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2018 WTA Turfgrass Research Day

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

The final curtain has been closed on the 2017 growing season. What a crazy one it was. Early June we were hot and very dry. July felt like the Noer Facility flooded every other day. The end of summer brought a long drought to Madison. After a complaining tweet in September of no rain at the Noer, a few people informed me they had received several inches of rain and flooded again. A crazy year or just what we have come to expect.

We all need something to count on and that will happen January 9th, 2018 at the Pyle Center on the campus of the University of Wisconsin-Madison, the 2018 Turfgrass Research Day. This years' Research Day is a different from past years. This year the WTA Board formed a committee over the winter of 2017. This group planned the entire day. In the past, the professors developed ideas and arranged speakers. This new group has done all the leg work to arrange speakers and topics.

The mission of Research Day is to give the UW – Madison professors and their staff the ability to share their recent research and interact with turf managers to discuss ideas for future research projects. This is another opportunity to show off the beneficial work conducted at the O.J. Noer Turfgrass Research and Education Facility and sponsored by the WTA.

Besides the Turf Group from the UW - Madison we have the following:

Dr. Frank Rossi, Ph.D. Cornell University
"Current Research and Best Management Practices for Turfgrass Management"

Frank S. Rossi, Ph.D. is an associate professor of turfgrass science at Cornell University. He received a B.S. and M.S. from the University of Rhode Island and his Ph.D. from Cornell University. Dr. Rossi's research interests include resource efficient turfgrass management, turfgrass ecology and cultural and environmental stress management.

Carmen Magro, CGCS from POGO
"Optimizing Turf Performance and Health Through Technology"

Carmen Magro has served as the Turfgrass, Golf Course and Ag Management Industry for twenty-five years focusing on applying the most practical solutions to solving turfgrass problems and presenting optimal turfgrass performance conditions. He maintains CGCS status with the GCSAA.

Leslie Ptak – OSHA
"OSHA for the Green Industry"

Leslie Ptak is a compliance assistance specialist in the Madison OSHA office. Her responsibilities include outreach and training for Madison OSHA's 19-county territory and oversight of the office's cooperative programs, such as alliances and partnerships. As a compliance assistance specialist, she has no enforcement authority.

This is a great time to visit the UW-Madison campus because classes are not in session and parking is easy, just two blocks from the Pyle Center. I can't think of a better way to start 2018 than seeing your industry colleagues, visiting with our distinguished guest speakers and the UW – Madison professors.

More information is available at www.wisconsintufgrassassociation.org. Registration is due by December 28th, 2017. Registration for Non-WTA members is $50.00 and for WTA members $40.00.

WISCONSIN TURFGRASS ASSOCIATION

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PRESIDENT'S MESSAGE

End of a Great Season

By Paul Huggett

This morning (November 10th) set record low temperature for the Madison area. We just touched the single digits. It seems early to have that ground firming temperature but in our farms 50 plus year existence, I do remember a year where we were finished cutting sod in October. That year, the mid 1980's, if I recall the correct decade, it started to rain and never quit. No ground prepping was done or cutting sod for that matter. Weather has such a significant impact on our turf growing/maintaining livelihood. Thankfully, we have seen the good and the bad and can say we are still ahead of the game.

Coming to the end of the season is an appropriate time to thank all who have made this organization possible. The list would be difficult to name all but an overview would include: our dedicate members, vendors, board members, O.J. Noer personnel, University staff and faculty. Our affiliated groups also help us many ways: Wisconsin Golf Course Superintendents Association, Sports Turf Managers Association, Lawn Care Professionals, Wisconsin Sod Producers Association. We thank you and need your continued support.

The upcoming chilly weather is perfectly timed for the use of the WTA's recently completed new storage facility located next to the chemical storage shed on the O.J. Noer Turfgrass and Research Facility. Major funding for this project comes from the Wisconsin Golf Course Superintendents Association. Thank you WGCSA! The Wisconsin Turfgrass Association also contributed funds and facilitated the leg work necessary to get the building built on university property.

Looking forward to seeing everyone at our Winter Conference at the Pyle Center on the UW Madison campus January 9th! Have a great fall.

I hope your end of the season plans go well as you wind down 2017.

A New White Grub Species on the Rise

By R. Chris Williamson, Ph.D., Department of Entomology, University of Wisconsin-Madison

White grubs, the larvae of beetles, are considered the most important insect pest in turf. They can be very destructive to turf by the feeding damage to the roots, and the additional damage caused to the turf by the vertebrate pests (skunks, raccoons, turkeys and others) that prey on the white grubs. There are numerous species of white grubs that occur in the continental United States and Canada, five species can be found in Wisconsin. Two of the most common grub species are the Japanese beetle and the May/June beetle. Another important, but less common, grub species is the Black Turfgrass Ataenius (BTA). BTA is sporadic, but can cause measurable damage to turf, especially golf course putting greens, collars, surrounds, fairways and tee boxes. Within the past few years, Northern Masked Chafer has been detected in three South Central counties in Wisconsin (Rock, Walworth and Kenosha). This is not that surprising as it is relatively well established in numerous northern and central Illinois counties. A fifth white grub species, European Chafer, was found in Door county Wisconsin last year (2016). This year (2017) it has been detected in Brown and Manitowoc counties in Wisconsin and several counties in the Upper Peninsula of Michigan.

The European Chafer is another important white grub species that can cause measurable turf damage. Much like other white grub species, the European Chafer has three larval stages (instars), and they grow and develop by a physiological process called molting. Grubs typically reach the second instar by early September and the third (and final) instar by early October. First instar grubs are approximately 3/8 inch when elongated, or about the size of a #2 pencil eraser when in the C-shape position. Second instar larvae are nearly ¾ inch when elongated, or about the size of a dime when in the C-shape position. Third instar larvae are roughly one inch when elongated, or about the size of nickel when in the C-shape position. The European Chafer typically completes its development in one year. Adults emerge from the soil from mid-June through early July. Adults fly a few hours before and after sunset when temperatures are above 65°F; peak adult activity occurs for 2–3 weeks. Female adults lay their eggs in the soil 2–4 inches below the turf. After 10–14 days, eggs hatch and grubs emerge to immediately begin feeding on turfgrass roots (around mid-July in Wisconsin).

Grubs feed from July until the soil freezes (typically in early November in Wisconsin) and overwinter in frozen soil. Surviving grubs return to the root zone to feed as soon as soil temperatures surpass 50°F for several weeks (typically late March through early May in Wisconsin). In late May, most grubs descend 2–10 inches down the soil profile to pupate (transform into an adult). After 10–14 days, European Chafer adult beetles emerge from the turf, around mid-June.

Current thresholds estimate that around 5–10 European Chafer grubs per one square foot of low maintenance turf is the point at which damage is noticeable and treatment may be necessary. This threshold is higher (15–20 grubs per square foot) in irrigated turf as watering helps the turf to recover from grub damage. Where European Chafer occurs, it is typically more damaging to turf than other common white grub species such as the Japanese beetle. European Chafer grubs are slightly larger than Japanese beetle grubs; as a result they eat more and can be more destructive than equal numbers of Japanese beetle larvae. Additionally, European Chafer grubs feed later into the fall and resume feeding earlier in the spring than Japanese beetle grubs. Unlike the Japanese beetle, however, European Chafer grubs are generally not as problematic in irrigated turf, they are most common on non-irrigated turf.

The optimal way to manage European Chafer grubs is to apply a preventive insecticide application prior to or near egg hatch (May to late July). Preventive insecticides include products that contain the following active ingredient: chlorantraniliprole, clothianidin, dinotefuran, imidacloprid or thiamethoxam. While nearly all of these preventive insecticides are effective against newly emerged, young grubs, they do not work well on older, larger (second and third instar) grubs; clothianidin is the one exception. Products containing carbaryl, clothiandin or trichlorfon can be used as a corrective or curative management approach. These products are most effective in August when the grubs are relatively young, since the effectiveness of these products tends to decline when they are applied to larger, older grubs in September, October, early November, or the following spring.

Following up with a corrective or curative product after using a preventive insecticide may be necessary for complete control. Both sprayable and granular (spreadable) formulations of preventive and curative insecticides are available. Regardless of the active ingredient or product formulation, all products must be watered-in with a sufficient amount of post-treatment irrigation or rainfall (at least 1/5 inch) to move the insecticide through the turf thatch and into the soil where the grubs are located. Granular formulations are often more appealing and practical for homeowners and lawn care operators, as they tend to be more stable in the turf environment until a sufficient rainfall event occurs. However, any insecticide treatment should be watered-in as soon as possible. Unlike most other white grub species (e.g., the Japanese beetle), European Chafer grubs are overall less susceptible to insecticides. Treatments directed at controlling the adult beetle or applied while it is a pupa are not effective..

TDL Update

By Kurt Hockemeyer, TDL Manager

As I write this article, I believe that many folks will have gotten their snow mold apps completed, irrigation systems blown out, and their turf areas winterized. Hunting season starts soon, and as Bruce just recently told me, this marks the unofficial end of the season in Wisconsin (and probably in other states as well). The number of diagnostic samples coming into the lab has dropped off dramatically over the past month. But, this decrease in diagnostic work is welcome because it allows me time to focus on our snow mold research that is now in full swing.

We have 90 treatments in this year's large snow mold trial, which is a bit smaller than in the past few years, but it is still a significantly large trial (Figure 1). The final applications in Marquette, MI were just completed in early November. And just in time as well as it looks like Marquette is due for a large amount of snow in a few days. Also recently completed was the final fall applications in the take-all patch study which is located near Green Bay. Still upcoming though is the other two locations for our large snow mold trial (Wausau and Madison), the snow mold timing study (Minocqua, Wisconsin Rapids, and Madison), our pink snow mold trial where we will be evaluating low water volume fungicide applications for their effectiveness in controlling pink snow mold, and finally our winter degradation study where we see how long fungicide residues last over the course of a winter.

Going back to diagnostic samples, there was one interesting thing that came into the lab. A couple of samples came in where Kentucky bluegrass was exhibiting yellow rings (Figure 2).This immediately made me think of something like necrotic ring spot was weakening root systems and causing plants to yellow, but after talking with the submitters, I moved away from that line of thought. Eventually I settled on a diagnosis of yellow ring. This should not be confused with yellow patch, which is a very different disease. Yellow ring is caused by a basidiomycete fungus (similar to fairy ring). In cool weather, the fungus infects roots and leaves become chlorotic. Sometimes white fungal mycelium can be seen growing out of the soil and/or thatch. Both of these samples had quite a thick thatch layer as well. This fungus causes no lasting damage to the turf and fungicides are not generally needed. Reducing the thatch layer is usually the best thing you can do to prevent this disease. This was definitely an interesting and not often seen 'disease'.

I hope that everyone had a wonderful growing season and that everyone also gets some much needed R and R. My first year as the manager of the TDL was definitely interesting I learned a lot and got to know many people in the industry. Enjoy the upcoming holidays and I hope to see many of you at the various events coming up this winter.

Figure 1. The large snow mold trial in Marquette. Matt Kapushinski is applying early snow mold apps on October 12th, 2017.

Figure 2. Yellow rings in Kentucky bluegrass were the symptoms in a couple of TDL samples this fall. These samples were diagnosed as yellow ring, a fairy ring-like disease that does not cause serious damage.

A Lasting Legacy

By Doug Soldat, PhD, Department of Soil Science, University of Wisconsin - Madison

As his obituary told it, on October 7, 2017, Wayne Kussow kicked the bucket. As a graduate student under his direction in the early 2000s, I remember him complaining about an obituary stating Mr. So-and-so "passed on" or some other euphemism for dying. He rolled his eyes and said "he didn't pass on, he died!" Wayne was truly a modest man to his core, and disdained those that were full of themselves. He'd rather go to the dentist than to be honored with an award. So, by "kicking the bucket" we caught a glimpse of his humility and good sense of humor for one last time.

Wayne Kussow was a world-class advisor who got to know all of his students. He customized their schedules, so top students ended up in plant physiology or organic chemistry and students struggling to get by were put in classes where they would be more likely to find success. Every one of his students knew that he genuinely cared about them. Like a good parent, was quick to let you know if he thought you weren't working hard enough, but also understood the challenges that students faced and was always there to help in any way he could. Aside from academic advising, he matched his students up with summer internships where they would be sure to learn new skills they were lacking. He always encouraged his students (most in golf) to work in places with large, medium, and small budgets to see golf course management from all perspectives.

Wayne was a highly respected turfgrass researcher. He carefully monitored runoff from lawns under different fertilizer programs which plainly demonstrated to policy makers (whether they listened is a different story) that phosphorus bans would have little impact on improving water quality, and that not fertilizing a lawn could actually worsen it. He tested turfgrass fertilizers and products annually and was quick to call a spade a spade if a product with grand marketing claims failed to perform in his tests. I enjoyed reading one of his early articles in the Grass Roots describing an earthworm based product as "foo-foo dust". He would often remind me that extraordinary claims require extraordinary evidence.

Wayne pioneered the modern approach to soil testing in the early 2000s. After consistently failing to find a clear connection between soil test level and turf performance, he decided the best approach was to set the optimum soil test levels for a given nutrient by picking a level near the lower third of the normal distribution of soil test levels with good performing turf or adequate tissue nutrient content. This is basically the same soil test thresholding method that is employed by the popular MLSN or Minimum Levels for Sustainable Nutrition from PACE Turf.

Wayne also worked to compile evidence for his theory of nutrient demand, which stated that nitrogen was the primary driver for turf P and K requirements. In short, the theory states that turf fertilized with nitrogen will grow more and thus have a higher demand for P and K. He collected data supporting this theory for years but much of it was done by his final graduate student, Steve Houlihan. Of all the work Wayne did, I think he was most proud of this aspect (although pride was something he was not prone to displaying). Fittingly, nutrient demand was the subject of the last scientific article Wayne ever published in 2012.

Wayne had an enormous influence in my life and career. By offering me a chance to earn my Master's degree with him, he set me up for the opportunity to be in the position I am in now – something I never could have dreamed would be possible. I am eternally thankful for the good fortune that I had gotten to know Wayne Kussow as a mentor and friend. I took his death quite hard, and I realized that it was partly due to the guilt I felt because he gave so much to me and that I was unable to do much for him – particularly near the end of his life. I came to terms with this somewhat after finding this quote from John Bunyan in *The Pilgrim's Progress*:

"You have not lived today until you have done something for someone who can never repay you."

If this is true, then Wayne Kussow lived a very full life indeed. His legacy will live on in those of us who were touched by his influence. Rest in peace, friend.

Meet the Graduate Student - Audrey Simard

By Audrey Simard, Department of Entomology, University of Wisconsin - Madison

Audrey Simard received her bachelor's degree from the University of Wisconsin Madison in Genetics in May of 2017. Her previous undergraduate research focused on identifying the genetic bases of desiccation and cold tolerance in Drosophila melanogaster. In the Fall of 2017 Audrey Simard started her graduate career in the Entomology M.S program at the University of Madison under advisement of Dr. R. Chris Williamson.

Honeybees and other native pollinators are currently a buzz topic today, from colony collapse disorder to questionable public usage of pesticides in urban areas. Which begs the question, insecticides have a known effect on pollinators, but what about fungicides?

Fungicides and turfgrasses have a long-standing relationship in urban areas especially in golf courses. Consequently, golf courses are highly attractive to pollinators increasing their potential exposure to fungicides and other pesticides. Audrey's research project is taking a new approach to measuring exposure, transmission and lethal effects of pesticides by sampling turfgrass guttation fluid for pesticide residue. Pesticides residue on food sources such as flowering plants is well documented, but water sources such as guttation fluid have had little research has been conducted on this equally fundamental resource. By identifying the biochemical and ecological pathways fungicides are introduced into beehives and their physiological consequences of their transmission we can help reduce, or reverse one of the many potential compounding factors that contributes to the decline of native pollinators and honeybees populations across the country.

Remember When

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

There are times in your life when you just have to realize that you are not as young as you used to be. I find myself realizing this fact more and more. These conversation starts," Remember when…." I was having one of these conversations when I realized that I am a charter member of the WTA. When the WTA started, I was a young turf student and the really old guys (Monroe Miller and others) had this dream of an industry dedicated to supporting turfgrass research at the UW-Madison. In the early years letters were written and mailed (USPS) to hundreds of turfgrass managers. I know because at that time I worked for Tom Harrison (Maple Bluff Country Club) and I was given the task to fold, stuff, address and lick stamps for all those letters (yes we licked stamps and envelopes at that time). I guess that gave me a special connection with the WTA. I needed rent and beer money.

As the manager of the O.J. Noer Turfgrass Research and Education Facility, I am invited to attend WTA board meetings. I have been fairly involved with the WTA my entire career but now I can see the real nuts and bolts of the operation. I can say I am impressed and glad to be part of such a fine organization. One thing all organizations struggle with is fundraising. The WTA is no different when it comes to memberships, newsletters, WTA Summer Field Day, Fall Golf Outing and Winter Turf Research Day. The mission is to generate funds that will be used to support the WTA and the researchers. Each year this task become more daunting.

Funding the newsletter, Summer Field Day and Winter Turf Research Day can be difficult. With more information at my fingertips, left to me by Tom Schwab, I can track company sponsorships. Businesses grow, companies merge or owners retire and the company ceases to exist. Right off the top, there is a decrease in the pool of businesses that are willing to support the WTA. How can we bring back companies that are gone, well we cannot! As members, you can increase the participation by asking your vendors if they support the WTA? Some that may not support the WTA but may rely on the research it conducts. The research from the UW, case in point snow mold product performance is quoted by all every snow mold protection buying season? Encourage them to be active members by attending events and advertising in the newsletter.

The same consolidation of companies also affects memberships. Where there once were two companies each with three members maybe now there is only one company and a total of three members. The merger of can lead to 50% decrease of those potential members. Again encourage your vendors to support the WTA. All the work funded by the WTA is work that benefits the entire turfgrass industry. There are also many turfgrass managers that are not members of the WTA. Many of these are your neighbors and friends. If you find the WTA and the access to the UW Professors maybe you can encourage some turfgrass managers to be members.

The Fall Golf Outing is no different than the other income sources for the WTA. In the early and mid-2000's the event sold out every year. Now if we have 100 attendees it is a good year. The Fall Golf Outing is the single biggest fund raising event for the WTA, besides memberships. I can remember when the outing was full every year and had as many of 40 Tee Sign Sponsors. This past year we had 106 golfers and 25 hole sponsors. Years ago there would have multiple tee signs on every tee from various golf courses and golf course maintenance staffs, even a few superintendents would sponsor a hole. A tee sign is $125.00 and a small price to show WTA support. There are a few companies that pay for an entire foursome plus a tee sign and raffle donation. DHD Turf & Tree Products brings two foursomes every year, buys a tee signs and in very generous with raffle prizes (thanks DHD). The other group we seem to be losing are the golf course maintenance staffs. Years ago, the superintendents would bring three crew members as a thank you for a great season. This year we still had a few crews there, but down from the "good ole days". Why not show your crew how you appreciate their long hard work by bringing them to the golf outing!

During these old guy discussions someone reminded me that one problem that the WTA has always faced was getting the golfing community involved. Moving our mission outside the turfgrass managers has always been a difficult task. Years ago more than a few superintendents believed in the WTA enough to try to enlist their members for support. These brave individuals went to their board and asked if they could write an article for the club newsletter telling the WTA story. They made arrangements to add a $5.00 or $10.00 check off box on the dues statement for money that would be donated to the WTA in the name of the club. It really worked! At the winter conference we would see a parade of superintendents presenting checks from their respective clubs. I challenge a few of you to try this club donation approach, you might find it much easier then you expect.

Times have changed but one thing is constant, the WTA need funds to support research. The industry needs research to support their business. The environment needs us to all be good stewards and much of the research from the UW supports a sustainable environment. As we are seeing in other parts of the turfgrass industry, our management practices are being challenged. The UW Turf team is out in front of those changes and research on sustainable management practices is ongoing. What can be done to start this chain reaction and find ways to increase the support for the WTA. The support is good but I know we as an industry can do a much better job!

Do you accept this challenge? ■

WTA Golf Outing at Chenequa Country Club Was A Wonderful Wisconsin Day to Raise Money to Promote Turf Research

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

October 2nd was an absolutely beautiful day for the WTA (Wisconsin Turfgrass Association) annual golf outing at Chenequa Country Club. The day was exquisite with partly cloudy skies, a warm 78 degrees and a light to stiff breeze out of the south making it an October day to remember. From the rear patio of the clubhouse the view over Beaver Lake was amazing.

The journey to this day began in February as a conversation with Jim Shaw, the longtime superintendent at Chenequa C C. Jim was more than willing to host his peers and support the WTA. After a few conversations Jim approached his Board to request permission to host our event. After receiving Board approval, I met with the clubhouse manager and golf professional in May and began working out the details. The clubhouse Manager Mike Paddock and PGA Pro Bill Graham were very easy to work with. Their help and insight made this very special day and huge success.

Now that the site was arranged, the "easy" part was next, players, hole-sponsors, and donations of raffle prizes for the post-golf drawings. Over the past few years, I have been lucky enough to be a minion for Tom Schawb as he scoured the world for prizes and sponsors. With Tom's departure, I knew I would need help. I had a WTA board member as part of this committee, Jake Schneider. Jake stepped to the plate every time I needed help. He would listen to some new idea I thought was gold but turned out to be brass. At the WGCSA Meeting in Green Bay in August, I enlisted the help of Mike Werth and Rob Johnson. Mike pitched in and brought in some much needed prizes and golfers. Rob seemed to make this his personal mission. I could write volumes of the behind the scene work he accomplished but I will leave it to say THANK YOU ROB!!!!! Mike also stepped up and found much needed prizes and tee sponsors. They both helped me avoid many more sleepless nights.

Then came the big day and again more help came my way. When I arrived, Jim Shaw and the golf pro took me aside and explained it normally would take a four-person best ball event at Chenequa Country Club 5-5:30 hour to play. The suggestion was to change the format to a scramble. This sounded like a great idea and we made the change and never looked back. Well, I looked back and wondered if people would be upset that they could not play their own ball all day long. After the round, I did not hear a single complaint. As a matter of fact, just the opposite. It appears we may move back to the scramble format in the coming years. Everyone appeared to have fun and that is the second reason for the event. The first reason is to raise funds for the WTA to enable them to support various project at the UW-Madison.

As the attendees moved their way into the clubhouse, they were met by an out of this world buffet. I was busy putting the finishing touches on a few things before I had a chance to part take in the buffet. As I made my way through the table people kept telling try this is great, no this is the best, so I sampled a few items and the food was excellent.

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When it looked as if most people were done making second, third and I may have seen a fourth trip to the buffet, it was time to start the festivities. As I was about to begin, someone (Matt Kregel) offered me a chair to stand on so everyone would know where that noise was coming from. I obliged him. The rest of the evening went well and we were able to have everyone headed for home at a very reasonable hour.

Even before this event had teed off, we are already working on venues for 2018 and 2019. The event for 2018 is Kenosha Country Club with host Paul Bastron. Kenosha Country Club is undergoing a renovation to bringing back the design of Donald Ross. The renovation is a work in process but the course is in awesome shape with the original design re-establishments shining through in their previous glory. The 2019 and beyond sites are works in progress so if you would like to host this terrific event please contact me.

Finally, the prizes awards went like this:

1st Place
Dan Wubbells
Jeff Ellingson
Todd King
Ted Balistreri
Sponsored by
Peter Meyer and National Golf Graphics

We recognized the 8th place finisher in a four-card playoff and the 13th place finisher in a five-card playoff. The team that won 8th place consisted of Brian Bonlender, Rick Weiterman, Chad Hauth, and John Turner. 13th place belonged to Gary Hunerberg, Jake Vollbeer, and David Radaj.

Additional winners were:
Long Drive under 55 - Pete Ellingson
Closest to the in pin - Phil Davidson (University Ridge GC)
Long Putt - Brian Bonlander (West Bend CC)
Long Drive Seniors (Over 55) - Rick Weiterman (West Bend CC)
Long Putt - Jim Shaw (Chenequa CC)
Closets to the pin - Tim Schmidt (Buttes des Mortes CC)

This year Monroe Miller was in charge of the raffle. He sold 54 playing cards (2 jokers) for $20.00 each.

The first prize was a Yeti Cooler donated by Dominic Frese of Meadowbrook GC
Won by Chad Grimm of Blackhawk Country Club in Madison

The second place prize was an Amazon Echo donated by the WTA
Also won by Chad Grimm (I guess it pays to buy more than one card)

There were four Amazon Echo Dots two from the WTA, One from Reinders, Inc. and one from Clesen-Proturf. Two of these were won by Rod Johnson (Pine Hills CC) and Mike Schmeiden (Evergreen Golf Course). I have yet to ask these older generations guy how they like this new age technology?

This was a great event if you were not able to attend please mark October 4th, 2018 at Kenosha Country Club for another impressive day.

Our hole sponsors were:

SAS Management, LLC
Reinders, Inc.
Clesen-Proturf
BASF
Bayer
Dow AgroSciences
Lohmann Golf Designs
Golf Creations
Wausau Country Club
Oneida Country Club
The Doug Soldat Family
Dr. Paul Koch
DHD Products
Chenequa Country Club
Pendelton Turf Supply
Burris Equipment
Waupaca Sand and Solutions
Sue Kershasky
Tom and Sandy Schwab
SentryWorld
Midwest Turf
Advanced Turf Solutions
Barenbrug USA
Syngenta
National Golf Graphics
Landmark Turf
Maple Bluff C C

Using Lower Toxicity Herbicides for Weed Management in Lawns

By Paul Koch, PhD and Kurt Hockemeyer, Department of Plant Pathology, University of Wisconsin - Madison

One of the most common questions I get is how to control weeds in home lawns using only 'organic' products or not using any pesticides at all. My answer typically includes recommendations for improving the overall health of the lawn to naturally crowd out weeds, but in most cases some sort of product is required to assist in decreasing the weed population to give the turf in the lawn a chance. To date, organic herbicides in turf haven't been terribly successful, but there do appear to be more and more intriguing options coming onto the market. With the lack of organic options currently available, we will sometimes recommend a lower toxicity herbicide as a means to provide weed suppression while reducing pesticide risk associated with more traditional herbicides.

To add more science-based information to our recommedations, we initiated a small herbicide study looking at several types of lower toxicity herbicides. The first trial was initiated in the fall of 2015 and continued for 2 years through the summer of 2017. A second trial replicating the first trial was initiated in the fall or 2016 and will continue through the summer of 2018. Treatments, application rates, application dates, and weed control results can be found in Tables 1 and 2. The site of both trials was a weed-infested plot at the O.J. Noer Turfgrass Research Facility that inlcuded dandelion, clover, creeping charlie, and other weeds.

The treatments applied included a non-treated control, Fiesta (chelated iron product), Tenacity (mesotrione), Quicksilver (carfentrazone), A.D.I.O.S (salt), Defendor (florasulam) applied in both late spring and early fall, and Turflon Ester Ultra (triclopyr). A tradtional 3-way herbicide mixture of 2,4-D, dicamba, and MCPP (Trimec 1000) was also include to serve as a comparison to a traditional herbicide. All treatments were included based either on their status as a reduced-risk pesticide as labeled by the EPA or their reputation as a non-traditional or low-impact herbicide. No funding from any group was provided for this trial.

The toxicity or 'impact' of a pesticide can be calculated in many different ways. Probably the simplest way is to use the

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Table 1. Mean percent weeds per treatment at the OJ Noer Turfgrass Research and Education Facility in Madison, WI on July 13th, 2017. Study was initiated in fall 2015.

	Treatment	Rate	Application Date	Percent Weed Cover[a]	Env Imp Quot	Hazard Quotient
1	Non-treated control			87.50a	NA	NA
2	Fiesta	25.2 fl oz/1000 ft2	5/23, 6/19	57.63ab	NA	6223.92
3	Tenacity Spreader Sticker	5 fl oz/A 3 pts/100 gal	5/23, 6/8	59.02ab	3.7	28.35
4	Quicksilver	2 fl oz/A	5/23, 6/8	75.69a	0.5	11.34
5	Adios	192 fl oz/1000 ft2	5/23	75.00a	NA	7409.43
6	Defendor-Spring Spreader Sticker	4 fl oz/A 3 pts/100 gal	4/7, 5/23	25.00cd	0.2	22.68
7	Defendor-Fall Spreader Sticker	4 fl oz/A 3 pts/100 gal	10/21	36.11bc	0.2	22.68
8	Turflon Ester Ultra	0.5 qts/A	5/23, 6/19	50.83cd	13.2	141.74
9	Trimec 1000	1.5 fl oz/1000 ft2	5/23, 6/19	0.695d	32.1	1796.75

[a]Weeds were visually assessed using a 36-point grid and tallying weeds at each point per plot. Means in each column followed by the same letter do not significantly differ (P=.05, Fisher LSD).

Table 2. Mean percent weeds per treatment at the OJ Noer Turfgrass Research and Education Facility in Madison, WI on July 13th, 2017. Study was initiated in fall 2016.

	Treatment	Rate	Application Date	Weed Cover[a] (%)	Env Imp Quot	Hazard Quotient
1	Non-treated control		5/23, 6/19	89.58a	NA	NA
2	Fiesta	25.2 fl oz/1000 ft2	5/23, 6/8	49.99b	NA	6223.92
3	Tenacity Spreader Sticker	5 fl oz/A 3 pts/100 gal	5/23, 6/8	50.69b	3.7	28.35
4	Quicksilver	2 fl oz/A	5/23	47.91b	0.5	11.34
5	Adios	192 fl oz/1000 ft2	4/7, 5/23	62.49b	NA	7409.43
6	Defendor-Spring Spreader Sticker	4 fl oz/A 3 pts/100 gal	10/21	39.58b	0.2	22.68
7	Defendor-Fall Spreader Sticker	4 fl oz/A 3 pts/100 gal	5/23, 6/19	34.02bc	0.2	22.68
8	Turflon Ester Ultra	0.5 qts/A	5/23, 6/19	12.50cd	13.2	141.74
9	Trimec 1000	1.5 fl oz/1000 ft2	5/23, 6/19	0.00d	32.1	1796.75

[a]Weeds were visually assessed using a 36-point grid and tallying weeds at each point per plot. Means in each column followed by the same letter do not significantly differ (P=.05, Fisher LSD).

signal word on the label to estimate the acute mammalian toxicty, with Caution being the least toxic and Danger being the most toxic (Warning is intermediate). This doesn't provide a quantification of potential toxicity, however, and models are sometimes used to estimate impact. One model often used in turf is the Environmental Impact Quotient (EIQ), developed in the 90's at Cornell University. More information is available at the EIQ website (https://nysipm.cornell.edu/eiq). Another model for estimating impact is the Hazard Quotient, which is a simpler model that quantifies impact based on the acute mammalian toxicity and the amount of the product entering the environment. We assessed the treatments in this trial using both of these models, though some products do not have enough information available to calculate an EIQ.

The weed pressure on the site was intense (Figure 1) and the data obtained to date have provided a couple interesting results. First, and unsurprisingly, the most effective weed control was provided by the 3-way mixture of Trimec 1000 (Figure 1). However, Trimec 1000 also had the highest toxicity ratings of any product included in the trial. Most of the treatments did not provide highly effective weed control, including Fiesta, Tenacity, Quicksilver, and A.D.I.O.S. Defendor and Turflon Ester, however, did proide a noticable and statistically significant reduction in overall weed cover (Figure 2). Defendor has another benefit as well…it's cold-weather activity allows it to be applied into late November and as soon as the snow melts in the spring. These are times of the year when lawn care companies are traditionally not that busy and making weed control applications at those times can help with scheduling other activities later in the spring and summer.

The bottom line is that the cheapest and most effective weed control is still obtained by the traditional 3-way herbicides like Trimec 1000. However, for those clients that are concerned about the non-target impacts of pesticides but still want some level of weed control, there are some options to market your services to those types of clientele. We are continuing to work with Dr. Soldat and weed scientists at UW and other institutions to continue providing you with a range of recommendations for every kind of customer. If you have questions or feedback on this trial, please don't hesitate to contact me at plkoch@wisc.edu.

Figure 1: The non-treated control on the left demonstrates the high weed pressure present, while Trimec 1000 on the right provided the highest level of weed suppression of any treatment in the trial.

Figure 2: Though they didn't provide weed control to the same level that Trimec 1000 did, Turflon Ester and Defendor provided significant reductions relative to the non-treated control at a lower toxicity level.

CALENDAR OF EVENTS

2018

Jan 2nd	Great Lakes School of Turfgrass Science	Online
Jan 2nd – 4th	Northern Green – MPLS Convention Center	Minneapolis, MN
Jan 9th	**WTA Research Day / EXPO – Pyle Center**	**Madison, WI**
Jan 16th – 19th	STMA Conference – Fort Worth Convention Center	Fort Worth, TX
Jan 31st – Feb 2nd	ILandscape Show – Renaissance Shaumburg Center	Shaumburg, IL
Feb 3rd – 8th	GIS – Henry B. Gonzalez Convention Center	San Antonio, TX
Feb 9th – 11th	Garden EXPO – Alliant Energy Center	Madison, WI
Feb 12th – 15th	TPI Conference – Westin La Paloma Resort	Tuscon, AZ
March 7th	Pesticide Applicator Training – Olympia Resort	Oconomowoc, WI
March 14th	Pesticide Applicator Training – Metropolis Resort	Eau Claire, WI
March 21st	Pesticide Applicator Training – Olympia Resort	Oconomowoc, WI
March 28th	Pesticide Applicator Training – Arlington Ag Station	Arlington, WI
April 11th	Pesticide Applicator Training – Comfort Suites Rock Garden	Green Bay, WI
April 18th	Pesticide Applicator Training – Olympia Resort	Oconomowoc, WI
July 24th	**WTA Summer Field Day – note date change**	**Verona, WI**

WTA Members -- If you have an important date you'd like to share with other members, Call 608-845-6536 or email audra.anderson@wisc.edu to include it in the next calendar.

Contact Telephone Numbers

GCSAA	Golf Course Superintendents Association of America	800-472-7878
Great Lakes	Great Lakes School of Turfgrass Science Online	763-767-3518
NGLGCSA	Northern Great Lakes Golf Course Superintendents Assoc	906-424-4176
Northern	Northern Green	651-633-4987
iLandscape	the Illinois + Wisconsin Landscape Show	630-472-2851
PAT	Pesticide Applicator Training (Turf and Landscape 3.0)	608-262-7588
STMA	Sports Turf Managers Association Conference	800-323-3875
TPI	Turf Producers International	800-405-8873
WDATCP	Pesticide Certification & Licensing	608-224-4548
Wee One	Wee One Foundation Golf Outing	630-457-7276
WGCSA	Wisconsin Golf Course Superintendents Association	920-643-4888
WGIF	Wisconsin Green Industry Federation	414-529-4705
WPT	WPT Garden Expo	608-262-5256
WSPA	Wisconsin Sod Producers Association	262-895-6820
WSTMA	Wisconsin Sports Turf Managers Association	608-792-9264
WTA	**Wisconsin Turfgrass Association**	**608-845-6536**


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