



# Hole Notes

The official publication of the MGCSA



**New Champion, Jared Keller, Crowned  
at Rochester Golf and Country Club**

Vol. 48, No. 6 July 2014

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# WEE ONE MINNESOTA GOLF OUTING AT BRACKETT'S CROSSING COUNTRY CLUB

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MONDAY, OCTOBER 13, 2014

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HOSTS: Tom Proshek,  
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Four Person Scramble *only one MGCSA member per team necessary*

Great Golf Prizes. On course refreshments. Lunch on the course. Heavy hors d'oeuvres immediately following golf with cash bar reception.

Enter Early. Field is limited to 30 teams (120 players).

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Country Club Attire – Collared Shirts. Soft spikes only.

10:00 - 11:00 a.m. Registration – Driving Range available

11:00 a.m. GOLF - Shotgun

4:00 p.m. Prizes and hors d'oeuvres reception (cash bar).

Contests: Must be present at the reception to win.

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**August 7**  
**UMN Field Day**  
**UMN TROE Center**  
**Host Dr. Brian Horgan**

**September 8**  
**Badgerland Exposure**  
**Lake Wissota Golf**  
**Host Kris Woppert**

**October 7**  
**Shoot Out**  
**Minnesota Horse and Hunt Club**  
**Host Mike Manthey**

**October 13**  
**The Wee One**  
**Brackett's Crossing Country Club**  
**Host Tom Proscheck**

**November 19**  
**Assistant's Professional Forum**  
**Pinz Bowling Woodbury**  
**Host Casey Andrus**

**December 3**  
**Winter Mini Seminar**  
**Medina Golf and Country Club**  
**Host Erin McManus**



**EDITOR**

**DAVE KAZMIERCZAK, CGCS**  
DAVE@PRESTWICK.COMCASTBIZ.NET

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## Bees and Golf Courses A Sweet Match-Up



**On the Cover:  
A New  
MGCSA Champion  
Jared Keller.  
Congratulations**



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# Presidential Perspective

by Roger Stewart, CGCS Superintendent at TPC Twin Cities

*This month I am sharing a letter of support your Board of Directors sent to the GCSAA for their endorsement of the Science of (the) Green project at the UMN Les Bolstad Golf Course.*

**Gentleman:**

**On behalf of the MGCSA membership and Board of Directors, I am writing to inform you of an exciting new initiative called Science of (the) Green at the University of Minnesota in St. Paul, Minnesota. The initiative's first project involves the renovation of the University's 85 year old Les Bolstad Golf Course that will provide a model for golf course restoration and renovation projects, along with management practices in the future.**

**The re-design concept is to provide a working, 'real time' example of how to renovate golf properties using three components of sustainability to insure the long-term success of a golf**

**course. Identified as agronomic, economic and environmental principles and procedures, the study of these components will create a comprehensive business model for success, which can be applied at any golf course facility. In addition, there will be a one stop demonstration area to showcase the current options for facilities considering a renovation, such as green and bunker construction, irrigation and sensing systems, grass species and bunker sand options, etc. The demo area will permit decision makers to compare options in one location while considering the corresponding costs.**

**Water use in Minnesota, the land of 10,000 lakes, and across the country is under great**

**scrutiny. It is clear our industry must take action to find better ways to reduce, reuse and recycle water so that we have access to this crucial resource for future generations, as well as for the long-term viability of the game of golf. The Science of (the) Green initiative at the University of Minnesota is unique in that it will employ the strategies that will demonstrate effective ways to use and conserve water, and reduce inputs from the design and engineering phase of the project, all the way through the construction phase and operational phase when the project is complete.**

**This initiative is more important today than ever before. The growth of golf and golf course construction was at an all-time high in the 1980's and 1990's. The last 15 years we have seen the world economy contract to a point where new course construction came to a halt and the golf industry, like other businesses,**

**has struggled. Most of those golf courses built during the last boom have not been renovated, upgraded, or enhanced since they opened.**

**Assuming the recent economic improvement continues, many of those courses will be positioned economically for renovation and restoration over the next 10-20 years. It is crucial that these golf courses be able to undertake those projects using sustainable techniques that contribute to the long term viability of the facility, the environmental stewardship as part of their surrounding community and ultimately the game of golf for future generations.**

**The University of Minnesota project will provide crucial information for golf course architects and golf course builders for their future renovation contracts. Owners, club officials, general managers,**



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**golf course superintendents and golf professionals considering a renovation will also benefit from information related to how to manage their facilities economic sustainability during and after the project. The outcomes of this proposed project can provide the roadmap to a successful and sustainable golf course renovation for the foreseeable future.**

**The Minnesota Golf Course Superintendents Association strongly endorses the Science of (the) Green initiative and its first project because it is relevant to the guiding principles of our association, which are education, outreach and the environment. In addition, we believe the outcomes from this project will provide valuable information that will change the way golf courses are constructed, renovated and managed now and in the future.**

**GCSAA and its affiliated Chapters are recognized as the leaders within the golf industry**

**in the areas of turf research, environmental stewardship and sustainability. As President of the Minnesota Golf Course Superintendents Association and on behalf of our entire membership, I am asking GCSAA to maintain its leadership position and endorse the Science of (the) Green initiative at the University of Minnesota for its potential to provide valuable information, data and tested procedures that will become the standard for sustainability in golf course renovation and construction now and in the future.**

**Thank you for your esteemed consideration of this request and I look forward to hearing from you.**

**Respectfully,**

*At the time of publication, the SOG project has received endorsement from both the GCSAA and the EIG. Thank you for your support of this progressive destination for golf studies. RS*

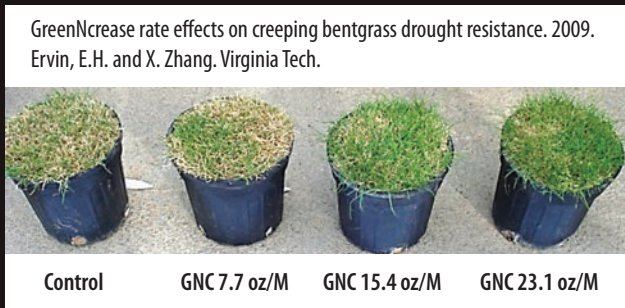
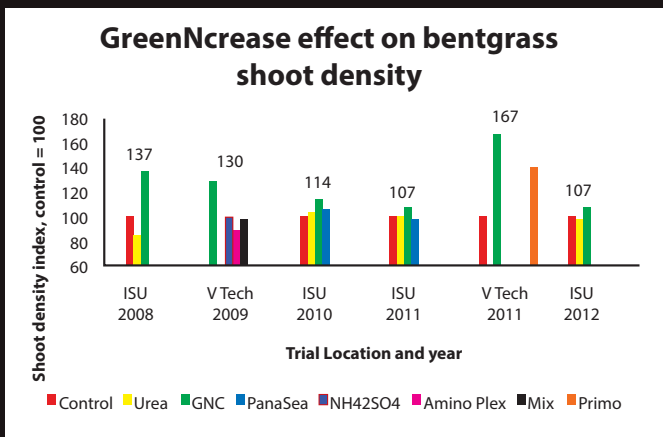
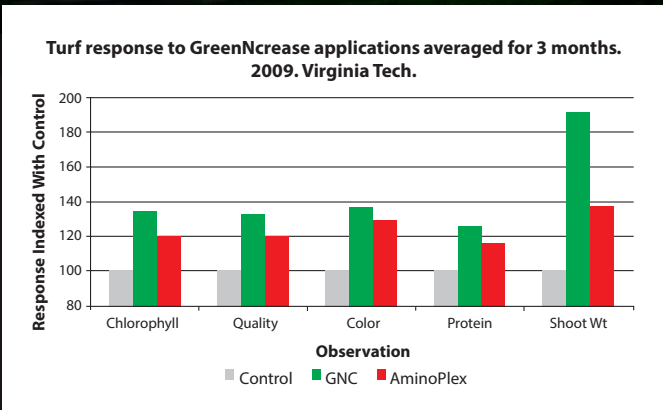
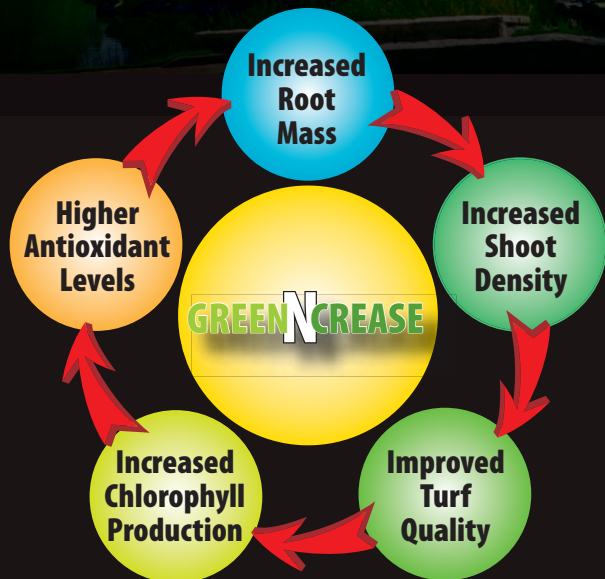


# MGCSA Equipment Manager's Forum and Tour July 8, 2014



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# In Bounds

by Jack MacKenzie, CGCS

Funny, when I look back and remember the not to distant past, my mind drifts to “ownership” of objects and persons that were not mine. In fact, I came to covet many things as a superintendent.

I “owned” my golf courses, all of them, but especially those where I was top dog. I owned my seasonal staff, even though there were a few whom I really didn’t want. I owned my assistants, all of who dedicated themselves to growing grass with passion equal to mine. And I also took ownership of my mechanic, the guy in the background who was much more important to my job than I likely gave him credit for.

Now, on the other side on the industry now, I have come to fully appreciate how critical my mechanic really was to operations at all the courses I worked. As I sort through the equipment manager positions posted upon the MGCSA website, my heart goes out to those who are searching for that unique individual who plugs away managing a huge and diverse arsenal of

turf maintenance equipment.

Hydraulics, electronics, hydrostatics, fuel injectors, carburetors, diagnostic tools, presses, pullers, gear reducers, expanders, cylinders, valves, pistons, rods, crankshafts, brakes, hoses, axels, wiring harnesses, bed knives, reels and filters. Gang mowers, topdressers, aerators, gas and electric carts, small engines, large engines, triplexes, walk mowers, trailers, sweepers, blowers, line trimmers, chainsaws, pick up trucks, tractors, skid steer loaders, lifts, jacks and just a bit of agronomic knowledge to question the wisest superintendent from going overboard with odd requests.

You know the ones, “Hey, could you open that top dresser just a little bit more so we get great coverage? Could we change those hollow tines to solids? On second though how about quad tines instead? Be sure and lower the height of cut by .001 inch by tomorrow morning. Just open the throttle up a little bit more and our pressure should be just about perfect. How about a bit more sand? Could we lower it just another .001 inches? Did I mention I want to aerify and overseed the range tee this afternoon? You wouldn’t mind looking at Dr. Johnson’s mower would

you? What do you have planned for this weekend?"

Over the years not only did I have to learn how to manage senior operators, junior operators, gal operators, member kid's operators, Hispanic operators and intern operators, but so did my equipment managers. Their interactions were always on the receiving end... the receiving end of a broken piece of equipment that is. And unfortunately, many of the failures were due to my lack of judgment and encouraging the equipment be pushed further than it was intended to perform.

Then again, they were partially to blame because there wasn't anything they couldn't fix or figure out, and I relied upon that assurance.

Hey Bill, Roger, Pat, Rich, Dick, Jim and especially Bob, thank you for your amazing abilities in maintaining a fleet of assorted equipment, keeping your cool when addressing the staff for disassembling your fine work, managing my expectations by proposing realistic options to many of my radical requests, always having the tools necessary to match the player's demands, informing me of things I didn't want to know in a variety of ways with the end game of improving the operations of the club and above all that, thanks for being my

friends especially when I took you for granted. Only too often I am afraid.

Back in the 1970's when I began my climb in the industry, one full time mechanic was a luxury. Player expectations were nothing compared to today and a new piece of equipment came around once every three years or so. Blitzers, Nationals, triplexes (still new at the time), small staffs, hand clippers and a very limited number of Cushman's didn't really require a fully equipped shop much less a full time mechanic. Reels were rebuilt and ground once each year in the winter whether they needed it or not. Turf management machinery lasted longer because fewer hands operated it. Youthful staff was sent out in the morning with a hand clipper and rotary mower, sans cart, to trim the course.

The 80's saw a revolution in equipment and demands, both the players and mine. The hydraulic, lightweight mower market exploded along with line trimmers, refined aerators, top dressers and spraying equipment. No longer did clubs rely upon one Cushman with a variety of interchangeable work components. Dedicated machines became vogue. Full time mechanics were suddenly required to maintain a growing fleet of

specialized equipment. More often than not, these individuals came from the existing crew because they were “handy with equipment”.

Expectations continued to grow in the 1990’s and new millennium. Old ideas were new again. Water injection, light topdressing, rollers, double and triple cutting. Spray technology took leaps and bounds; growth regulators, spoon-feeding, a plethora of chemistries to be applied and more and more assumptions that the equipment manager could just “keep up” with the changing times.

Sadly, as I look back, I fear I didn’t keep up with the dynamics that player requirements placed upon the strongest cog in my wheelhouse, my equipment manager. New pole barns were built to house an ever growing fleet of equipment. Every staff member had a utility cart, we had a dozen line trimmers, seven walk mowers and three sprayers. But disgracefully, still only one mechanic to keep up with all of the changes.

Then the economy took a dive... but of course not expectations, and thus even more pressure came to bare upon my key staff. Eventually, I did get an additional seasonal assistant, an intern and my summer staff grew from 12 to 22 through the years. My equipment

manager got a floor lift. Better than nothing I suppose.

As I review the many equipment manager opportunities that have crossed my desk this year I wonder if perhaps this position is suffering “burn out”, not unlike other management positions often do at a golf course. Have wages and benefits kept up with the changing times? Should clubs consider employing full time or seasonal assistant equipment managers? Do EMs have the tools necessary to be productive especially in this every changing environment?

This year the MGCSA has been working hard on expanding the D or Equipment Manager Classification. Through this outreach effort I have come in contact with much different set of fine professionals with a completely different perspective on the industry. They love and take ownership of their machines just as you do of your course. They also have families, hobbies, needs and dreams just as you do.

It is easy for me to reflect upon some of my inadequacies as a manager when it came to my right hand wrench, unfortunately I am beyond doing anything about them. But it is never too late to give a big thanks to my “solids”, Bill, Roger, Pat, Rich, Dick, Jim and Bob. No, especially Bobby, MY equipment mechanic, thank you.

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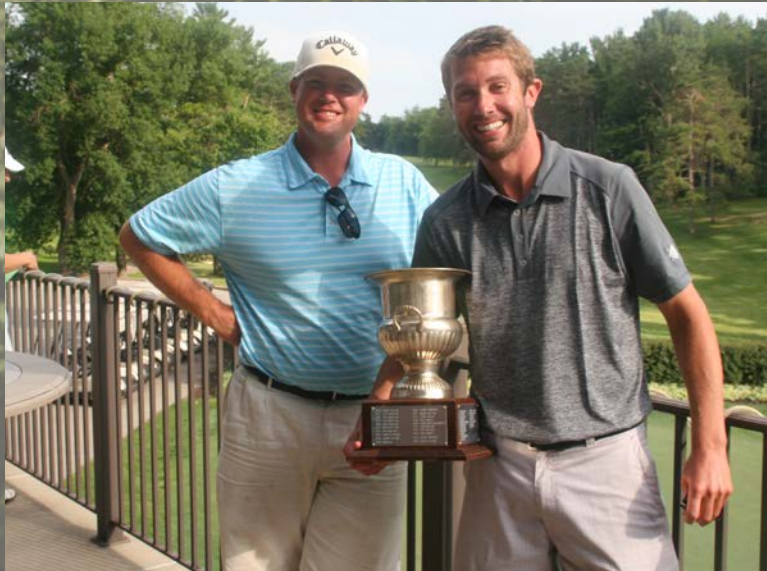
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# *The Championship 2014*



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*The membership and staff at Rochester Golf and Country Club are also to be credited for their willingness to host a tournament on behalf of the MGCSA. Your Association is grateful for the opportunities offered by our affiliate base and member golf destinations.*



*Rochester Golf and Country Club  
Superintendent Nick Folk provided a true test of competition.*



**Championship Flight:**

**Low Gross 1st Place: Jared Keller 75**

**Low Gross 2nd Place: Ben Walker 77**

**First Flight:**

**Low Gross 1st Place: Greg Paulus 84**

**Low Gross 2nd Place: Aric Hemquist 86**

**Low Net 1st Place: Charlie Miller 76**

**Low Net 2nd Place: Nick Folk 77**

**Second Flight:**

**Low Gross 1st Place: Jim Temple 87**

**Low Gross 2nd Place: Mark Schmitz 97**

**Low Net 1st Place: Tom Dostal 74**

**Low Net 2nd Place: Tim Gallagher 77**

**Senior Flight**

**Low Gross 1st Place: Tom Meir 83**

**Low Gross 2nd Place: Jin O'Neill 93**

**Low Net 1st Place: John Granholt 75**

**Low Net 2nd Place: Walt Braunig 86**



*Thank you participants, you are all champions!*



## TROE CENTER - UFORE NURSERY AUGUST 7 REGISTRATION FORM

### TURF TRACK

#### 10:00 A.M. - 11:00 A.M. - TROE CENTER

Sam Bauer <b>Growing Degree Days for Scheduling PGRs</b>	15 min x 4
Brian Horgan <b>Science of the Green</b>	15 min x 4
Ian Lane <b>Bee Lawn</b>	15 min x 4
Maggie Reiter <b>Drought Trials</b>	15 min x 4

#### 11:00 A.M. - 12:00 P.M. - TROE CENTER

Eric Watkins <b>Fine Fescue Breeding</b>	15 min x 4
Vera Krischik <b>New Turf Insecticides</b>	15 min x 4
Matt Cavanaugh <b>Wetting Agents for Surface Firmness</b>	15 min x 4
Clem Dabney <b>Turf Rhizosphere</b>	15 min x 4

#### 1:00 P. M. - 2:00 P. M. - TROE CENTER

Angela Orshinsky <b>Plant Defense Activators</b>	15 min x 4
Pam Rice <b>Pesticide and Nutrient Runoff</b>	15 min x 4
Garett Heineck / Lindsey Hoffman <b>Perennial Ryegrass</b>	15 min x 4
Andy Hollman <b>Consumer Turf Mixtures</b>	15 min x 4

### FIELD DAY AGENDA - AUG. 7, 2014

9:00 A.M. - Welcome from University of Minnesota and MTGF
9:00 A. M. - 10:00 A. M. - Coffee, Donuts and Vendor Time
10:00 A.M. - 12:00 P.M. - Turf and Grounds Tracks
12 NOON - 1:00 P. M. - Lunch and Vendor Time
1:00 P. M. - 2:00 P.M.- Turf and Grounds Tracks

### GROUNDS TRACK

#### 10:00 A.M. - 11:00 A.M. - TRIAL GARDEN AREA

Karl Foord <b>Pollinators</b>	30 min x 2
Jeff Hahn <b>Insect IPM</b>	30 min x 2

#### 11:00 A.M. - 12:00 P. M. - TRIAL GARDEN AREA

Michelle Grabowski <b>Disease IPM</b>	30 min x 2
Madeline Leslie <b>Display and Trial Garden</b>	30 min x 2

#### 1:00 P. M. - 2:00 P. M. - UFORE NURSERY

Chad Giblen <b>Dutch Elm Disease</b>	30 min x 2
Gary Johnson / Eric North <b>EAB Management Update</b>	30 min x 2

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# *Honey Bees and Golf Courses, One Sweet Partnership Part 2*

*Rebecca Masterman, UMN Bee Squad Coordinator*

## **T&CC Honey Bee Update**

Town & Country Club’s three bee hives stand like chimneys on the maintenance building roof. Every nine days or so, the University of Minnesota Bee Squad comes to check on them, puffing a little smoke into each, signaling the bees to begin eating honey. This keeps them on the comb instead of flying around too wildly. Still, there’s always somewhat of a surge of

golden-brown insects moving like sparks as the beekeepers reach into the boxes to check for brood, eggs, and honey.

At this point in our ridiculously wet summer, the bees are just hitting a much needed “flow” of nectar, where multiple sources, like basswood and white clover are blooming, and can be collected and converted into the bees’ winter honey supply. The bees have also been spotted dipping into the late roses

and zinnias in Town & Country Club's many gardens.

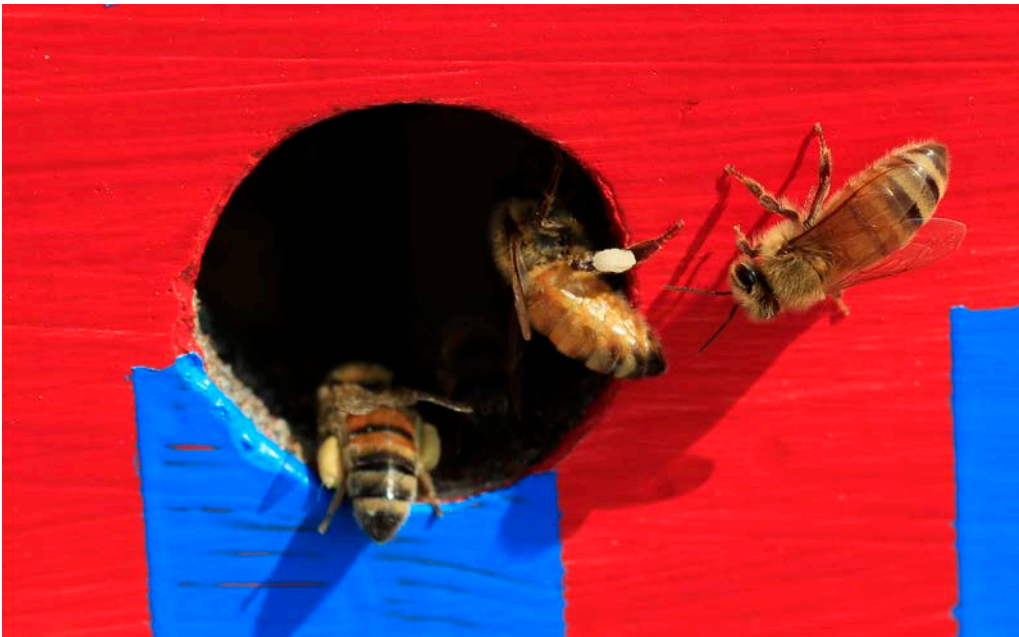
Recently, the Town & Country Club's beehives have gone through a transformation. Although many of us are used to seeing stacks of white-painted boxes clustered in fields or orchards, Town & Country's rooftop bees have begun sporting a more urban aesthetic. General Manager Vincent Tracy's wife and daughter have been working hard to paint new bee boxes with gorgeous blue elephants, tulips, checkers, Buddha's, and spaceships.

In order to switch out the white boxes for the new, more glamorous ones, a bunch of Bee Squad members took the cherry picker, chauffeured by Assistant Turfgrass Supervisor Ryan Browning, up to the roof. Each white box was opened, and its frames (there are ten in each box) were moved carefully to a colorful equivalent. The frames, Bee Squadders were happy to note, were healthy: thick with honey, brood and bees.

After the transition to new boxes was completed, the Bee Squad was transported back to earth once

*Blow. The Bee Squad gives the T&CC hives a property face lift.*





orful hives, the bees orient themselves using the sun and the earth's electromagnetic fields; they don't actually need hive paintings. However, it is important that beehives are painted with light colors, as the bees are affected

again, began to remove their

*Checking out the new "digs"* bee hats and veils, and pack up the van with now-sticky hive tools and extra boxes. An employee stopped by to ask an important question: will the bees recognize their hives now? Or will they get lost in the face of

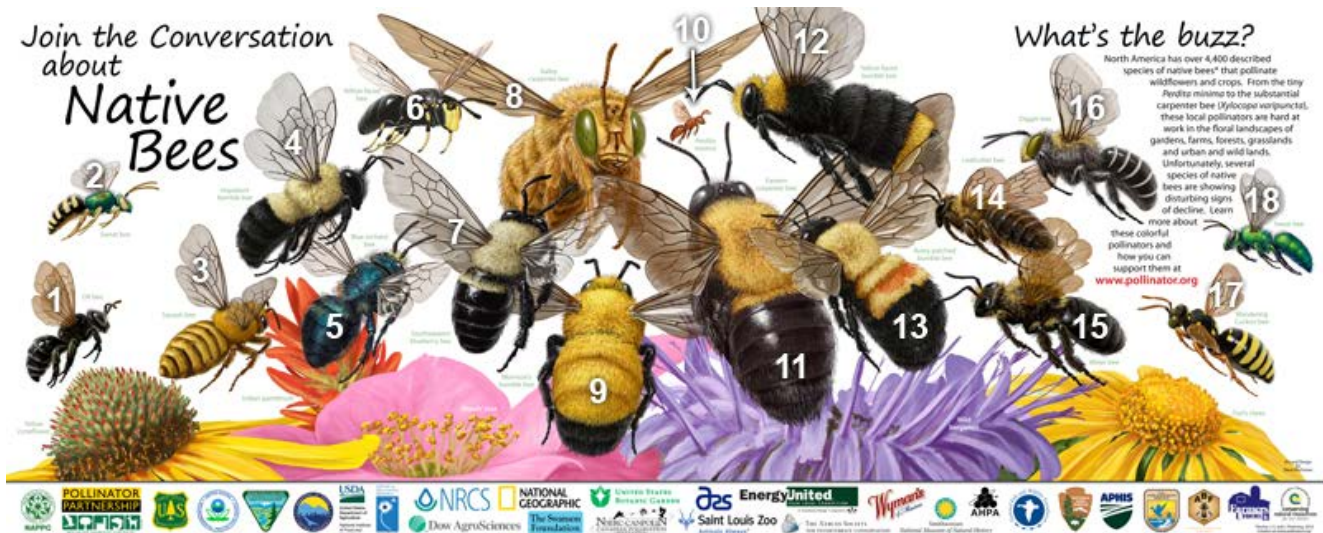
all the new colors and patterns? As long as the new boxes are positioned exactly like the old ones, with their entrances facing the same direction, the bees will successfully navigate their way home. Although we enjoy the col-

by temperature, and would have to work extra hard to ventilate and cool a black or dark-colored hive. For more information about the UMN Bee Squad, visit us at [www.beesquad.umn.edu](http://www.beesquad.umn.edu).

*Honey bee on new wax comb*



**Identifying the bees on the poster “Join the Conversation about Native Bees”**  
Written by Stephen Buchmann, Ph.D., Interim NAPP Coordinator, Pollinator Partnership



1. **Macropis nuda.** There's oil in some flowers. Flowers including Spotted Loosestrife (*Lysimachia* spp.) produce energy rich and nutritious floral oils which some female bees (*Macropis nuda*) collect using modified leg hairs like "oil squeegees" to enrich their brood provisions. This happens in some tropical bees (especially the genus *Centris*) but in the northeastern USA, only in these interesting little *Macropis* oil bees.

2. **Agapostemon texanus.** US sweat bee (a male *Agapostemon texanus*) is especially colorful. Males of this species have a shiny green/brassy head and thorax but a wildly contrasting black and yellow-banded abdomen. Look for these bees on sunflowers and other common plants in the late spring and summer.

3. **Peponapis pruinosa.** Squash and gourd bees (like our *Peponapis pruinosa*) are common bees across much of the United States. They are specialist pollinators preferring the pollen and nectar of squashes, gourds and pumpkin flowers. The genus *Peponapis* is a colorful bee about the size of a honey bee. They are solitary; each female constructs her own nest with no help from kin, and nest a foot or more underground, usually in or near patches of their favorite cucurbits.

4. **Bombus impatiens.** The Impatient Bumble Bee (*Bombus impatiens*) is the preferred bumble bee of commerce. Since it can buzz pollinate, while honey bees never do, it is reared in large numbers and its colonies flown to distance localities, greenhouses needing pollinators. Since it does not naturally occur west of the Mississippi, efforts are underway to only allow it to be used in the eastern states as a managed pollinator. Its colors are muted, the yellow hair bands are often more white than a bright yellow. Compare with Morrison's bumble bee of the western states.

5. **Osmia lignaria.** The Blue Orchard Bee (*Osmia lignaria*) is a member of the leafcutter and mason bee family (Megachilidae). Its distribution includes the Pacific Northwest USA where it is a common visitor to fruit trees in gardens and yards. This bee is often first noticed as females searching for just the right size beetle or nail hole in which to nest and raise their brood. Blue orchard bees are specialists on trees in the rose family and superb pollinator of sweet cherries and other orchard crops. They are currently being tested as pollinators of almonds in California. This bee can be very easily provided for by drilling 7-8 mm diameter holes 5 inches deep into scrap lumber. These "bee condos" can be attached to a garden shed, fence or tree. Nesting females will take up residence and you will be rewarded with bountiful fruit harvests.

The Pollinator Partnership is a 501(c)(3) nonprofit organization that works to protect the health of managed and native pollinating animals vital to our North American ecosystems and agriculture. To join the P2 action team, make a donation or learn more about us, please visit [www.pollinator.org](http://www.pollinator.org).



# Arrowhead Area Superintendents Gath

By Geoff Jordan, Superintendent, Pine City Country Club



Sunny and dry conditions greeted a gathering for members of the Arrowhead Turf Managers Association for golf and dinner at Pine City Country Club, hosted by Superintendent Geoff Jordan. The golf course was in great condition and the greens were rolling fast for the enjoyment of the sixteen participants.

On course events included a skins game and proxies. Three skins were awarded, two to Josh Gamst from Moose Lake Golf Club with

birdies on holes 5 and 6. One skin went to Jake Brytowski from Pine City Country Club after chipping-in for birdie on the second hole. Proximity awards were given to Dale Spetz from Big Lake Golf Club near Cloquet for closest to the pin on hole 3. Long putt on the ninth hole awarded to Ken from 29 Pines Golf Course in Mahtowa. Josh Gamst from Moose Lake Golf Club stuck it close on number 7 to win the proxy, but missed the birdie putt. Prizes were donated by Steve Young with Plaist



# er In Pine City



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Roger Stewart, CGCS from TPC Twin Cities, and President of the MGCSA, along with Executive Director of the MGCSA, Jack Mackenzie, were invited to speak to the gathered turf managers. Roger spoke on the importance of organizations such MGCSA and the Arrowhead Turf Managers Association, more specifically, the importance of face-

to-face interactions versus the use of social media, and how it relates to attendance at meetings and golf outings. Mr. Stewart and Mr. MacKenzie spoke on the benefits of membership with the MGCSA, focusing mainly on research, and the importance of research funding. Many in the audience were interested in the University of Minnesota's Les Bolstad project and how said project will assist and influence the changing face of golf course maintenance.

The Arrowhead Turf Managers Association is a group of superintendents, owners, managers of a golf facility in Northeast Minnesota and Northwest Wisconsin. Monthly gatherings allow participants to discuss and share problems and/or solutions to aspects affecting golf maintenance. Meetings are held May through September on the third Monday of each month. Upcoming meetings include, July 21 at Big Lake Golf Course. The August meeting will held at Springbrook Golf Course in Mora, on the 18th of that month. Twenty-nine Pines Golf Course will host the outing on the 15th of September. For more information on the Arrowhead Turf Managers Association, please feel free to contact Geoff Jordan at [gjordanenger@gmail.com](mailto:gjordanenger@gmail.com)



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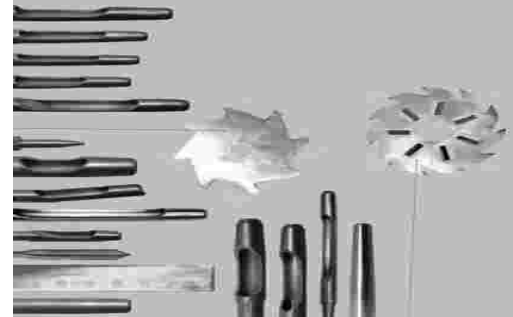
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## In Passing

Mark A. Stennes, age 63, of New Brighton, died July 22 after complications from liver cancer. Born in Bemidji to Oscar & Anna Stennes. He graduated from Bemidji High School and went onto Bemidji State University where he met his future wife Diane Dougherty. They married on August 24, 1974. Mark went onto the University of Minnesota to complete his degree in forestry and masters in plant pathology. They decided to raise their family in New Brighton. Mark was passionate about his career and family and always a friend of the MGCSA.



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# *A New Way of Looking at an Old Problem*

## **Dr. Doug Soldat**

Article courtesy of the Wisconsin GCSA publication *Grassroots*

Some of you may recall sitting in those wonderful wooden chairs (ingeniously designed to keep you awake) in the Soil Science building and learning about the specifics of nitrogen leaching from Dr. J.R. Love, Dr. Wayne Kussow, Dr. Jerry Tyler, or maybe Dr. Nick Balster (who currently teaches Soil Science 301 at UW-Madison). We learned that fertilizer is normally applied in the ammonium form which is quickly converted to nitrate by microbes. Nitrate has a negative charge, and because soils also have a net negative charge, there is no mechanism for nitrate to be retained like there is for the positively charged nutrients like ammonium, potassium, calcium, and others.

Therefore, nitrate is highly susceptible to leaching losses and the recipe for disaster includes: 1) a large application of soluble nitrogen fertilizer, 2) bare soil, or a field with plants too small to absorb most of the nitrogen, and 3) excessive rainfall to transport the nitrate to the groundwater. These three conditions are not uncommon in agricultural settings where soluble fertilizer is the only economically viable choice and logistics usually prevent fertilization when the crop is actively growing. Of course we never quite know what Mother Nature has in store for us in the spring when these applications are typically made.

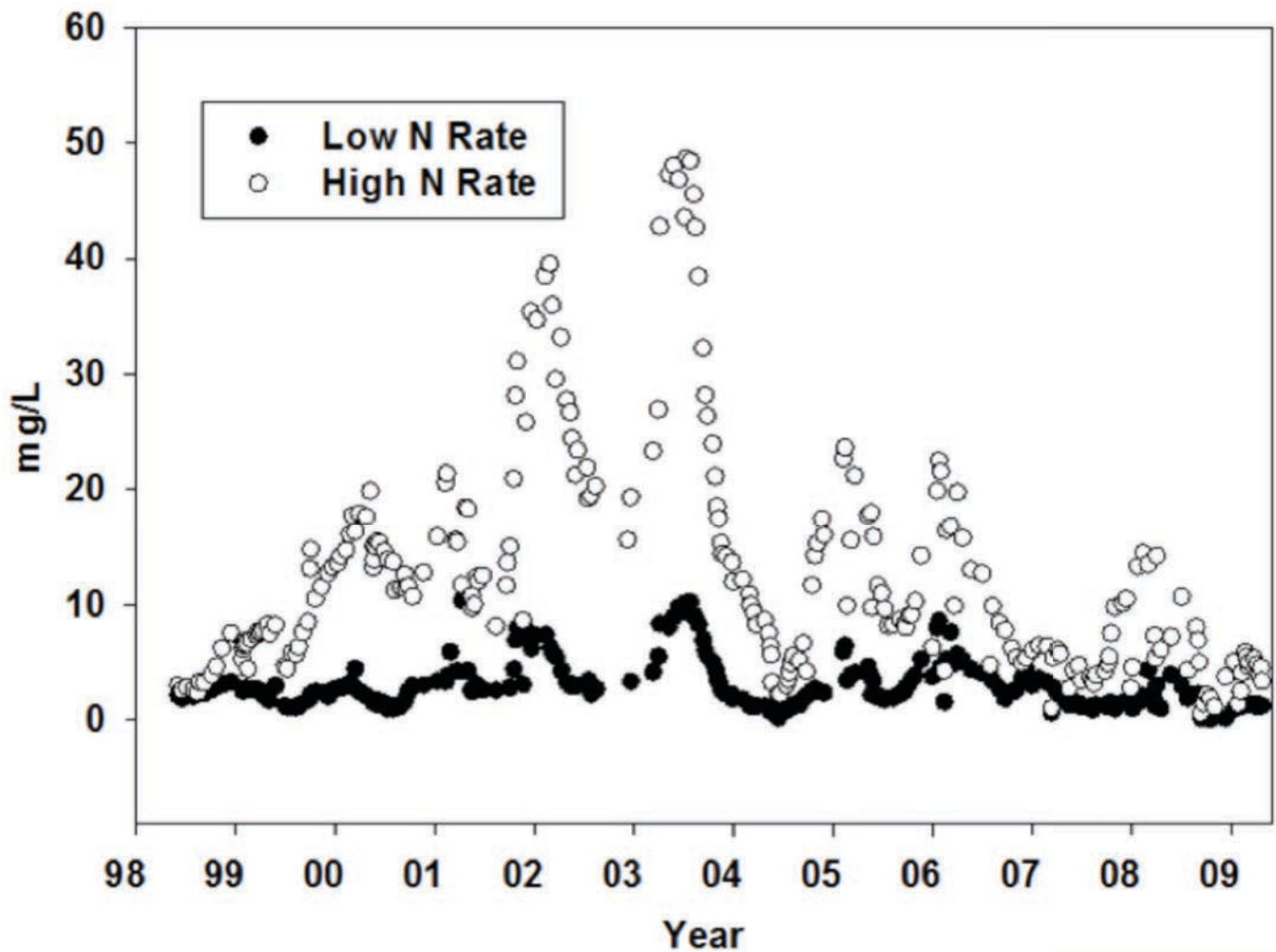
As we know, turf management is very different from traditional agriculture and for the past three decades studies about nitrogen leaching

from turfgrass have found that nitrogen leaching losses from turf fertilization are minor. Perhaps this finding is not surprising because turfgrass fertilization often involves spoon feeding and slow release fertilizers. We also apply our fertilizer to actively growing, nitrogen deficient turf. That means that we are missing conditions #1 and #2 from this list above. There simply isn't much nitrogen hanging around in a turfgrass soil at any given point in time. As a Master's student under Dr. Kussow, I recall applying soluble urea to my sand-based research green and watering it in with irrigation water that contained about 10 ppm of nitrate. When we collected the drainage water, it was almost always less than 2 ppm nitrate. The turf roots absorbed the nitrogen out of the irrigation water as it passed through. My conclusion from that work was that nitrogen leaching is not a major avenue for when typical fertilization programs for putting greens are used. There are dozens of studies that have reached a similar conclusion.

But recently our ideas about nitrogen leaching from turf have begun to change based on some work from Michigan State and Colorado State Universities. In Michigan, Dr. Kevin Frank has observed substantial amounts of nitrogen leaching from a mature fertilized lawn (Figure 1). By mature, I mean it had been fertilized normally for a period of 20 years. There were two interesting aspects to his findings. First, the fact that high levels of nitrate were found at all was surprising given decades of prior work that found the opposite – in fact in the early 1990s scientists at Michigan State studied these same plots and found minimal nitrogen leaching (Miltner et al, 1996). What happened between 1991 and 2001? Why did the nitrogen start to leach?

To answer that, we need to start with the nitrogen cycle. Keep in mind that I am attempting to distill a highly complex situation into a few generalized sentences. When you apply fertilizer to corn and track where it ends

up, you often find that about half of the application makes it into the corn plant.



*Figure 1. Concentration of nitrate in the drainage water from two mature lawns, one fertilized yearly with approximately 2 lbs N/M (low rate), and the other at about 5 lbs N/M (high rate). The leaching follows a distinct pattern, with high concentrations of nitrogen in the drainage through the late fall, winter, and early spring, with the lowest concentrations found during times of active turf growth. Normally, in conventional agriculture spikes in leaching will coincide with timing of fertilizer application and rain events, that pattern is not evident at all in the turf setting shown above, indicating a different mechanism of leaching is responsible. Graph courtesy of Dr. Kevin Frank, Michigan State University.*



Most of the rest ends up in the drainage water as nitrate, with a small amount converted into the gas that makes up 70% of the air we breathe. When we track the nitrogen applied to turf, we find that about half of it ends up in the plant (like corn), but almost none in the drainage water (unlike corn), and a small amount converted to nitrogen gas. The missing portion ends up in the soil as organic matter. This organic matter accumulation can go on for a long period of time, but eventually will taper off because there is a limit to the amount of organic matter a soil can store. At this point, the nitrogen cycle changes, and the nitrogen that used to accumulate in the soil as organic matter will now begin to end up in the drainage water.

Researchers at Colorado State University published a paper that used a computer model to describe what is happening to soil organic matter over time in fertilized turf (Figure 2). If we just focus on the upper most line in the figure, which represents a lawn fertilized at 3 lbs N/M/yr with the clippings mulched, you can see that soil organic matter accumulates rapidly for about 30 years, then starts to stabilize. It is at this point in time when we would expect leaching to start to become an important process. During the accumulation phase, the extra nitrogen in the system is stored in the organic matter, but afterwards it has nowhere else to go. Figure 3 is a graph from the same computer simulation shown in Figure 2, but now shows the expected nitrogen leaching associated with the various management systems. You can see that after about 30 years, the 3 lbs N/M/yr plot begins to show significant nitrogen leaching. None of the other management scenarios do because they are still in the accumulation phase.

So what does this mean? First, this is a major departure from the way we normally talk about nitrogen leaching. Under this new system, nitrogen

leaching is predicted to occur when the soil becomes saturated with organic matter, regardless of the rainfall or the timing of the fertilizer application.

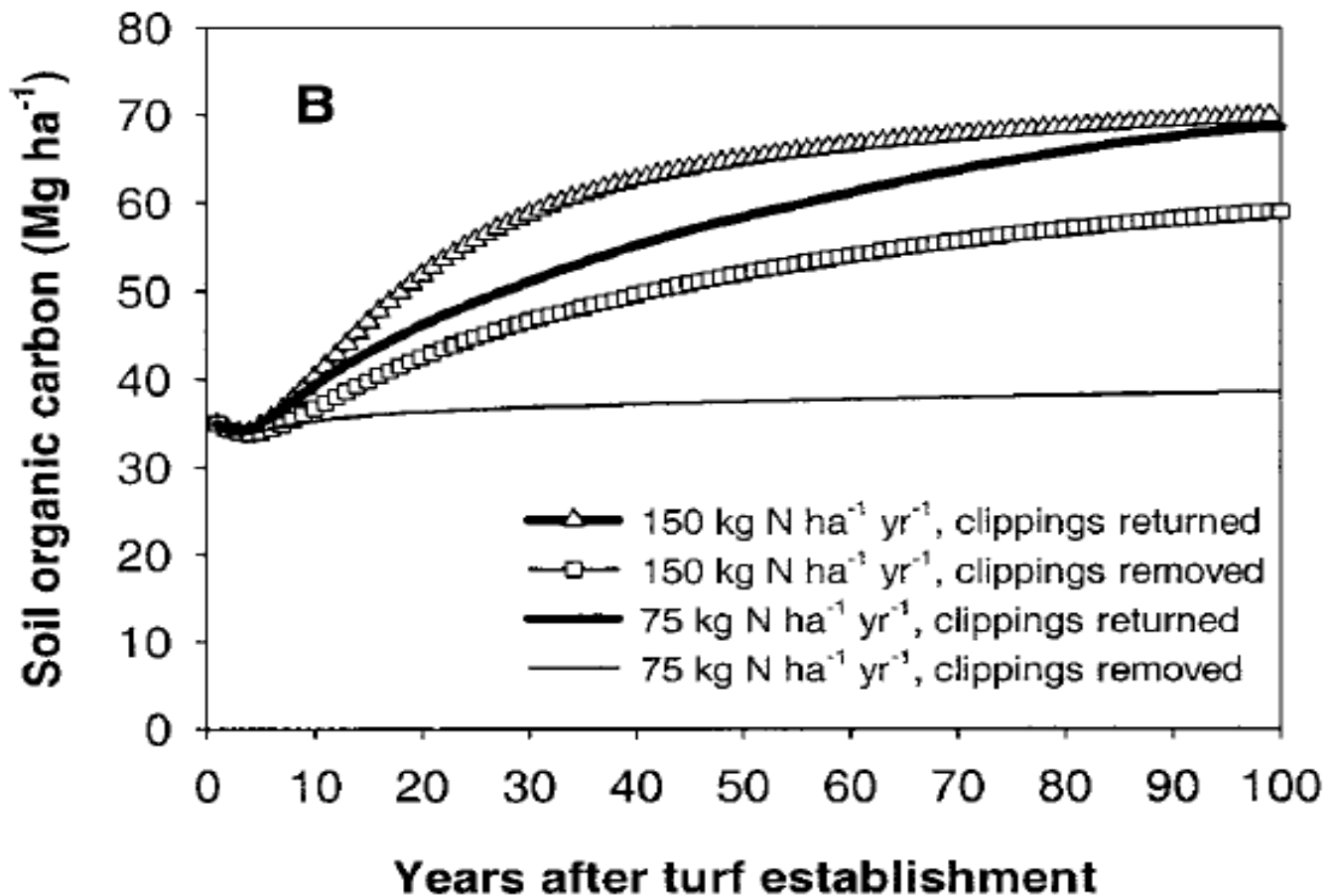


Figure 2. This computer simulation predicts how soil organic carbon (closely related to soil organic matter) changes over time under four different fertilization and clipping management programs. 150 kg N ha<sup>-1</sup> yr<sup>-1</sup> is approximately 3 lbs N/M. You can see that carbon (organic matter) increases most rapidly in the 3 lbs N/M program with clippings returned. However accumulation rate slows at about 30 years. Graph from Qian et al. 2006.

Second, it means that after the accumulation of organic matter levels off, nitrogen fertilizer requirements should be adjusted downward. We are still



at a very early stage in understanding all this new information. Currently there is no soil test that could determine if your soil is in the saturation phase or beyond it. However, developing such a test is now a distinct possibility that I and others are working on.

In fact, this spring Soil Science graduate student Sabrina Ruis visited a number of Wisconsin golf courses to collect soil samples and inquire about fertilization and irrigation history. She is hoping to gain some insight as to how a computer model (like the one used by the Colorado State researchers) and some soil testing information (like clay content, soil organic matter, soil organic nitrogen, pH and others) might be able to predict soil nitrogen saturation and therefore improve upon fertilization recommendations.

The Soil Science Department at the UW has a long history of improving soil testing from Emil Truog who developed the first do-it-yourself test for soil pH in 1912, to O.J. Noer who established the first soil testing lab in the US, to Dr. Wayne Kussow who comprehensively calibrated the Bray and Mehlich-3 soils tests for turfgrass. The task is tall in front of us is tall, but the Badger Soil Nitrogen Test has a nice ring to it, no?

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# Golf Course Regulation Compliance Program

## 2 of 6: *Prevent Backflow to Protect Water Sources*

### by Corinne duPreez, MDA

#### **Backflow prevention**

A backflow prevention device is used to protect the water supply from potential contamination due to the unexpected flow of water in the reverse direction. Minnesota Department of Agriculture (MDA) and Minnesota Department of Health (MDH) regulations require the use of a backflow prevention device or a fixed air gap when filling pesticide or fertilizer application equipment from a municipal water supply, a private well, or from surface water.

#### **Statutory authority**

Minnesota Statute 18B.07, Subd. 5. Use of water supplies for filling application equipment. (a) A person may not fill pesticide application equipment directly from a public water supply, as defined in section 144.382, or from public waters, as defined in section 103G.005, subdivision 15, unless the equipment or water supply is equipped with a backflow prevention device that complies with the Minnesota Plumbing Code under Minnesota Rules, parts 4715.2000 to 4715.2280.

Minnesota Statute 18C.201, Subd. 2. Use of public water supplies for filling equipment. A person may not fill fertilizer application equipment directly from a public water supply, as defined in section 144.382, unless the outlet from the public water supply is equipped with a backflow prevention device that complies with Minnesota Rules, parts 4715.2000 to 4715.2280.

Feel free to cross reference them with the MDA's fact sheet, Backflow Prevention Guidelines for Filling and Rinsing Fertilizer or Pesticide Application Tanks at: <http://www.mda.state.mn.us/~media/Files/chemicals/pesticides/bf-prevent.pdf>

## Acceptable Backflow Prevention Devices

**Air Gap:** Maintain a fixed and permanent physical separation from the discharge outlet to the rim of the tank, container, etc. The physical distance from the opening of the application equipment to the end of the water line must be two (2) times the diameter of the water line. An additional device for rinsing containers is required.



Fixed ridged air gap



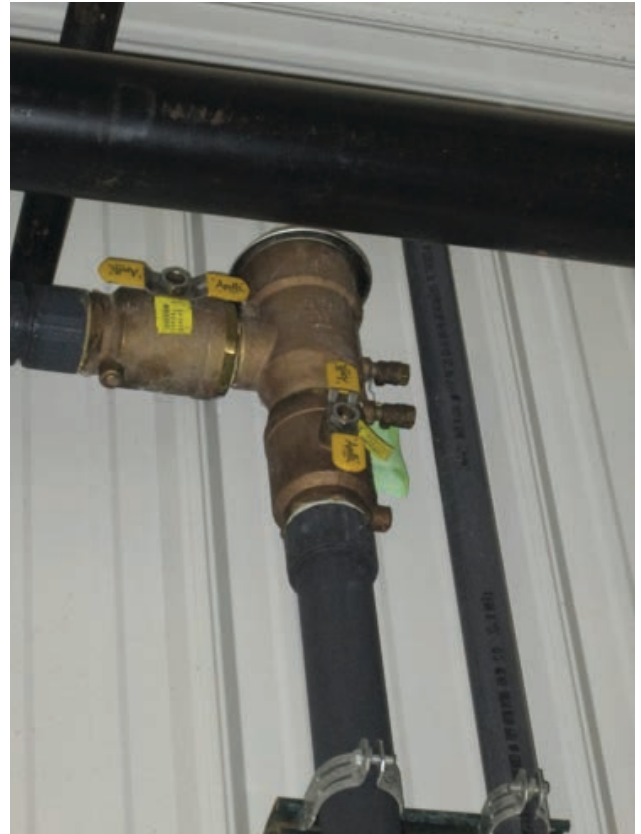
Removable fixed air gap

**Reduced Pressure Principle or Reduced Pressure Zone Device (RPP or RPZ):** Installed, tagged, and inspected by a certified plumber.



***Number One Compliance Violation  
Are You Up To Code?***

**Pressurized Vacuum Breaker (PVB):** Install a PVB twelve (12) inches above the overflow level of equipment that is being filled under continuous pressure with a shutoff valve downstream.



**Atmospheric Vacuum Breaker (AVB):** Install an AVB on a water line not subject to continuous pressure, six (6) inches above overflow level of equipment being filled, and downstream of a shutoff valve. An additional device is needed to rinse containers.



## Rinsing Empty Pesticide Containers/Application Equipment Only

Hose Connection Vacuum Breaker: Attach this breaker on the discharge side of the last control valve. Do not install a hose with a spray control valve following the hose connection vacuum breaker.



Double Check Valve with Intermediate Atmospheric Vent: This valve and vent must be used together on  $\frac{1}{2}$  and  $\frac{3}{4}$  inch water supplies for inline applications with continuous pressure. This valve is for rinsing containers/equipment only; it is not a substitute for a RPZ or RPP.

Filling hand/backpack sprayers:  
Fill a water-only service container  
and transfer the water into your  
sprayer.



## Unacceptable Backflow Prevention Practice or Devices

**No backflow used**

**Use of check valve only**

**RPZ without inspection/tag**

**Air gap not permanent/not fixed**

**Inadequate separation of air gap (2x times the width of water line is required)**

**No physical gap for filling backpack sprayers**

**No check valve for rinsing containers**

**Airgap maintained by person/hand instead of fixed**

**No physical separation in air gap**

***Number One Compliance Violation  
Are You Up To Code?***

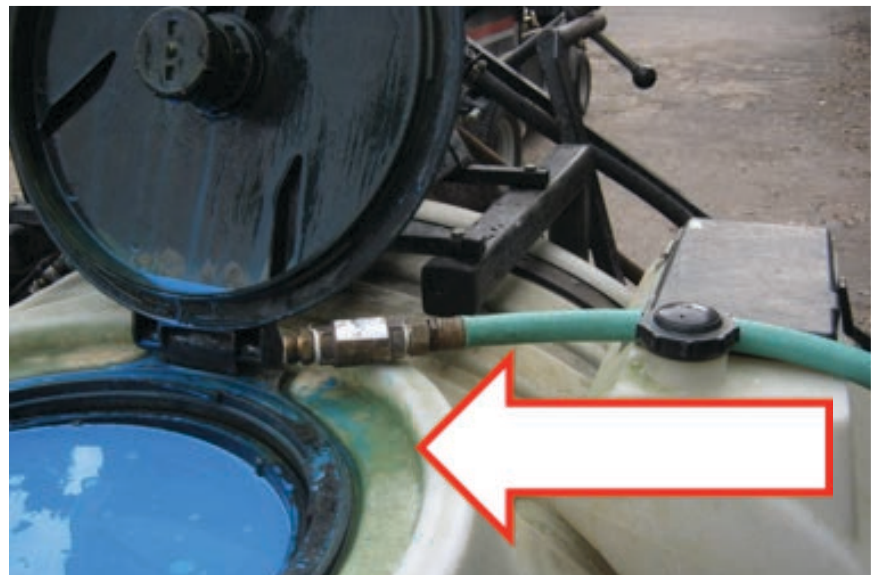
**No physical separation in air gap**



**Air gap is not permanently fixed.**



**Air gap is maintained by a person and not permanently fixed**







**Air gap is maintained by a person and not permanently fixed.**

## **Backflow Prevention Violations and ORDERS**

During an inspection, an Agricultural Chemical Investigator (ACI) will observe the backflow prevention device(s) at your golf course. If non-compliance is documented, one or more of the following Orders will be issued and re-inspection may occur.

1a. Cease and desist the filling of pesticide application equipment until an MDH approved backflow prevention device is properly installed.

1b. Statement of Completion - Properly install a MDH-approved backflow prevention device before filling pesticide application equipment. (Timeline to complete included.)

RPZ specific orders:

2a. Cease and desist the filling of application equipment until the RPZ has been

inspected by a certified person.

2b. Statement of Completion - RPZ backflow device must be inspected annually by a certified person. Submission of a copy of the certification tag is considered adequate proof of completion. (Timeline to complete included.)

## **Financial Penalties**

**The MDA views the lack of backflow prevention device to be a serious and direct threat to groundwater. Pesticides have been and can be easily directly back siphoned into groundwater. Due to the potential health and environmental risks associated with the lack of adequate backflow prevention, be advised that documented noncompliance may result in additional enforcement, including financial penalties. In fact, this is one of the more common financial penalties levied on golf courses.**

**As mentioned above, for additional information and/or examples of acceptable backflow prevention devices, refer to MDA's fact sheet, Backflow Prevention Guidelines for Filling and Rinsing Fertilizer or Pesticide Application Tanks at: <http://www.mda.state.mn.us/~media/Files/chemicals/pesticides/bfprevent.pdf>**

**Thank You,**

**Corinne du Preez, Agricultural Advisor/ACI  
Minnesota Department of Agriculture  
Pesticide and Fertilizer Management Division  
3555 9th St NW, Suite 350  
Rochester, MN 55901  
Office (507) 206-2883  
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# 2014 Scholarship Announcement

This year the MGCSA is pleased to award two, \$1,000 MGCSA Legacy Scholarships, to AnneMarie A. Backstrom and Anne W. Frank, a \$1,500 Joseph S. Garske Legacy scholarship to Melina K. Lynn and a \$1,500 Garske scholarship renewal to Allison E. Hable.

The Minnesota Golf Course Superintendents' Association offers a Legacy Scholarship program designed to assist children and grandchildren of Class AA, A, SM, C, D, Associate and Affiliate members. The MGCSA provides scholarships to students attending college or vocational programs at any accredited post-secondary institution. The program is independently managed by Scholarship America, a national non-profit student aid service organization.

## **Winners of this year's MGCSA Legacy Scholarships are:**

AnneMarie Backstrom, the daughter of Jeff Backstrom. Jeff is the superintendent at Cannon Golf Club. AnneMarie attended Bethlehem Academy in Faribault and was active in 4-H, volleyball, track and various leadership clubs. She is currently attending the College of St. Benedict where she is pursuing a degree in Environmental Studies.



*“AnnMarie bleeds green, as in 4-h green. She has been very active in Goodhue County 4-h and served as a Minnesota State 4-h Ambassador in 2012. She travels all over the state and country participating or helping out at 4-h activities. She developed a passion for it at a very young age and created many friendships along the way. I can’t be more proud of her achievements in school, church, 4-h, and volunteering. She even found time to work part-time on the grounds staff at Cannon Golf Club. She is very excited about receiving the MGCSA Legacy Scholarship...along with her parents. Thank You to the MGC-SA for the continued support of this scholarship!”, her father Jeff said*



Anne W. Frank, daughter of Bob and Tammy Frank. Frank, is an affiliate member who works for MTI. Anne graduated from New Richmond High School and occupied her time with interests in running, canoeing, cribbage track and 4-H. She is also attending St. Benedicts is majoring in Communication.

*“Tammy and I are very proud of Anne and all of her accomplishments. I also appreciate the scholarship opportunities that the MGCSA provides. Thank you.”*  
*Bob*



The Joseph S. Garske Legacy award, named after the founder of Par Aide Products Company, Joe Garske, is committed to further the education of children and grandchildren of MGCSA members through financial contributions. This is the 17th consecutive year for these awards. Par Aide is located in Lino Lakes, Minnesota and owned by Steve Garske, son of Joseph.

The late Mr. Garske, who died at the age of 76 in 1982, started Par Aide in 1954 with plans to make a “good” ball washer. A foundry man and avid golfer, he knew little about the golf business, tried to sell his ideas for design and tooling to two accessory companies, was turned down by both and so began Par Aide Products Company. The Legacy Scholarship was started in his honor by Steve in 1996.

“I am pleased to have our company provide these scholarships since for many superintendents, providing a college education for their children requires true sacrifice. I am fortunate to have the opportunity and ability to help,” Garske said.

“As a long-time member of the Scholarship Committee some years ago, it always bothered me that we had lots of scholarships available for turf students but nothing for the legacy of current members,” Garske said. (Heeding the comments of a long-time Minnesota Superintendent that our committee was working to put him out of a job.) While Steve thought this was a bit of paranoid thinking, it did make him realize that supply and demand works in this industry as well, and if nothing else, an oversupply of eager new superintendents could definitely undermine salaries. However, it was the following premises that motivated Par Aide to initiate a legacy scholarship program:



- 1) Many Superintendents are underpaid, in my opinion, and they truly work a labor of love. Sending a child to college is likely a real hardship. These same Superintendents who now have college age children were the very ones who had been so responsible for supporting our company through all the years and had helped us attain our success. We wanted to thank them.
- 2) Our founder, Joe Garske, did not have any formal education and was always conscious of that fact. He had quietly supported at least one young man in gaining a degree.
- 3) There were lots of turf student scholarships but few if any Legacy awards.”

So it seemed obvious to Steve to initiate a legacy program and it was discussed at numerous scholarship meetings. The problem was how to administer such a program. Suppliers to our industry did not want to be in a position of

judging one potential recipient/customer against another, and Superintendent members were not comfortable with reviewing personal information and making judgments on each other either. The sponsorship concept lay dormant until we discovered the Citizens' Scholarship Foundation of America, now called Scholarship America, an organization that does nothing but review and award scholarships. It's completely impartial and considers all information confidential. The MGCSA quickly agreed to accept the cost of administration and the Joseph S. Garske Legacy was born.

The idea was to provide two two-year scholarships to deserving children of current MGCSA Members. This program is thought to have been successful by all and has been in existence since 1996, helping numerous sons and daughters of Superintendents pursue their college education. Par Aide has continued to prosper and as an expansion of its Minnesota program, it now also offers a similar program nationwide through the GCSAA.

Congratulations to the winners of the 2014 MGCSA and Joseph S. Garske Legacy Scholarships.

### **Winners of this year's Joseph S. Garske Scholarship are:**

Melina Lynn, daughter of Tom and Sandy Proshok, is the recipient of the Joseph Garske Scholarship. Tom is the Superintendent at Brackett's Crossing Country Club. Melina is a graduate of Lakeville North High School and is currently attending the Milwaukee School of Engineering. She is specializing in Biomedical Engineering. When in town, Melina volunteers at Dakota Woodlands Women's Shelter and Fairview Southdale Hospital and was active in Best Buddies and soccer while attending high school.





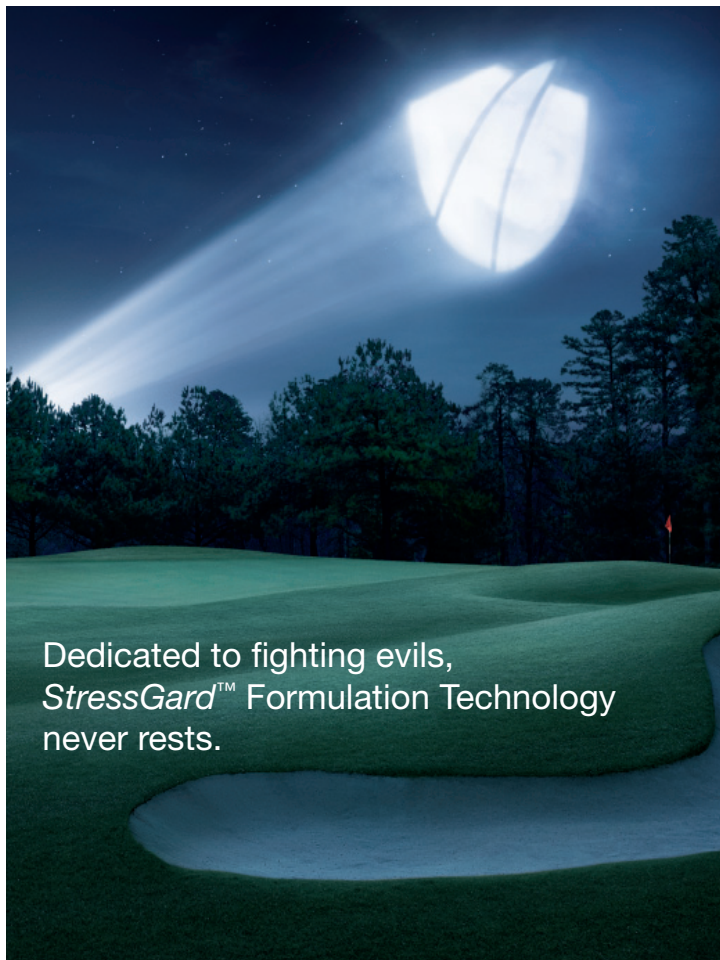


*“ We are extremely proud of Melina and all of her accomplishments she concurred thus far early in her life both academical-ly as well as athletically. Melina has matured into a great young lady and is a caring, un-selfish, hard worker, bright, along with a continuing willingness to learn and be adventurous. We couldn’t be happier for her in what lies in the future for this special lady. She even mows and rolls much straighter than her step-dad.” Tom said of his step-daughter.*



Allison E. Hable, daughter of Jeff and Donna Hable is the recipient of the Joseph Garske Renewal Scholarship. Jeff is the superintendent at Phalen Golf Course in St. Paul. Allison is a graduate from the Coon Rapids High School where she played varsity volleyball and softball. She also enjoys playing tennis, rollerblading, crafts, hanging out with friends and family.

*“Both Allie and I are extremely excited and thankful for this great program and her being awarded the Joseph S. Garske Scholarship. This opportunity will help assist her in funding her College education. Allie will be attending University of Nebraska-Lincoln where she will major in Fashion Merchandising and Minor in Business.”  
Said father Jeff.*



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**Contact Info:**

Mike Kelly  
Area Sales Manager  
MN, IA, WI, NE, ND, SD  
952-292-1966  
[mike.kelly@bayer.com](mailto:mike.kelly@bayer.com)  
[www.backedbybayer.com](http://www.backedbybayer.com)



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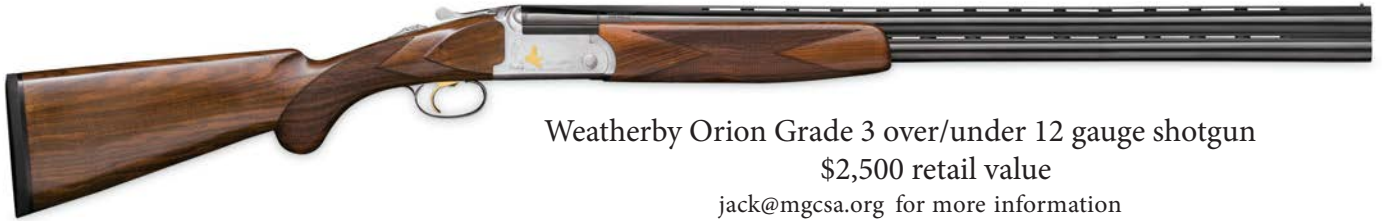


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# Within the Leather

by David Kazmierczak, CGCS

I have a confession to make.

center.

I moved to Minnesota in 1998, a Kansas State Turf School graduate. Up until that point I hadn't really heard too much about the U of M's turf school or how strong the program was. Never heard of a ton of cutting-edge research coming from it. Maybe there was, I just missed it. Strength of an individual program is pretty subjective anyway, but let's be fair and say nobody was comparing it to Penn State. As an impartial observer and increasingly more involved individual I have to say I am impressed with the growth I have seen in the last decade.

Starting with the people. The U of M is extremely fortunate to have a leader in Dr. Brian Horgan basically at the helm of this program. Brian is as articulate as he is smart and his enthusiasm and drive would make Donald Trump proud in my opinion. Right there with him is Dr. Eric Watkins, Sam Bauer and Matt Cavanaugh who I feel share in Horgan's commitment and enthusiasm to turf research and outreach. Add to that Dr. Angela Orshansky, Plant Pathologist who I have not met personally but who's publications so far follow right along

While it most certainly isn't earth shattering or life or career altering, it is a wee bit embarrassing as I have been a superintendent in Minnesota for 15 years, have now been on the MGCSA Board of Directors for three years and editor of this magazine for as long. I have never set foot on the TROE center grounds, much less attended field day at the U of M. This is coming from the guy who wrote a column last month criticizing members for not showing up to events.

To be fair, I didn't have a chance to go to the TROE center for field day the past few years as it was presented via computer in a virtual tour. In the years before that, the event day just didn't jive with my schedule or whatever. I will be changing that this year however, and not just because I feel obligated or because we have a board meeting beforehand. I am truly interested in what is going on at the TROE

with the other three in service and dedication to the turf community and our profession.

And we cannot fail to mention the worker bees; Craig Krueger, field manager, Andrew Hollman, Senior Scientist, Pam Rice, USDA, Patrick Flattery, Scientist, and graduate students Maggie Reiter, Garret Heineck, Clemon Dabney, Madeline Leslie, Long Ma and Ian Lane. Who keep the destination operational and perform the studies we support.

The TROE center itself, heavily supported by the MGCSA with cash and in kind funding to the tune of over 2.5 million dollars since 2001, is by most accounts a very fine research center. I will see for myself in a couple of weeks. It takes a first class facility to produce first class results, no matter how good the researchers are.

The research being done, both with and without MGCSA support seems very relevant to our profession and potentially very important to our work on the golf course as time goes on. Having worked on the K-State turf facility and helping with some of the research going on down there 20 years ago, I can tell you not everything is geared towards the golf course but it seems to be a lot of the present research at the U of M is. Good for us!

Lastly, there is the Science of the Green project. This project, which will be presented by Dr. Horgan at the Field Day involves the renovation of the Les Bolstad Golf Course on campus into a renovation lab of sorts, which would serve as a template for renovation both nationally and internationally along with the potential of becoming a living lab for research and testing in the future. The possibilities are seemingly endless with this project. Field Day is back for the first time in three years. It is designed to showcase and highlight the program and enlighten not just golf course professionals, but all turf professionals. A lot of work goes into pulling this off logistically, and the main beneficiaries are the people who show up.

Put all that together, and I see a vibrant turf program worthy of backing and support. I will be interested in hearing the discussions by the participants and seeing what is going on at the TROE center. MGCSA President Roger Stewart in his column last month alluded to just this- that there are big things going on at the facility, and it is indeed worthy of my time- and yours. Hope to see you there.