, thanks Scottie Hines, CGCS for his two year term as MGCSA President after the MGCSA 2014 Annual Meeting at the Northern Green Expo.

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New Faces and Custom Testing Packages at the University of Minnesota Soil Testing Laboratory

By Brian Barber, Keith Piotrowski, Angela Gunglogson, Sam Bauer and Dr. Brian Horgan

As golf course superintendents, you strive to maintain the best possible playing conditions day-in and day-out. This requires a solid understanding of the art and science of turfgrass management. Possessing skills in the art alone can leave you missing a big piece of the puzzle. To better understand the science of plant and soil health, turfgrass managers have been analyzing soil, tissue, and water samples for almost as long as turfgrass management has been a profession. Today, testing laboratories have become more advanced, timely, and economical, opening the door for a wide range of

Minnesota Soil Testing & Research Analytical Laboratory (STRAL) is opening its doors as well. The new staff, along with the UMN Turfgrass



Keith Piotrowski
Assistant Scientist
Manager of STRAL
22 years with the UMN

Science group, has designed several packages specifically to meet the needs of professional turfgrass managers. The new packages offered

Brian L. Barber
Scientist
Director of STRAL
23 years with UMN



Angela Gunlogson
Junior Scientist
STRAL
5 years with the UMN



testing services offered specifically for golf courses. The University of

include 3 soil testing options, tissue testing, and water quality analysis;

these are listed in greater detail below. However before we detail that, an introduction to the laboratory and new staff is in order.

About the University of Minnesota STRAL and Staff

Housed in the University of Minnesota's Department of Soil, Water, and Climate and in place for over 43 years, the Soil Testing & Research Analytical Laboratory is a service analytical lab providing Universities, State and Federal agencies, private industries, and the general public with environmental analyses of the highest quality. The laboratory offers over 100 tests for soil, water, plant, animal, agricultural lime and other specialized materials.

In early 2012, STRAL underwent significant staffing changes, and the new personnel have the experience and expertise to meet the needs of golf course superintendents. The new Director, Brian Barber, has 23 years of

research experience in soil-pesticide interactions and contaminants of emerging concern, as well as the analytical expertise to conduct a multitude of wet-lab analyses. The new Laboratory Manager, Keith Piotrowski, has 22 years of analytical experience dealing with many facets of environmental quality and the third core member of our staff is Angela Gunlogson, who has been with STRAL for five years, and has primary responsibility for our soil testing program.



STRAL is loosely divided into three separate labs; focusing on soil, water, and plant materials

respectively. In the STRAL soil lab, we measure the composition of samples and provide fertilizer recommendations based on most standard micro- and macro-nutrients. In the plant lab, we use combustion analyzers to determine N, P, and S levels in plant material, and we perform digests and ICP analyses for other elements detectable down to the parts-per-billion (ppb) level. Finally, in the STRAL water lab, we perform

routine testing of fundamental indicators such as pH, alkalinity, electrical conductivity, and various classes of solids. Over the last two years, we have also invested nearly \$100,000 in equipment that allows us to conduct colorimetric analyses for Ammonium⁺, Chloride⁻, Nitrite⁻, Nitrate⁻, various pools of Phosphate³⁻, and Total P. Our system is modular and expandable, allowing us to add new methods to meet the emerging analytical needs required to conduct a comprehensive water quality monitoring program.

The Soil Testing and Research Analytical Lab is trusted by corporations, universities, and private individuals to provide high quality analyses on nearly any kind of environmental sample. We have the equipment and experience needed to conduct analyses on all your golf course soil, plant, and water samples. Please see our website: <http://soiltest.cfans.umn.edu/>, or call 612-625-3101 for more information, or to discuss your specific analytical needs.

New Offerings at the STRAL

The 5 new packages being offered are outlined here. New profes-

sional turfgrass testing request forms will be available on the STRAL website at: <http://soiltest.cfans.umn.edu/>. In addition to offering new packages, results can be emailed for faster turn around time and credit cards will now be accepted. Tissue results will be emailed out within 48 hours. Soil and water tests will be completed within 7 days.

Recommendations given will be based on nitrogen, phosphorus, potassium. For further consultation on the results of professional soil, tissue, and water tests contact Sam Bauer (sjbauer@umn.edu) or Dr. Brian Horgan (bphorgan@umn.edu).

We are excited about this new offering at the University of Minnesota and look forward to assisting you with testing services in the future. After all, today's turfgrass manager requires science-based information in order to make even slight adjustments in their management programs. These adjustments can often lead to cost savings, improved turfgrass health, and a more enjoyable golfing experience.

Soil Package 1: \$18.50

Phosphorus, potassium, calcium, magnesium, pH, organic matter %, texture

Soil Package 2: \$49.75

Phosphorus, potassium, calcium, magnesium, pH, organic matter %, texture

Zinc, copper, iron, manganese, boron, sulfur

E.C. soluble salts (1:1 slurry)

Nitrate and ammonium

Soil Package 3: \$99.75

Phosphorus, potassium, calcium, magnesium, pH, organic matter %, texture

Zinc, copper, iron, manganese, boron, sulfur

CEC and base saturation (sum)

E.C. saturated paste, ESP, SAR

Nitrate and ammonium

Chloride

Plant Tissue Package: \$22.50

Total nitrogen

Aluminum, boron, calcium, cadmium, chromium, copper, iron, potassium, magnesium, manganese, sodium, nickel, phosphorus, lead, zinc

Water Package: \$72.25

pH and Electrical Conductivity

Hardness

Nitrate and ammonium

Sulfate and chloride

Carbonate and bicarbonate

Salt concentration (TDS)



NGE CH



Thank You





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Within the Leather

by David Kazmierczak, CGCS

**I wrote almost.....
last year
about how
fortunate**

**I am to be
allowed to attend the GIS
show each year and experience
the education, networking
and ultimate trade show that
enhances what I do and how
I do it at Prestwick. This year
was no different in Orlando.
The show may have been a little
smaller, the duration tighter
and the opportunities seemingly
overlapping but still a solid
experience.**

**As I walked the trade show
floor it was fun to see all the
new stuff coming out and
talk to reps about how they
were designed, when they
will be available, etc. It is
amazing what technology
is bringing to the table
for us to use and
make our jobs easier
and better. Well,**

mgcsa.org

**Before I get to my point
of technological consternation,
let me relate to you that I am
a movie snob. I'm not a huge
movie fan per se because my
attention span generally is that
of a gnat after a pot of coffee.
For me to invest two to three
hours of time in a single setting
without flipping the channels,
it takes a herculean effort from
Hollywood and 99.9 percent
of the time they simply are not
up to the task. But when they
are- the movie and the lines are
woven into the tapestry of who I
am, what I think and what I say.**

**It is probably safe to say
that just about every guy who
ever worked on a crew can
recite Caddyshack verbatim
or at least pull a dozen lines
out of their hind end at a
moment's notice. I am this
way with any number of films,
mostly comedies. In my warped**

mind, everyday thoughts and conversations become the playing field for which I am to bring the game of movie line insertion. So I got that going for me.....which is nice. (Caddyshack)

Walking the trade show floor is kind of like walking through candyland for and adolescent when it comes to this silly little game I play with myself. I carry on conversations with familiar people and strangers. I am bombarded and stimulated with interesting thoughts, ideas and tangible things. The movie one liners are free and flowing .

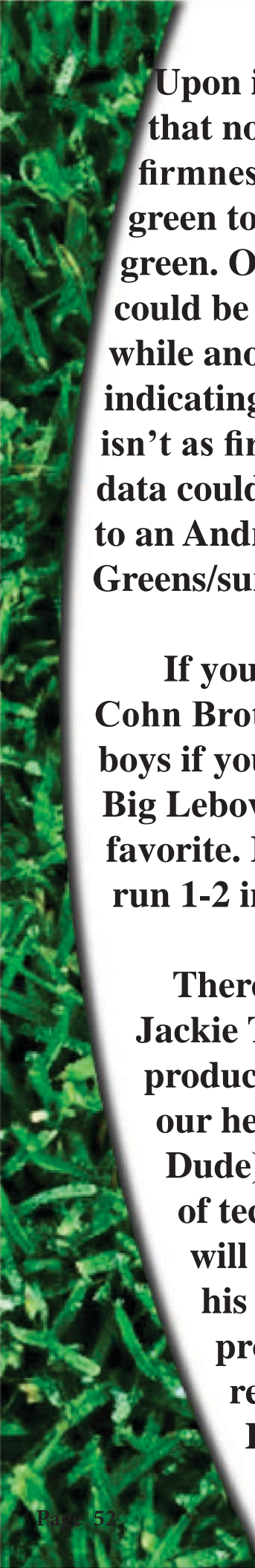
“Badges? We don’t need no stinking badges!” (Blazing Saddles), uttered in a conversation about lost credentials.

“So you’re saying there’s a chance.” (Dumb and Dumber), uttered when told the price of a new mower.

“Run away!, Run Away!” (Monty Python and the Holy Grail), the thought running through my head when cornered by a pushy flag peddler.

The above were the family-friendly quotes. You can imagine some of the other ones. So there I was happily traversing the wide Orange County Center isles when all of a sudden I saw a devise that sparked my curiosity originally, then quickly became the bain of my GIS existence. I had discovered the Fieldscout Trufirm measuring devise.

At first I thought it was another version of the TDR 300 moisture meter. I purchased one of these last year and found it to be a very valuable tool in profile and root zone water content measuring as many other superintendents have.



Upon inquiry, I was told that no, this was to measure firmness of greens, both from green to green and intra-green. One spot on the green could be .42 on the meter, while another would be .28, indicating one spot on the green isn't as firm as the other. The data could also be downloaded to an Android device for plotting Greens/surfaces. Ummmm, Ok.

If you are a devotee of Cohn Brothers films, (local boys if you haven't heard), The Big Lebowski is surely your favorite. It and Caddyshack run 1-2 in my world.

There is a part where Jackie Treehorn (a porn producer) is chatting with our hero Jeff Lebowski (The Dude) about the wonders of technology and what it will do for the end user of his morally questionable product. The dude's response was "Well, I still (take care of

business) manually." Me too dude, me too.

Really? A firmness meter for a green? What's next? I looked at the thing and decided that this was an evil contraption. Not that I don't think it would be kind of interesting putting some sort of value to how firm your greens are, it's just that some things just shouldn't be quantified. I'm sure if you are in this game long enough at some point somebody has griped about a particular green being firmer than a couple others, but do you really want to run out with your skippy meter and find out?

And what are you going to do about it anyway? Run a steam roller over a six square foot section of your green to make up that .10 difference? It's ridiculous. I'm going to lay a wager that the low areas are not as firm as the high areas, and the normal entry/exit ways from the cart path are firmer than the rest of the green. (Just a hunch.)

But the real danger is that members, owners, and certain players, and we all know who they are, may catch wind of such a device and then there may be no turning back. It has the potential to be like a stimpmeter reading on crack. All it might take is one superintendent in one greens committee meeting touting that his Trufirm readings are within .01 of each other and he has reached the ultimate in consistency- or worse- tweeting it to the rest of the uncivilized golfing world.

That means you have to get the Trufirm, and God help you if your readings aren't consistent. I would hate to see the day some poor schmuck lost his job because the readings on his Trufirm weren't good enough, but I can certainly imagine it happening.

“I've always thought religion was a fine thing- if taken in moderation.” (The

butler in Trading Places, dressed as a priest.) Maybe we can replace religion with technology in that statement. I am all for progressive, helpful things but this just doesn't seem like one to me. Shortly after my Trufirm experience I happened upon something called the Sand Pentrometer. It lets you test the sand in your bunker to determine if it will produce a “fried egg” lie or not.

“What in the wide, wide world of sports is a goin' on around here?” (Blazing Saddles)

Needless to say, that ended the 2014 GIS show for me, and off to the Pointe for a refreshment or two I went to contemplate what I had just saw.