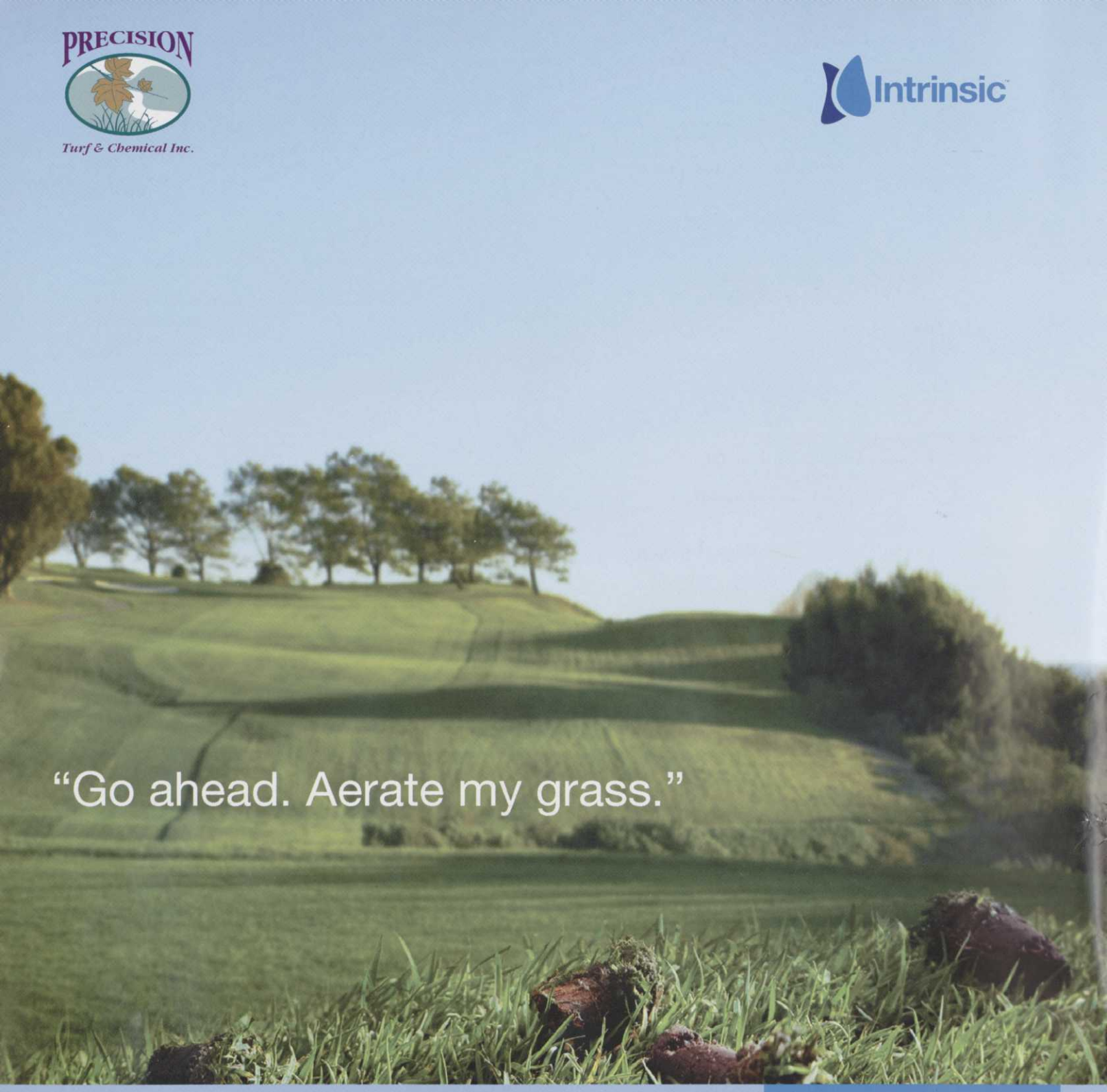

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Inside This Issue of Hole Notes

MGCSA EVENTS

JANUARY 3, 2012
SUPER TUESDAY
Minneapolis Convention Center
Host: MTGF

JANUARY 4-6, 2012
NORTHERN GREEN EXPO
Minneapolis Convention Center

NOV-DEC 2011 HOLE NOTES ADVERTISERS

ABOUT THE COVER

Seasons Greetings from Ella, a newborn daughter of Meghan and Justin Bicek. Justin is an Assistant Superintendent at North Oaks Golf Club.

PRESIDENT'S MESSAGE

Tick Tock, My Time is Up

By Paul Diegnau, CGCS

Well, my two years leading the MGCSA are drawing to a close. These are challenging times and will probably continue as such. Looking forward, I believe that our association has taken the appropriate steps to help stabilize our economic outlook at least for the short term.

This issue you have in your hands will be the last hard copy of the *Hole Notes*. Beginning in 2012 this publication will still deliver the same high-quality content you have come to expect but it will only be available electronically, saving us tens of thousands of dollars in printing costs in the years to come. As a gesture of thanks to the vendors who support us, year in and year out, we are lowering our advertising rates to pass on this savings. In the coming year expect to receive e-alerts as new *Hole Notes* issues are published and made available online. As an added membership benefit we have recently upgraded the MGCSA website to include a members-only section, online purchasing capabilities and a digital membership listing. We will continue to explore additional opportunities to increase the value of MGCSA membership.

"Tom Fuller, who was assisted by the Wee One Foundation in 2010, appears to have turned the corner on the road to a full recovery. I recently read on The Caring Bridge website that he is gaining back the weight he lost and feels the best he has felt in many, many months.

Happy Holidays, Tom!

Declining participation in MGCSA events has been a topic of discussion many times over the past two years. In 2012 we will be combining the Research and Scholarship tournaments into one big event to be called "The Scramble." It is our hope that combining two tournaments will create more excitement and enthusiasm and possibly return us to the days of 120+ player events.

At the same time we added the Wee One tournament into our rotation. This runs counter to our downsizing initiative but the value of the tournament to our industry is hard to argue with. Helping our own members solidifies this industry. We hope to see this tournament continue to grow in participation and support in the future. Due to the hard work of Dale Parske, John Meyer, and Tom Proshek and the generosity of our vendors and members, the 2011 Wee One Tournament held at North Oaks Golf Club raised almost $8,000 for the Wee One Foundation. Thank you to all who participated in one way or another! On a related note, Tom Fuller, who was assisted by the Wee One Foundation in 2010, appears to have turned the corner on the road to a full recovery. I recently read on The Caring Bridge website that he is gaining back the weight he lost and feels the best he has felt in many, many months. Happy Holidays, Tom!

It has been an honor and a pleasure to serve the members of the MGCSA. I have thoroughly enjoyed my time working with our Board of Directors. They are an intelligent, open-minded group that is not afraid to think outside the box. Our association is in good hands and on solid ground! Thank you to each and every one of you for taking the time from your busy lives to serve your fellow members.

Happy Holidays and Merry Christmas!
Paul Diegnau, CGCS

HOLE NOTES (ISSN 108-27994) is published monthly except bi-monthly November/December, January / February for $2 an issue or $20 per year by the MGCSA, 217 Minnetonka Av. S., Ste. D, Wayzata, MN 55391. Scott Turtinen, publisher. Periodicals postage paid at Wayzata, MN. POSTMASTER: Send address changes to HOLE NOTES, P. O. BOX 617, WAYZATA, MN 55391.

HOLE NOTES

Official publication
of the MGCSA

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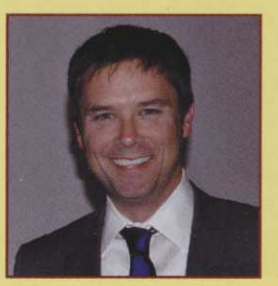
Irrigation Water, Science and Emotion, Is EPA a Friend or Foe of Turf?



By BRIAN HORGAN, Ph.D.
University of Minnesota

(Authors Note: This article was written based on testimony given at a hearing to construction code officials on the benefits of turf in the environment).

I am a board member of the National Turfgrass Federation and an active participant in many national debates about turfgrass and the environment. This is an example of one such debate by the turfgrass industry and regulators.

When EPA started their Water Sense program (www.epa.gov/watersense), their intention was to bring national attention to potable water demands and to reward those that implemented a comprehensive water conservation program. Water Sense is an EPA partnership program whereby retailers, builders and landscapers subscribe to the water saving techniques and EPA rewards them with the use of Water Sense labels for marketing purposes. Products listed on their website as Water Sense certified include urinals, showerheads, toilets, faucet fixtures, and landscape irrigation controllers.

The program is analogous to the Energy Star Program designed to conserve energy.

Jumping ahead to "outdoor" criteria for a certified Water Sense home, EPA originally intended for builders/landscapers to have two options for landscape water conservation; (1) no more than 40% of the landscapable area can be turf or (2) utilize a water budget tool to direct irrigation.

The turfgrass industry from the very beginning did not see value in restricting turf to 40% of the landscape area. Assuming the goal is to conserve all sources of water, one cannot infer that a generalized turf limitation of 40% or less will reduce water consumption of the landscape when the remainder of the landscape has not been specified.

In fact, we pointed out that restricting turf to 40% of the vegetated area connotes a negative environmental value to turfgrass and completely discounts the positive social, economic and environmental attributes. In a study evaluating the effect of three landscape types on residential energy and water use in AZ, McPherson et al. (1989) found that energy consumed for air-conditioning a home with a rock landscape was 20-30% more than for the turf and shade landscape. This was due to a 4°C depression in landscape temperature attributed to evaporative cooling from the turf. Even when accounting for CO2 and N2O emissions from inputs required to maintain turfgrass in the urban landscape, Townsend-Small and Czimczik (2010) found turfgrass is a net sequester of carbon when applying up to 8 lbs N / 1000 ft2 yr-1. Milesi et al. (2005) used satellite imagery and modeling and estimates total potential C sequestration of turf in the continental U.S. to range from -0.2 to 16.7 Tg C yr-1 depending on management. The CENTURY model has identified intensively managed turf can sequester approximately 1 t C ha-1 yr-1 (Qian and Follett, 2002). This rate of sequestration is similar to perennial grasslands following cultivation (1.1 t ha-1 yr-1) (Gebhart et al., 1994), is much higher than unmanaged grasslands (0.33 t ha-1 yr-1) (Post and Kwon, 2000), and is twice as much soil C stored compared to native prairie (Bandaranayake et al., 2003).

"This is where the debate got interesting. One of EPA's arguments was the Water Sense program was voluntary. No one was forced to participate."

Alternative landscapes are sometimes touted for their putative ability to reduce urban runoff and enhance groundwater recharge but such outcomes are not necessarily realized. Erickson et al. (2001) found no significant differences in runoff water quantity when comparing a native Florida woody perennial landscape to a St. Augustinegrass landscape. However, significantly greater amounts of P were leached from the native perennial landscape compared to the turfgrass landscape (Erickson et al., 2005). The thatch-forming capabilities of turfgrass in combination with a permanent and dense plant structure yields a less channelized pathway for water movement, which increases resistance, horizontal spread, and infiltration of surface runoff (Linde et al., 1995). This effect was demonstrated by Krenitsky et al. (1998) who observed turfgrass sod to be more effective than synthetic erosion control materials in reducing both runoff and sediment losses through the delay of runoff initiation. This combination of factors may be enough to reduce runoff water volumes and therefore nutrient loading, regardless of soil nutrient concentrations. Steinke et al. (2007) showed managed Kentucky bluegrass turf was as effective as a buffer for runoff from paved surfaces as a planting of native prairie and yielded no more nutrient or sediment pollution despite fertilization. Kentucky bluegrass turf had similar water infiltration capacity as the native prairie plantings (Steinke et al., 2009).

This is where the debate got interesting. One of EPA's arguments was the Water Sense program was voluntary. No one was forced to participate. The turfgrass industry argued that once EPA published their guidelines, communities and municipalities would adopt them as tools to conserve water and this is exactly what happened. In fact, Code Officials when writing their new International Green Construction Code (IGCC) adopted the entire EPA Water Sense program as a starting point and made it even more restrictive.

The IGCC stated, "Water used for outdoor landscape irrigation shall be non-potable." We stated that significant challenges exist as to why water source should not be dictated and left as a jurisdictional option. Although a long-term outcome from the IGCC may be greater access to alternative sources of water, the current distribution system is not capable of meeting large increases in volume and landscape irrigation may not be possible due to the random distribution of the demand (Tchobanolglous et al., 2011).

(Continued on Page 6)

Is EPA Friend or Foe?

(Continued from Page 5)

Based on 2004 numbers, the EPA estimates 1.7 billion gallons per day of wastewater were reused (U.S. EPA, 2004). This is only slightly more than the 1.5 billion gallons that may be applied for landscape irrigation each day in the U.S. (U.S. EPA, 2011). Florida is the leading producer of recycled water followed by California. Together these two states produce nearly 30% of the total recycled water. The most recent analysis shows that Florida uses 56% of the 243 billion gallons of reclaimed water produced annually for irrigation of golf courses, landscape, or other public access areas (Parsons et al., 2010). However, in 2009 California allocated just 18% of it's 235.86 billion gallons for landscape irrigation (California EPA, 2009). A 2005 inventory in California determined that 1.5 billion gallons of wastewater are discharged into the ocean each day (Hauser, 2005). These numbers indicate that current infrastructure in California is capable of treating just 30% of it's wastewater for reuse. These statistics, from the two states most advanced at recycling and reusing water, demonstrate significant challenges as to why water source should not be dictated in the proposed IGCC and left as a jurisdictional option.

Our primary argument was a sensible approach to water conservation is based on a water budget that is regionally based and calculates ET using specific crop coefficients for various turfgrasses. The water budget should account for all plants in the landscape as Park et al. (2005) documented that irrigation requirements for an ornamental mixed-species landscape increased over time and used more water than St. Augustinegrass. Ranked ET rates of four turfgrasses under field conditions in a semi-arid region were: tall fescue (6.8 mm d-1) > zoysiagrass (5.6 mm d-1) > buffalograss (5.1 mm d-1) = bermudagrass (5.0 mm d-1)(Qian et al., 1996) and intraspecies ET rates can vary up to 60% among 61 Kentucky bluegrass cultivars (Ebdon et al., 1998). Most regions of the U.S. have specific crop coefficients for turfgrass; however when lacking 80% replacement ET will be effective at maintaining turfgrass and conserving water (Sass and Horgan, 2006). In addition, smart irrigation controllers should account for diurnal variability in crop coefficients, which range 0.2-0.8. Fu et al., (2004) found tall fescue and bermudagrass could be irrigated at 40-60% replacement ET while maintaining acceptable quality and function.

In the end, Code Officials voted not to include the 40% turf restriction at the same time that EPA decided to pull it from Water Sense.

I certainly learned from this process. I learned that:

1) One must advocate and participate in the process to affect change

2) EPA and other regulators in government can be reasonable. Some offices are better than others.

3) This process took years with involvement from many people in industry.

4) Spending time in DC will either make you sick or invigorate your passions in life.

5) I am proud of the turf industry for advocating for change with EPA and using science as their primary mechanism for defense. We are now engaged in a positive discussion with EPA's office of water about the best water budget tool to conserve water recognizing that we can do better with the water we apply to our landscape.

Growing Degree Day Models And Daily ET Available Online

By DOUG SOLDAT
Department of Soil Science, University of Wisconsin-Madison

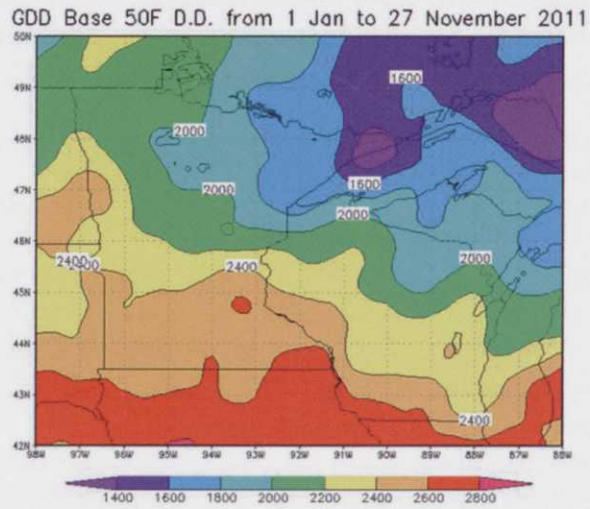
The turf programs at the University of Minnesota and University of Wisconsin have benefitted from a close relationship over the past several years. We teach the School of Turfgrass Management together, we've collaborated to conduct and publish several scientific studies, and we've even begun to make some of our courses available to each other's students as online educational tools have improved. Now that you know that history, maybe you'll be a little less reluctant to check out the new UW Turfgrass Science web site at www.turf.wisc.edu. It has some cool features that we thought our neighbors to the west might enjoy.

At www.turf.wisc.edu, you'll find several growing degree day maps and models for Wisconsin and Minnesota so you can improve Poa annua seed head suppression and perfectly time your applications of herbicides and insecticides. We also added a spreadsheet that you can download to better manage your trinexapac-ethyl and paclobutrazol applications on creeping bentgrass putting greens. An example of one of the growing degree day maps is shown below *(Fig. 1)*.
This model was developed a number of years ago based on research at Purdue University. The scientists found that ester formulations of herbicides are more effective early in the spring (GDD 110-150) while amine formulations are more effective later in the spring (GDD 200-600). The Spring Broadleaf Herbicide Timer will give you a map of the accumulated growing degree days and help you make the best decision regarding herbicide formulation based on the weather.

Next, under irrigation scheduling, you'll find a program to assist with irrigation scheduling called WIS-TURF (Wisconsin Irrigation Scheduler for Turf). This scheduler was developed by scientists at UW for agricultural irrigation and I had the opportunity to modify and fine tune it specifically for turf. I'll be working on an instructional video which will describe how to use the new scheduler at your course, so keep an eye out for that in early spring. We have also added evapotranspiration maps to the web site to help you keep track of ET on a daily basis – no weather station required (Fig. 2). We hope you'll find this information useful and a fitting "thank you" for letting us keep Paul Bunyan's axe all these years!

Spring Broadleaf Herbicide Timer

Figure 1



Suggested Timing:
Ester Forumlations: 110-150
Ester/Amine Formulations: 150-200
Amine Formulations: 200-600
Source: Schlelcher, Throssell, Reicher, and Weisenberger (1995)

Broadleaf weeds are best controlled in fall. However, spring applications are often employed. IN cooler temperatures, amine formulations are less effective than ester formulations. However, later int he spring, as landscape plants are flowering and air temperatures are warmer, amine formulations are more effective. This model identifies the optimum timing for the ester., amine, and comibination formulations.

Figure 1. A screenshot of the Spring Broadleaf Herbicide Timer at www.turf.wisc.edu. The web site has five other similar growing degree day models that can help you maximize application efficiency.

Figure 2

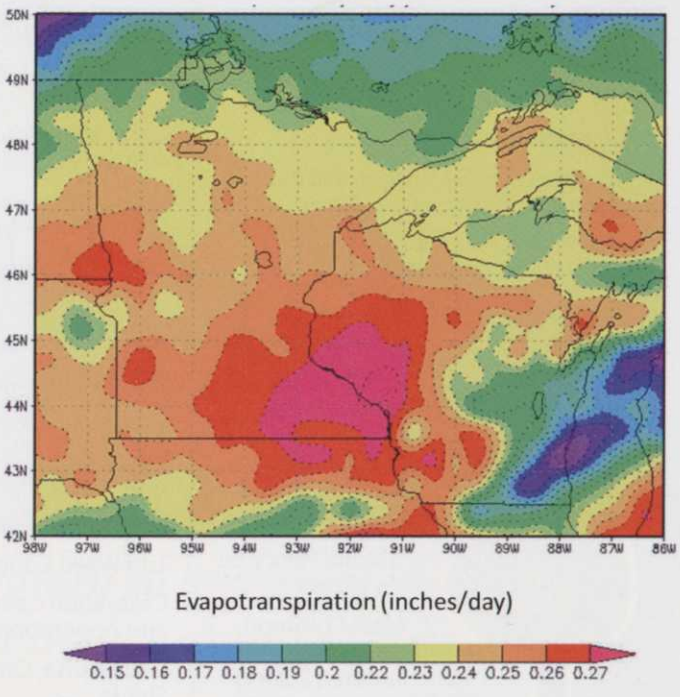


Figure 2. Daily ET maps available at www.turf.wisc.edu. You can improve irrigation scheduling by keeping track of the daily ET and rainfall for your course using the Wisconsin Irrigation Scheduler spreadsheet also available on the site.

Watson Award Recipient, Hole Notes Contributors Honored At MGCSA Recognition Banquet at Brackett's Crossing CC

The Watson Award has been given annually since 1990 to a member of the MGCSA for their journalistic efforts through writing an article for the *Hole Notes* publication. On behalf of Brandon Schindele, Superintendent of Edina Country Club, First Assistant Jeff Mold accepted the 2011 award for the article titled Use of Basamid for Fairway Re-Grassing at Edina Country Club.

Brandon provided the readers with an exceptional article about fairway reconditioning using the product Bosamid in last December's *Hole Notes*. The summer long project required meticulous management to meet the membership's expectations.

The in depth presentation included many great photographs, tips and editorial content describing the project from the initial plan to first mowing. Because Basamid is such a touchy material to handle, Brandon and his staff needed to take extra precautions to protect themselves, the course and the environment.

Edina Country Club Assistant Superintendents Jeff Mold and Brian Grill accepted the Watson Award for Brandon Schindele at the MGCSA Awards and Recognition Banquet.

Celebrating the evening with Jeff, were several past recipients of the distinguished writing award: Rob Adams, Paul Diegnau, CGCS, Jack MacKenzie, CGCS and Fred Taylor, CGCS.

Beyond member generated articles, a good publication needs great columnists. The recipients of *Hole Notes* are fortunate to have several who monthly give their time to bring antidotal and educational materials for our enjoyment and edification. Diegnau, Scottie Hines, CGCS and Brian Brown were recognized and commended for their wonderful efforts.

Also acknowledged that evening were the many vendors who see value in the publication *Hole Notes* and continue to advertise thus keeping the cost of the magazine a mere two dollars per issue. Mentioned as well were Scott Turtinen and Jeff Turtinen, who created the typography, layout and assisted in the editing of the magazine for the past 21 years. Andrew Carlson, who assisted with the journal's proofreading, was also recognized.

(Editor's Note: A complete re-cap of the December 7 MGCSA Awards and Recognition Banquet will be published in the January-February 2012 digital version of Hole Notes and will also available at www.mgcsa.org.

Highlights from the Northern Green Expo 2012 Seminar Schedule

Below is a selected list of topics geared toward golf course superintendents that will be highlighted at the Northern Green Expo in January 2012!

Management

- Keynote: Radical Engagement for Greater Results
- Golf: Managing your Manager, Committee and Boards
- Time Management Techniques for the Green Industry
- Developing a Sustainable Golf Course Model
- Pesticides, Perception and Society
- Should Henry Be Out There?
- Most Common Problems Encountered During Golf Course Site Visits
- Uncovering the Architectural History of Your Golf Course
- Golf Course Design, Renovation, and Maintenance & Local Case Studies
- Human Resource Management: In Focus

Turf

- Waitea Patch Management Strategies
- Turfgrass Research Update
- Identifying and Troubleshooting Turf After Cut Appearance Issues
- Biorational Control of Dollar Spot
- Turf Weed Control: New Products
- Calibration Calculations, Equipment and Applications
- Golf Course: Growing Great Turf in the Shade
- Pesticide Recertification (A &E)

Grounds

- Stormwater Management: Reclamation & Re-Use - Target Field Case Study
- Back to the Basics: Asphalt & Concrete
- Raingarden Maintenance
- Creation and Protection of Wetlands
- Small Engine Repair
- Maintaining Natives

Water

- Irrigation Basics – The Occasional Repair
- Wire Locating/Tracking
- Irrigation Troubleshooting: 2 Wire
- Weather Based Controls
- Water Conservation/Efficiency
- Aquatics Recertification (F)

A complete schedule-at-a-glance can be found online at www.NorthernGreenExpo.org.

"We appreciated the opportunity to serve you in 2011 and look forward to helping with your turf needs in 2012"

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