

leaves. Also, why pay a premium for products that are “specially formulated” to increase foliar absorption? Urea worked as well as the other products, and it appears that only a small portion of your total N budget can be foliarly absorbed.

Foliar nitrogen uptake efficiency of creeping bentgrass as affected by spray volume, adjuvants, tank-mixing, and fertilizer formulation (Shelby Henning, Bruce Branham, and Richard Mulvaney, University of Illinois)

Another foliar nutrition study caught my eye from our neighbors to the south. They found maximum uptake of nitrogen occurred after about 6 hours, but a good deal had occurred in 2 hours. Unsurprisingly, lower spray volume led to greater foliar uptake; however, the highest spray volume had uptake of 15% while the lowest had 19%. This seems like a fairly insignificant difference, to me. If fungicides were in the mix, I would choose the higher spray volume.

They tested several adjuvants in different classes (non-ionic, methylated seed oil, kinetic organosilicone, and others) and found that all products tested improved foliar uptake from 20% without an adjuvant to 25% with

one; again, not an enormous difference. Because all products tested worked, I wouldn’t be looking to pay a premium for one adjuvant over another.

The Illinois researchers found fertilizer source (calcium nitrate, urea, or ammonium sulfate) did not affect foliar absorption. Also, tank mixes of urea plus Daconil Ultrex, Renaissance (a biostimulant), Tracker (a dye), Primo Maxx, and “the kitchen sink” (all of these mixed together) did not significantly affect the absorption of urea.

In summary, and corroborating the research from Arkansas, foliar uptake potential of a liquid application of 0.1 lbs/M is low. In the case, only about 20% (0.02 lbs/M) was absorbed. This amount can be increased slightly (5%) by using an adjuvant or decreasing the spray volume.

Integration of iron into nitrogen fertility regimes for regulations of fertilizer and water requirements of Penn A-series creeping bentgrasses (Jing Dai, Max Schlossberg, and Al Turgeon, Penn State)

In a *Grass Roots* article, I discussed the use of iron in fertility programs. Dr. Schlossberg and colleagues



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have been investigating use of iron sulfate for enhancing putting green color without creating unwanted growth. In 2008, they applied iron sulfate at rates of 0.06, 0.1, or 1.4 lbs/M per month along with N ranging from 0.3 - 1.0 lbs N/M per month. They found that the iron affected color about the same as the nitrogen. Stated a different way, you can cut your N rate in half and get the same color response if you add iron at 0.1 lbs/M/month. There results were very similar to those found by Yust et al. in 1984. Take home message: use of iron is great for aesthetics, no need for expensive iron formulations because iron sulfate appears to work well. What more could one ask from a product that affects color as much as nitrogen, but without affecting growth?

WATER

Metabolic responses of transgenic creeping bentgrass for a cytokinin biosynthesis gene to drought stress (Emily Merewitz, Bingru Huang, and Thomas Gianfagna, Rutgers University)

This work out of Rutgers is on the long-term end of the spectrum, but extremely interesting nonetheless. The genetically modified creeping bentgrass to internally produce more cytokinins (an important plant hor-

mone). In drought conditions, the genetically modified grass had higher leaf water content, more chlorophyll, greater photosynthesis, and more antioxidants than the unmodified creeping bentgrass. Previous plant improvements were done the hard way, by finding grasses that appear to survive better in tough conditions. These new genetic techniques allow us to customize the exact traits desired in a grass. Some people are frightened by this power, but for me it's an opportunity to improve our continued efforts to reduce inputs and improve economic and environmental sustainability. Without a doubt, these genetically modified grasses will need to be studied thoroughly before they are released. In the debate about potential invasiveness of genetically modified plants, I've always thought that a grass tolerant to round-up was a red herring (just kill it with another herbicide), but enhanced tolerance to environmental stresses may confer greater potential for invasiveness.

SOILS

Biochar as an organic amendment alternative in sand-based turfgrass sites or golf course putting greens (Mark Slavens, Marty Petrovic, Johannes Lehmann, and Karen Heymann, Cornell University)

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Biochar for sand-based rootzone modification (Shane Brockhoff and Nick Christians, Iowa State University)

The biofuels movement of the past few years has created a new and exciting soil amendment called biochar. Biochar is produced by pyrolysis (burning a source like switchgrass in the absence of oxygen). The main co-products from this product include bio-oil (a bio-fuel), bio-gas (methane), and biochar. Biochar is chemically stable, and won't decompose like peat moss. It has a high water holding capacity and also can be a source of nutrients itself and increases the cation exchange capacity of the soil.

Researchers at Cornell actually made biochar out of grass clippings from the Cornell University golf course and used that biochar in a study to demonstrate its beneficial properties. Similarly, researchers at Iowa State conducted laboratory studies for a switchgrass biochar and identified that the best incorporation rate for sand root zones is 5 to 10% by volume. Unlike peat moss and inorganic amendments, biochar is likely to be inexpensive, and widely available in coming years.

Lawn turf color and density in relation to soil nitrate concentrations (Xingyuan Geng, Karl Guillard, and Thomas Morris, University of Connecticut)

Temporal variation of amino sugar nitrogen in turfgrass soils (Dave Gardner, Ohio State; and Brian Horgan, University of Minnesota)

Finally, researchers at Connecticut and Ohio State are working towards developing a nitrogen test for soil. We are probably dozens of years away from a reliable, accurate soil test for nitrogen, but it is nice to see that steady progress is being made. I hope to contribute to this area in the near future.

UNIVERSITY OF WISCONSIN RESEARCH

Our turf team made eight presentations at the conference, I won't attempt to summarize them here because you are likely familiar with our work or will be in the near future through conferences and field days. Brad DeBels (Soils graduate student, and recipient of the Kurth Fellowship) won third place for his presentation on drip irrigation. He was competing against 43 other grad students from all over the country, so this is a truly impressive feat. Way to go Brad!

Nitrogen effects on quality of velvet bentgrass grown on sand and soil putting greens (Ben Pease, Eric Koeritz, John Stier, and Doug Soldat)

Evaluation of depth and spacing of subsurface drip irrigation emitters for turfgrass irrigation in a silt loam soil (Brad DeBels, Doug Soldat)

Use of a growing degree day model to schedule trinexpac-ethyl applications to creeping bentgrass golf putting greens (Bill Kreuser, Doug Soldat)

Determining fungicide degradation on golf course turfgrass under winter conditions using commercially available ELISA kits (Paul Koch, Jim Kerns, John Stier)


Response of creeping bentgrass to fall-applied nitrogen on sand and soil putting greens in the Upper Midwest (Dan Lloyd, Doug Soldat, John Stier, Brian Horgan, Andy Hollman)

Golf courses as a source of potentially invasive grasses (John Stier, Mark Garrison, Ed Luschei, Mike Cassler)

Logistic regression modeling of dollar spot epidemics using weather variables as inputs (Jim Kerns, Damon Smith)

Deschampsia as a native, shade tolerant turfgrass (Jason Kruse, John Stier)

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Fall Business Meeting

By **David Brandenburg**, Golf Course Manager, Rolling Meadows Golf Course

Efficiency was apparent at the first WGCSA business meeting with Chapter Manager Brett Grams available to assist the Board of Directors. All the important documents were on a PowerPoint for all to see and the new budget format will allow all members to understand where their money goes and for what purpose.

President Riley started his final meeting by thanking the membership and board of directors he worked with over his 11 years on the board. He was deservedly proud and complimentary of the boards accomplishment in hiring our first chapter manager to guide the day to day association activities.

Next up was Chapter Manager Grams who updated the members in attendance of his accomplishments so far.

- The data base has been updated and downsized from three data bases to one easy to manage program to allow accurate and effective communication with the membership.
- The new website is quickly coming on line with new features including online payments, online directory and access to the Turf Grass Information File (TGIF) operated by the library at Michigan State where all issues of The Grass Roots from 1984 to present are available.
- Development of a Industry Partner Plan to allow our vendor members who support the WGCSA to do so in a efficient cost effective way rather than the nickel and dime approach we have been offering them in the past.
- Developing an opportunity to raise funds for turf-grass research without going back to members or vendors for additional donations through an online auction of donated tee times.

Membership Chair James Van Herwynen presented the membership totals and expressed his pleasure at having a data base that is always up to date and the ability to print our membership directory without hours of painstaking updates. The association is at 421 members representing 240 golf facilities.

Golf and Arrangements Chair Scott Bushman thanked the superintendents who hosted events in 2009 and presented the schedule for 2010. (The schedule can be found elsewhere in this issue and at WGCSA.com.) This is the first time in many years the schedule of events was full this far in advance. Many thanks to Scott and the host clubs for their work.

Government and Regulations Chair Chad Harrington discussed the phosphorus ban and announced the



Chapter Manager Brett Grams Updates the Membership

WGCSA has joined RISE (Responsible Industry for a Sound Environment) in effort to stay abreast of changes in the industry. More information about RISE can be found at www.pestfacts.org.

Treasurer Jeff Millies gave some feedback on his recent trip to the GCSAA Delegates Meeting. The annual meeting allows chapter leaders to learn what the national association is doing and meet the candidates for office. (More information on the Delegates Meeting can be found in the GCSAA column in this issue.) Jeff presented the GCSAA's Golf Industry Show will be small in size in comparison to other years and although GCSAA has substantial savings they are concerned about the financial impact of the recent and ongoing recession. Cuts to some services and employee furloughs will be implemented at the national headquarters.

Jeff also presented the 2010 budget available on a handout and in PowerPoint. New categories were created to provide greater detail for the membership. The association is doing well and expects to make \$3,000 at years end just as budgeted. The association has \$20,000 in CD's and another \$20,000 that will be invested soon providing for adequate savings in case of emergency.

Vice President Brian Zimmerman presented the 2010 Scholarship and Research to be approved by the members in attendance.

- \$1,500 J.R. Love Scholarship
- \$1,000 Monroe S Miller Literary Scholarship
- 3 x \$500 Legacy Scholarships
- \$15,500 Wisconsin Turfgrass Association
- \$5,000 Research Auction Donation
- \$5,500 Other Scholarship and Research

The association has decided to give research money directly to the Wisconsin Turfgrass Association rather than to the professors through the university. It was noted that donations given to the professors go through the university system where up to 49% is taken off the top for costs. Whereas the WTA can fund research directly in conjunction with the professors at the O.J. Noer Turfgrass Research and Education Facility without losing that percentage. It is a positive sign for the industry that the WGCSA has a good working relationship with the WTA and University of Wisconsin-Madison staff.

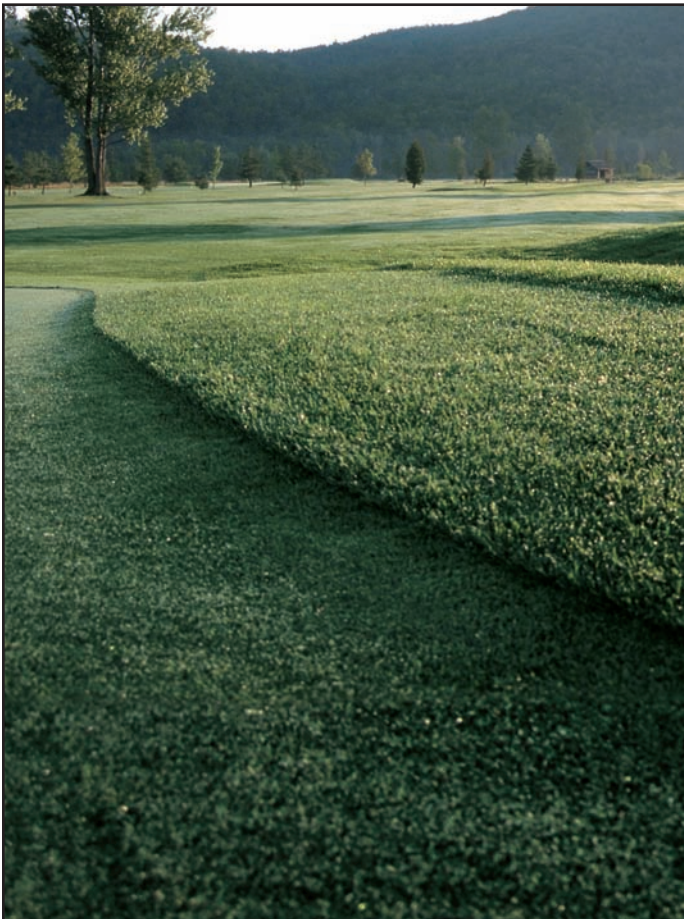
Next was the presentation and vote on a wording change in the bylaws. It will allow for members to apply for membership online through the website. The bylaw

change also cleans up a mistake that stated only members could apply for membership to the association.

The final piece of business was the election of officers and directors. Winning one year terms as officers: President - Brian Zimmerman, Milwaukee County Parks, Vice President - Jeff Millies, Edgewood Golf Club, Treasurer - Chad Harrington, Autumn Ridge Golf Club and Secretary Jim Van Herwynen, South Hills Golf and Country Club. Elected to two year terms as directors were Mark Storby, Oneida Golf and Country Club (second term), Scott Sann of Greenwood Hills CC and Colin Seaburg of Ozaukee CC.

Director Scott Bushman, Fox Valley Golf Club has one year left on his term and Dustin Riley will serve on the board as Past President while Alan Nees of Agrotain will serve as the Vendor Liaison.

Mike Lyons, Old Hickory Golf Club is leaving the board as Past President after 12 years of service. Matt Schmitz is also leaving the board to concentrate on other activities after serving as Secretary. Thank you Matt and Mike for your service to the WGCSA. 🌱



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Couples Weekend at Fox Valley GC

By **Brett Grams**, Chapter Manager, Wisconsin Golf Course Superintendents Association

The first cold temperatures of fall could not dampen the mood of the attendees at this year's couple's weekend. Old friends and new acquaintances gathered at the Lazy Dog Sports Bar in Kaukauna, WI on Friday evening October 2nd. The hospitality gathering has been a long time favorite of the attendees. This year 12 Affiliate Companies were again gracious enough to sponsor the first evening's activities. Great conversation, a fearsome game of "spoons", and several memorable renditions of Karaoke made for many laughs throughout the evening.

Saturday's weather was cloudy and cool, but we were still excited to play golf. Fox Valley GC lies just west of Kaukauna in the still rural and gently rolling farm country. The first golf layout was a nine hole course in Combined Locks which opened in 1946. In 1966 the club moved to its present location. Today's 18 hole course has underwent two separate renovations by Lohmann Golf Designs which included work to green banks, bunkers and tee additions.

Some of the participants warmed up on the driving range but the majority of us cheered the Badgers football team and planned our strategies for the round from the confines of the clubhouse. Our hosts Scott Bushman and his wife Lisa left the field in the dust with an impressive score of 39. I was witness to Scott's almost always straight and long drives and Lisa's remarkable putting. In fact, she was able to sink her first putt of the day from 25 feet, and then started to play even better! My wife and I did not fare nearly as well on the scorecard but had a great time playing with the eventual cham-



Hosts and winners of the coveted Mr. and Mrs. Mow Trophy, Scott and Lisa Bushman

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Hole 8 at Fox Valley Golf Club



pions. The course conditions were fantastic with the fall colors enhancing a very scenic and manicured golf course.

After golf we met back at the clubhouse for a fantastic steak dinner with DJ entertainment and a few brave souls did some dancing. Hostess Lisa Bushman was gracious enough to create several themed gift baskets which were awarded in a raffle. The flag event winners were Scott Bushman (long drive, closest to pin), Bev Quast (long drive-women, closest from off the green), Karen Kienert. (farthest from pin on the green) and Cheryl Schmidt (closest to pin-

women) The highly coveted Mr. and Mrs. Mow travelling trophy was awarded to our hosts Scott and Lisa Bushman with Tim and Jessica Schmidt taking second with a very respectable score of 44. Greg and Lynn Kallenberg finished third just a stroke back at 45.

Please consider attending next fall's couples outing! We have already secured Saddle Ridge GC in Portage on October 8th and 9th, please mark your calendars. Those that attend always have fun and it is great for our spouses to spend some time together in a fun and relaxed atmosphere. 🌿



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DATE	EVENT WGCSA COURSES OUT										
PAR	4	4	5	4	3	5	4	5	4	3	6
NAME	1	2	3	4	5	6	7	8	9	OUT	10
<i>Sara + Nicole</i> BROGREN											
<i>Scott + Lisa</i> BUSHMAN	4	5	5	4	3	5	6	3	5	39	
<i>Jack + Patty</i> DESCHLER	7	5	7	7	9	7	6	4	11	62	
<i>Eden + Anthony</i> GRAMS	6	5	7	9	4	6	5	4	7	52	
<i>Mae + Erika</i> GRUNDMAN	6	7	6	5	6	5	4	5	5	50	
<i>Sara + Leah</i> KALLENBERG	6	6	7	6	4	5	4	3	5	45	
<i>Alma + Erika</i> KIENER	4	7	6	6	5	7	4	3	4	46	
<i>Jul + Beverly</i> QUAST	6	6	5	9	6	5	6	5	5	55	
<i>Steve + Cathie</i> SCHMIDT	5	5	7	5	4	6	7	3	4	46	
<i>Tom + Jessica</i> SCHMIDT	4	5	7	5	3	6	5	4	5	44	
<i>Rick + Pam</i> WEITERMAN	7	6	7	6	5	5	4	4	8	52	



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Going Fore the Gold

By **Jake Schneider**, Assistant Superintendent, Blackhawk Country Club

Amid all of the hoopla and letdown over Chicago's failed bid for the 2016 Summer Olympics was a bit of good news for the golf world. For the first time since Canadian George Lyon claimed individual gold and the U.S. swept the team medals at the 1904 Olympics in St. Louis, golf is back, and it's about time. The format will be similar to PGA tour events in that it will be a 72-hole stroke play tournament. What will be different is the selection process for the 60 participating players. Using the Official World Golf Rankings, the top fifteen players will automatically be eligible to participate, regardless of country affiliation. After that, if a country has two or more players in the top-15, no more players from that country are eligible. Although this system will likely leave out some of the top American players, it will give players from countries that aren't traditional hotbeds of golf a chance at representing their country, and I certainly believe that it's a fair process that could allow a relative unknown to be in the mix of things. Given the international nature of the economy and the worldwide exposure that the Olympics generates, this formula has the potential to be a real shot in the arm for the growth of golf around the globe.

Besides being good for the game, it should be downright exciting. Although I personally enjoy watching ANY golf more than my girlfriend would care for, nothing tops the excitement of rooting on the U.S. in the Ryder Cup or the President's Cup. My couch still has an impression in it from the ridiculous amount of hours that I spent watching Tiger, Stricker, and the boys putting on a show at Harding Park this past October. Someday, it is my hope that the team format will also be reintroduced to Olympic competition.

Unlike many of the other Olympic sports, there are few people in the world who would successfully argue that Tiger isn't the world's best golfer. If the Olympics were held tomorrow and Vijay Singh captured the gold, would that make Vijay Singh the world's best golfer? I certainly don't think so, but such is the fickle nature of golf, where you never know who's going to win from week-to-week. Comparatively, Jamaican Usain Bolt, who's currently the world's fastest man, would probably win 95% of the 100 and 200 yard dashes that he entered. Tiger's good (understatement of the year nominee), but even he'd be lucky to win 50% of the time. What am I getting at? Well, despite my excitement for golf's Olympic return, the amount of tour tournaments that are played on a yearly basis are a far better barometer for determining the world's best player than 72 holes in Rio.

However, a team format would be unique in that it would be a tournament that determined the world's best golfing country. Although I'm short on details (and stature) and long on ideas, if you were to pit the top four players from the countries that are traditional golf powers (U.S., Canada, Spain, Ireland, Australia, South Africa, etc.), I believe that you would have an incredibly exciting tournament that would offer more significance than individual stroke play. But, for now, it is what it is, and any time that golf can garner attention on a huge international stage like the Olympics, it's hard to complain. Additionally, if Stricker happens to win, any complaints that I've logged in this article will be retracted, and Madison will officially be named the best golfing city in the world. 🌱

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