

# Minnesota Irrigator

PUBLICATION OF THE IRRIGATORS ASSOCIATION OF MINNESOTA **SPRING 2018**

## Comments by the IAM President



Dear Irrigators,  
This past winter IAM has been very active. Our annual meeting in Freeport, on February 15, was well attended.

A year ago, many irrigators expressed an interest in learning more about technology in irrigation, and the convention committee responded by organizing speakers who addressed these issues. New this year, we had a panel of irrigators that used soil moisture monitoring probes. The panel members shared their experiences using these probes. A round of thanks goes to the convention committee for organizing an information filled day.

IAM hosted a day on the hill, in February, at the Minnesota State Capitol. Twenty-three irrigators participated. We met with thirteen legislators. Some of the issues that were discussed included DNR overreach, property taxes, and health care costs.

*PRESIDENT continued on page X*



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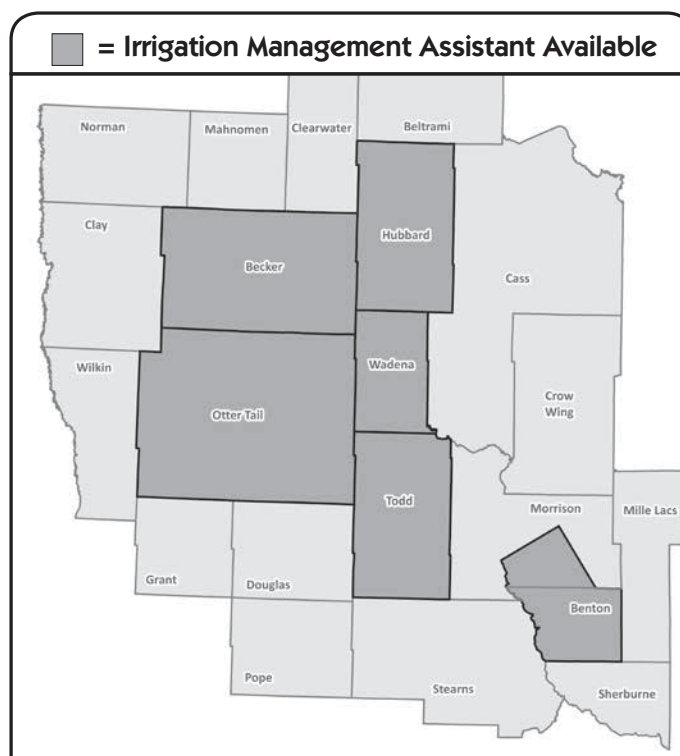
## New for 2018: The Minnesota Irrigation Management Assistant

*Perham, MN* – The East Otter Tail Soil & Water Conservation District (SWCD) is thrilled to announce the expansion of the Irrigation Management Assistant. The tool will be available for the summer of 2018 and will now serve Otter Tail, Becker, Hubbard, Todd, Wadena, Benton and a portion of Morrison county.

The Irrigation Management Assistant is an online tool that allows you to track your crop water use and irrigation needs. It does this by:

- Using local soils data to calculate the water holding capacity of the soils in your field.
  - Using local precipitation data from the National Oceanic and Atmospheric Administration (NOAA)
  - Using local crop water use (evapotranspiration) from our Ag Weather Network
  - A modified version of the University of Minnesota's checkbook irrigation scheduling method.
- This tool will give you a second opinion on when to irrigate and the amount to put on. It will also give you a warning if your soil moisture levels are below the recom-

mended depletion amount. Users have the option to update rain, irrigation, and crop maturity information to reflect field-specific conditions. It is available on desktop and mobile devices.



The expansion of the Irrigation Management Assistant tool is a collaborative effort between Benton and East Otter Tail SWCDs. The RESPEC consulting firm originally developed the tool for the Benton SWCD and has continued working

*MGMT ASSISTANT continued on page 5*

## The Ag & Energy Center is 50 years old

If you are over 60 years old, what do you remember about the '60s in the greater Staples area? If you are under 60, what have you been told about that era and before?

It was a pivotal time. There was major concern about losing the historic railroad presence in the city, how the workforce would fare and how it would affect the community. It was also a time that found school and community leaders stepping up to make a difference.

The Ag & Energy Center began operations in 1968. In the early years, it was known as the "School Farm." The official name was the "Central Minnesota Demonstration Research and Irrigation Farm," or "CMDRIF"...often shortened to "Irrigation Farm." As time went on, the name changed to "The Irrigation Center," then to the "The Ag Center," and finally to the current "Ag & Energy Center."

People may have heard the name, seen the combines and tractors in a parade, visited a field day or Living Legacy Gardens...but what is it really?

To begin, one must look at what farming was like in the 1960s. The average yield for corn was about 40 bushels per acre. (The state average yield was over 60 bushels per acre.) That yield was only on part of the total acres planted because much of the crop only made silage due to lack of rain. Soils in this area are often sandy and do not hold water after a rain like heavier soils.

Most farms had livestock, much of which was dairy, so that the silage could be fed to the cows to help earn a living. Farming often did not generate enough income for more than the very basics of family living.

Agriculture was critical to the area. Much of the population that sent children to the school and did business in town lived in the country. The Chamber of Commerce hosted the "Farmers Night on the Town" for many years during that era. School leaders at the time saw that finding a way to enhance the economics of farming would benefit the whole community.

Irrigation had been a topic of discussion for several years. A small number of farmers in the area had been irrigating for a few years with real success. But low farm incomes did not allow for the average farm to be able to borrow enough money to get into irrigation, especially when you were

*AG & ENERGY CTR continued on page 2*

## Welcome to the MN Irrigator's Spring Newsletter

*Jerry Wright, IAM Membership Secretary*



Wish you the best in your crop planting and irrigation management. This newsletter comes to you thanks to the support of the enclosed advertisers, current IAM irrigators & industry membership and those Extra Mile Supporters listed.

**Directors on the IAM Board welcome and encourage you to become a member** if you have not already joined. We all benefit by each other's ideas, experiences and support to continue the IAM activities in the new year including keeping a watchful eye

on MN Irrigation Water Rights; telling personal stories about benefits of irrigation with Legislators as well as represent the interests of irrigation practices across the state.

**To become a member, simply return the application form included on the last page of this newsletter.** There are many benefits in belonging to IAM with the best one being simply knowing that you have joined in partnership with your neighboring irrigators in supporting your IAM officers and the board of directors' legislative and agency contact activities. As a member, you can also be placed on the IAM email alert list if you submit your email address.

If you are not interested in receiving future newsletters from Irrigators Association of Minnesota (IAM), "please send a note to [wrightsj@charter.net](mailto:wrightsj@charter.net) or IAM, 24 S. Edquist St., Appleton, MN 56208

If you have a topic that you would like to see discussed in a future issue, drop a note to IAM president, Alan Peterson at [alpetefarm@frontiernet.net](mailto:alpetefarm@frontiernet.net). Articles for the newsletter are solicited and gathered by the IAM officers and Membership Secretary Jerry Wright whom can be contacted at [wrightsj@charter.net](mailto:wrightsj@charter.net). Crow River Press in Hutchinson manages the advertiser space and edits, prints and mails the newsletter.



## AG & ENERGY CENTER *continued from page 1*

not sure there was access to water on your farm or if it would work on your soil.

Those discussions prompted to two high school agriculture teachers, Bill Guelker and Don Baustian, to approach the Superintendent of Schools, Dr. Duane Lund, with an idea. They took him on a tour of irrigation sites in the Elk River area and said the light, sandy soil in this area can be an asset with irrigation. They thought the school should buy a farm. Dr. Lund was very interested.

Dr. C. F. Reichelderfer was the chairman

of the school board at the time. Other board members were: C. Richard Longbella, Donald Gilbertson, Maude Dahl, Dr. Robert Mayhew, and Howard Pattison. At that time, the school board managed both the Staples Schools and the Area Vocational School (AVS). Michael Matanich was the Director of the AVS and Stan Edin was the Assistant Director. This is the group that considered the idea and made the decision.

History was made when the Staples Public Schools purchased a 320 acre farm. It was the first and continues to be the only



IAM Board visit to the Ag & Energy Center



operation of its kind which is owned by a local school district and operated by a local college. The use of irrigation exploded in the region because farms could go just a few miles to "The Farm," see irrigation systems in operation and hear results of testing done on irrigated crops.

Now, the University of Minnesota research staff had a place in our community to study crop practices that would help area farmers. New crops, never considered before, would be demonstrated and find a home in the area. Farming was on its way to a more prosperous place because of it.

So what is the rest of the story? What else has the farm influenced in the last 50

years? How have the "The Farm" staff found ways to fund this enterprise when changes in public funding required it to pay its own way? How did dry edible beans become so prominent in the area? Why did Living Legacy Gardens come into being? How many agriculture businesses and government agencies know the importance of Central Minnesota agriculture because "The Farm" is in existence?

The story of "The Farm" is being written to chronicle how this unique entity began in a unique time in the history of Staples... and how it and its partners have influenced and supported agriculture in the region and in the state ever since.

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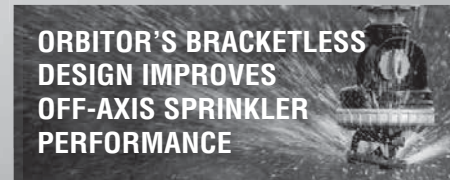
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# Agriculture and Groundwater Meetings: FARMERS TAKE NEXT STEPS TO PROTECT GROUNDWATER

by Brittney Johnson, District Technician, East Otter Tail Soil & Water Conservation District

Over 80 agricultural producers, professionals, and landowners from the north central region came together over the winter of 2017 and 2018 to discuss the ways we can work to protect groundwater locally. The meetings were hosted in Perham, Parkers Prairie, Osage, and New York Mills.

In these meetings, titled Agriculture and Groundwater: Local Solutions to Protect Both, we focused on the local solutions farmers are implementing to maintain their financial stability and strengthen their stewardship of local groundwater resources. These meetings were facilitated by the Freshwater Society, who focused on three questions:

- What are farmers already doing to protect groundwater?
- What new practices would they like to implement?
- What are the barriers to implementing those new practices?

The responses we received confirmed that many of our producers are already doing good work to protect our water. They are using practices like irrigation scheduling, the 4R Nutrient Management Principles (right rate, right time, right place, and right source for fertilizer applications), and building soil health to improve nutri-

ent cycling and water holding capacity.

When we asked about the practices our local producers would like to implement in the future, it was clear they had already given it a lot of thought. Folks talked about using in-field moisture sensors, modifying their tillage practices, and diversifying their crop rotations through additional cash crops or through cover crops. We also heard from people about their interest in using variable rate irrigation systems.

As we know, variable rate irrigation systems can be very expensive to install. They

also have a long period of time to receive the full return on investment. These two things, the cost of technology and the long ROI period, were two of the barriers our producers come across most often when implementing new conservation practices. Other barriers included a lack of local information and research about new practices, a lack of market for additional crops, and highly variable weather conditions.

It was also clear that our producers felt like the good work they are already doing is not being recognized. They felt there is

a lack of communication about the efforts they are making, both between individual farmers and between farmers and the non-farming public.

Importantly for us at the East Otter Tail Soil & Water Conservation District, these meetings included a discussion about how we can help local farmers overcome these barriers. These solutions, as well as a more detailed summary of what we recorded, can be found in the final report published on our website at [www.eotswcd.org](http://www.eotswcd.org).

The results from these meetings will be used to inform future services, programs, and cost share practices at the SWCD. We will also be forwarding the results to our local, state, and national representatives so they have a good understanding of the work our farmers are currently doing and the futures they envision for themselves.

These important discussions were made possible through a grant from the Clean Water, Land, and Legacy Act Amendment.

For more information contact: Brittney Johnson, District Technician, East Otter Tail Soil & Water Conservation District - Perham [www.eotswcd.org](http://www.eotswcd.org), 218-346-4260 ext. 117 [brittney.johnson@eot.mnswcd.org](mailto:brittney.johnson@eot.mnswcd.org)





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## PRESIDENT'S COMMENTS *continued from page 1*

I have heard many positive comments regarding our day on the hill. Watch for it again next year.

We have amended three pieces of language onto HF 3679, Representative Steve Green's bill. One of the amendments deals with making irrigation water permit transfers easier. If permits don't transfer with the property being sold it can negatively affect the value of that property. The second amendment asks that the DNR consider the economic impact to an area before making any changes to appropriation

amounts. Lastly, we want the DNR to disclose all data used in making any decisions to reduce appropriations. The DNR wasn't supportive of these amendments. We hope to get this bill through the legislature, but will need to be vigilant throughout the legislative session.

As of this writing, the spring weather has not been cooperative. When the weather finally changes and you are able to get out into the field, please be careful and have a safe planting season.



IAM members visited the capital on February 27th to meet with several area Legislators



IAM President Alan Peterson addressed lawmakers

## MANAGEMENT ASSISTANT *continued from page 1*

with local partners to expand the project. Benton SWCD received funding for this project from the Environment and Natural Resources Trust Fund (ENRTF).

If you farm in Benton or Morrison County, you can register for the tool at [www.soilandwater.org](http://www.soilandwater.org). If you farm in the five county area to the northwest, you can find the tool at [www.eotswcd.org](http://www.eotswcd.org) or at [ima.respec.com/eot](http://ima.respec.com/eot).

If you have questions, please contact the Benton SWCD at 320-968-5300 ext. 3 or the East Otter Tail SWCD at 218-346-4260 ext. 3, Brittney Johnson, EOT District Technician



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## FROM THE IAM CONVENTION:

### How you can use irrigation water more efficiently

By Carmelita Nelson, DNR Water Conservation Coordinator

Over one hundred irrigators attended the Feb. 15, 2018 Irrigators Association of Minnesota (IAM) Annual Convention. Alan Peterson, IAM president, reported that based on feedback from irrigators, the theme this year was using technology and best practices to improve irrigation efficiency. Keeping farms economically viable in a tight market will require some adjustments, and one of the easiest to make is modifying irrigation practices.

Pumping water for irrigation is perhaps the biggest source of energy consumption on the farm. Farmers cannot simply stop irrigating, but they can adopt new technologies designed to lower their energy requirements. For example, by converting high-pressure irrigation systems to energy efficient low-pressure models, farmers can expect to see energy savings of about 50%. Farmers may also be able to reduce their pump size to reduce horsepower requirements.

If you missed the convention, or just want a short review of the recommendations, below is a compilation of efficient irrigation practices from some of the speakers. They are roughly in order of easiest to implement, to more difficult or expensive. The speakers assumed that most irrigators in Minnesota now have Center Pivot Systems.

#### Low Cost Fixes & Practices

- Check for and repair any leaks
- Irrigation Scheduling
  - UMN Extension Irrigation Checkbook (<https://www.extension.umn.edu/agriculture/irrigation/irrigation-management/irrigation-scheduling-checkbook-method/>)
  - Irrigation Management Assistant software
- Partial Irrigation Strategy (rather than fill the soil profile to the top)  
<https://www.extension.umn.edu/agriculture/irrigation/irrigation-management/#soil-moisture>
- Minnesota Agricultural Water Quality Certified Farm

#### Moderate Cost or Changes

- Install three or more soil moisture sensors per field
- Install Tensiometers (measures soil moisture tension or the suction that plants' roots must exert to pull water from the soil)
- Nozzles that provide larger water droplets – less evaporation
- Crop rotation – using some crops with lower water needs
- Cover crops

#### More Complex or Higher Cost Changes

- Convert high-pressure irrigation systems to energy efficient low-pressure models
- Variable Rate Irrigation
- Smart Irrigation Technology
- Drip Irrigation



## What is a Well Interference?

By Carmelita Nelson, DNR Water Conservation Coordinator

Well interference happens when a domestic well, or a public water supply, loses or has reduced water because of another water use taking place nearby. In Minnesota, water for drinking, cooking and cleaning (domestic use) is the highest priority by law. If industrial, agricultural, or other non-domestic water use causes a water loss for domestic use, then the non-domestic water user may be responsible for compensating the domestic well owner or municipality for the cost associated with resolving the out-of-water situation.

When a high capacity well is pumping, the surrounding groundwater can be lowered in a pattern known as a “cone of

depression.” Wells located within the cone of depression may experience lower water levels and have problems getting water if water levels drop below the pump in the well. This condition is referred to as “well interference.”

Well inferences typically occur in dry years, however, with more production wells coming online every year we are seeing potential well interferences regardless of weather patterns. Shallower homeowner wells are typically impacted first. Depending on the aquifer and the location of the wells, one homeowner may be impacted, but their neighbor may not have a problem.

Most well interference problems tend to be localized and short in duration but being without water is a major incon-

venience and can cause damage to well pumps. Some problems can be resolved by lowering the pump in the well or installing a new well pump, but in some situations, it may be necessary to drill a new well.

For the past 40 years, the Department of Natural Resources (DNR) has had statutory responsibility for investigating potential well interferences and protecting domestic water supplies. On average, approximately 50% of the complaints are found to be valid well interferences and the other half are dismissed as not valid.

When a possible well interference is suspected, the homeowner and a licensed well driller completes a “Water Well Information and Complaint Questionnaire” and submits the form to the DNR. The licensed well driller must determine that the well was in working order prior to the out-of-water situation.

The law states that the DNR cannot validate a well interference claim if the affected well has been sealed prior to the completion of the DNR’s investigation of the complaint. If the well is sealed prior to completion of the investigation, the complaint is dismissed.

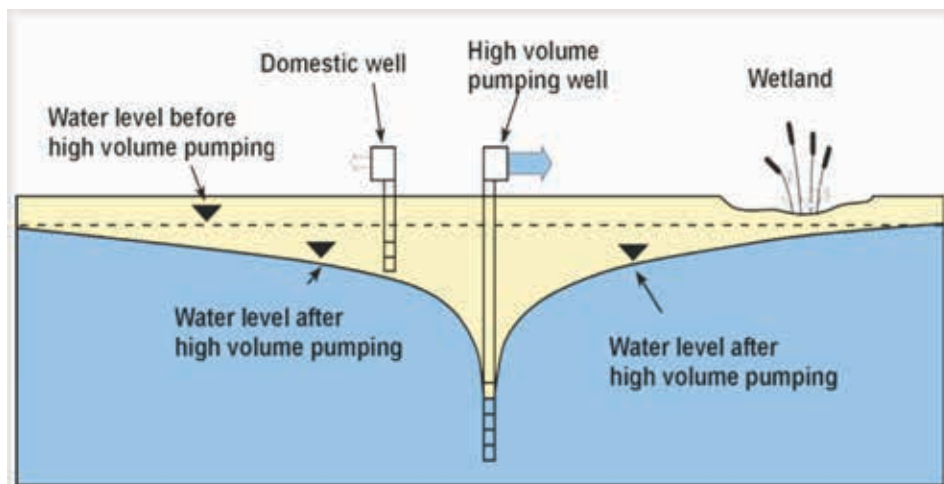
After the form is completed by the homeowner and well driller, a DNR area hydrologist will evaluate the situation as soon as possible and determine whether an investigation is necessary. As part of the investigation, a DNR groundwater specialist may need to conduct an aquifer pump-

ing test or other analysis, and then compile a report based on the findings. If the DNR determines a well interference condition exists, the non-domestic well owner will be required to perform one or more of the following actions within 30 days of notification:

- Request a modification or restriction of the permit in order to provide the affected well owner with an adequate domestic water supply.
- Negotiate a reasonable agreement with the affected domestic well owner(s).
- Request a public hearing.

Most well interference complaints are resolved through a settlement process. This may involve paying the cost of lowering the pump in the well or replacing the pump, while in other situations it may be the cost of drilling a new well or connecting to a rural water supply. Each settlement is unique, sometimes the homeowner is willing to split the cost fifty-fifty, sometimes they request full reimbursement, and sometimes it is somewhere between these two arrangements.

The procedures for resolving well interferences are outlined in Minnesota law and the DNR has a website that describes the resolution process at: [http://www.dnr.state.mn.us/waters/watermgmt\\_section/appropriations/interference.html](http://www.dnr.state.mn.us/waters/watermgmt_section/appropriations/interference.html). You can also contact your DNR area hydrologist or the statewide well interference coordinator at 651-259-5034.



Well Interference and Cone of Depression



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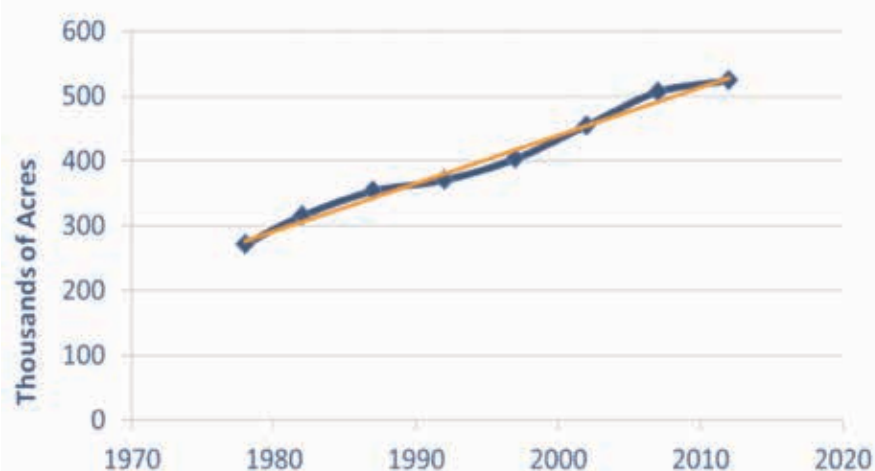
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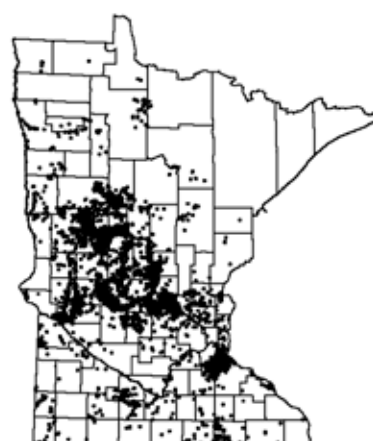
## IRRIGATION IN MINNESOTA



### MINNESOTA IRRIGATED CROPLAND

Over the past 37 years the irrigated acreage in Minnesota has nearly doubled. While still a small percentage of total agricultural land (about 3% of the approximately 21.7 million acres uses irrigation), the use of water for irrigation tends to be concentrated in sandy soils that doesn't hold water very well.

### DNR Water Appropriation Permits: Agricultural Irrigation



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## CANADIAN RESEARCH: Nitrogen Use and Algal Blooms

by George Rehm, Extension Nutrient Management Specialist (retired)

Algal blooms are unsightly growth on water bodies that produce toxins harmful to humans and animals, affect drinking water supplies, cause low oxygen “dead zones” and a number of other negative consequences. Many freshwater lakes around the world including Lake Erie, Lake Winnipeg, and Lake Taihu have suffered from algal blooms for decades.

Irrigators, especially those in Minnesota, are farming under a lot of scrutiny. They’re accused of using crop management practices that add to the concentration of nitrate-nitrogen in the groundwater. Further, the increased concentration is thought to increase algal blooms in Minnesota’s waters.

phosphorus. The purpose was to investigate the effect of these nutrients on algal blooms.

However, 40 years ago, these researchers began reducing the amount of nitrogen that they were adding to the lake. From 1990 to 2013, they cut the artificial loading to zero. Although these were dramatic cuts in nitrogen loading, algal blooms continued to cover the lake.

According to the researchers, “We have been researching the role of artificial nitrogen in algal blooms for almost 50 years now and these latest results clearly demonstrated that ceasing nitrogen loading into lakes has little effect on the size or the duration of the algal blooms.

There are a number of algal species that can make up for nitrogen deficits by fixing



But, these concerns and accusations are not supported by research conducted in Canada. This research is summarized in the refereed journal, ECOSYSTEMS. The details of the research are in the journal. The researchers conclude after 69 years of research that water stewards should focus efforts on removing phosphorus to combat algal blooms.

Beginning in 1969, Canadian researchers at the IISD\* Experimental Lakes Area in northwestern Ontario have been artificially manipulating a lake by adding various amounts of carbon, nitrogen, and

atmospheric nitrogen that is dissolved in the lake water. It was clear from the data collected in this study that phosphorus is the key driver of algal blooms in lake environments.

This information should be of interest to irrigators because excess nitrate-nitrogen does move to groundwater when soils are irrigated. The groundwater then moves to surface waters. However, this study shows that nitrogen, regardless of source, is not the cause of algal blooms.

\*IISD = International Institute for Sustainable Development

### Water Management Tips from Nebraska

Irrigation and water management information is housed on the Nebraska Extension website <http://water.unl.edu/> in the Agricultural Production section. Sub-sections include:

- Managing Water for Crop Production
- Agricultural Irrigation

Also checkout the **Agricultural Water Management Guide**, a Nebraska Extension publication on irrigation management – both why it is used and more importantly, strategies to improve irrigation efficiency. Also included are definitions of basic irrigation terminology and a brief history of irrigation.

[http://cropwatch.unl.edu/Agricultural\\_Water\\_Management\\_Guide/index.html](http://cropwatch.unl.edu/Agricultural_Water_Management_Guide/index.html)

This publication is targeted to farmers, crop consultants, agriculture educators, science instructors, students, and anyone interested in increasing their knowledge of irrigation management.

## The Many Benefits of Biotech/GM Crops

By George Rehm, Extension Nutrient Management Specialist (retired)

The adoption and use of biotech/GM crops has been criticized by some. Even though various agencies, through their research, have concluded that there are no harmful effects from the use of these crops, the criticism continues. So, it seems that now is a good time to summarize the positive benefits for our environment and our economy. An organization called PG Economics is one entity that has studied the impact of the biotech/GM crops. Some of the major conclusions of the report follow.

### Greenhouse Gas Emissions

Crop biotechnology has significantly reduced agriculture’s gas emissions by allowing farmers to adopt more sustainable practices such as the use of reduced tillage which decreases the burning of fossil fuels and allows the soil to retain more carbon. From 1996 to 2015, use of GM crops reduced the use of crop protection chemicals by 8.1%. As a result, farmers who grow biotech crops have reduced the environmental impact associated with the use of these products by 18.6%. The economic impact of this reduction is more profit for the farmer.

### Reduced Pressure To Use More Land

Biotech crops allow farmers to grow more without putting new land into production. For example, if crop biotechnology had not been available to farmers 2015, maintaining global that year would have

required the planting of an additional 18.3 million acres of corn, 20.8 million acres of soybeans, 7.4 million acres of cotton and 1.7 million acres of sunflowers.

### Increased Yields

Insect resistant corn and cotton crops have consistent increases in yield by reducing damage caused by insect pests. From 1996 to 2015, for all users of this technology, yields have increased by an average of 13.1 % for corn and 15% for cotton. In 2013, in South America, biotech soybeans increased yield by 9.6%.

Over 20 years, crop biotechnology has been responsible an additional production of 198.7 tons of soybeans, 394.2 tons of corn, and 1.7 million tons of canola.

### Improved Life for Poor Farmers Who Farm Small Acreages

With better control of pests and weeds, crop biotechnology helps farmers increase their yields which lead to improved income and better lives for those who farm small acreages.

### Contributions to Global Economic Success

Crop biotechnology continues to be a good investment for farmers. In 2015, farmers netted an average of \$3.45 for each dollar invested in biotech seeds.

All things considered, it’s apparent that biotech/GM crops have had a positive effect on both the bottom line of farmers and the quality of our environment. In other words, these crops help tremendously to sustain global agriculture.

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## MAWRC Monthly:

### MDA Announces New Direction for Nitrogen Fertilizer Rule

The Minnesota Department of Agriculture recently released the framework for their draft Groundwater Protection Rule, a redirect from the draft Nitrogen Fertilizer Rule released in 2017. Draft rule language is not yet available, but a fact sheet provides some hints as to what might be included in the new rule.



- The restricted areas for fall application of nitrogen fertilizer and the application of nitrogen fertilizer on frozen fields (Part 1) have changed;
- The MDA will focus its efforts on protecting public drinking water systems also known as Drinking Water Supply Management Areas (DWSMAs) that have high nitrate levels (Parts 1 and 2).

According to the MDA, the two key changes in the new rule are:

Information provided by the MDA notes that “there will be no regulatory component for townships. Voluntary Township Testing and NFMP activities will continue to occur in townships such as forming local advisory teams, promoting BMPs, and evaluating BMP adoption.” This suggests that the upcoming Groundwater Protection Rule will not address the MDA’s Township Testing Program, but that the testing will continue as outlined in the Nitrogen Fertilizer Management Plan (NFMP).

The use of private well information as the foundation for a regulatory program was one of the primary concerns expressed by farmers and ag organizations relative to the draft nitrogen fertilizer rule. Data provided thus far from the township testing program suggest a significant departure in program implementation from that outlined in the NFMP.

The changes to the restricted areas subject to part 1 of the rule also reflect some movement to address concerns about overreach and extent of the rule. However, caution is advised until details are provided in the final draft rule language to allow more thorough evaluation.

As noted in the MDA rule factsheet, there will be “exceptions related to the presence of clay soils with ultra-low permeability.” It is worth noting that the NFMP calls for prevention activities focusing on “the most hydrogeologically vulnerable areas.”

The question for those reviewing and commenting on the rule then might be, “should the approximately 90% of Minnesota cropland falling into the category of low permeability/low vulnerability soils be described and exempted in the rule, or not mentioned at all?”

The MDA also announced their expected timeline for the proposed Groundwater Protection Rule, including rule release

this spring, a 30-day comment period, and summer hearings before an Administrative Law Judge.

The MDA expects to have the final rule ready for the Governor’s signature before he leaves office in January, 2019.

The MDA timeline also calls for the fall fertilizer application prohibition to go into effect in 2020.

Find more information about the rule at

<http://www.mda.state.mn.us/nfr>. For more information about the MDA’s Township Testing Program go to <http://www.mda.state.mn.us/townshiptesting>.

The MAWRC is a non-profit research and education corporation comprised of 24 agricultural organizations working together to address water issues. For more information, go to [www.mawrc.org](http://www.mawrc.org)



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## Research on Woodland Management and Soybean Aphid:

### COOPERATING GROWERS NEEDED

By Marcella Windmuller-Campione (Assistant Professor, Dept. of Forest Resources) and Robert Koch (Assistant Professor, Dept. of Entomology), University of Minnesota

Looking for soybean growers in central and southern Minnesota to participate in a research study on soybean aphid population levels and buckthorn density in 2018

While there are several options for managing the destructive soybean aphid, including insecticides and aphid-resistant soybean varieties, these options focus solely on the soybean field. However, it is very likely that buckthorn is lurking (and reproducing!) in your woodland or an adjacent publicly owned forest, proving the required overwintering habitat for soybean aphid. Research in Ontario, as well as in Minnesota, has observed the relationship between proximity of buckthorn and early season soybean aphid population levels.

What has been little explored is if this relationship varies with buckthorn density. Does higher density buckthorn result in higher early season soybean aphid populations? If so, are there management techniques that we can implement to reduce buckthorn density, which could possibly reduce soybean aphid populations, thus improving quality and yield for soybean growers? These questions require an interdisciplinary approach, bringing together research faculty, Extension educators, and soybean growers with expertise in forestry, entomology, and agriculture.

#### Do you have a soybean field adjacent to a woodland in central or southern Minnesota?

We are looking for soybean growers in central and southern Minnesota who have **10 or more acres of woodlands or forests** that they own and/or are publicly owned and **adjacent to their soybean field**. Our request is for cooperators to allow field crews from the U of MN to sample in both



Image of European buckthorn, which is the overwintering host for soybean aphid (photo credit: Paul Wray, Iowa State Univ., Bugwood.org).

the woodland and the soybean fields. Field crews will set-up forest inventory plots in the woodlands to gain information on the overstory, regenerating seedlings and saplings, and buckthorn density once during the summer growing season. This information will be shared with

the landowner. Field crews will use transects to sample soybean aphid populations 2 to 3 times during the growing season to quantify how soybean aphid levels change. This information will be used to test the relationships between buckthorn density, buckthorn proximity, and soybean aphid populations through the growing season.

If you are interested and/or would like additional information on participating in this study please contact Dr. Marcella Windmuller-Campione at 612-624-3699 (office) or 847-772-5458 (cell) or by email (mwind@umn.edu) or website (<https://www.forestry.umn.edu/marcella-windmuller-campione>)

**We are planning to begin early season sampling in June.**

## Don't compromise on best practices for rotating alfalfa to corn when field work is delayed

By Jeff Coulter, U of M Extension Corn Agronomist

There are many advantages to planting corn after alfalfa, including greater yield potential, reduced nitrogen needs from fertilizer or manure, and reduced pest pressure compared to when corn follows other crops. The degree to which these and other benefits are achieved is contingent upon successful termination of alfalfa, as alfalfa can greatly compete with corn for water and nitrogen. Therefore, avoid compromising on best practices when rotating alfalfa to corn, even when spring field work is delayed.

In many fields where corn follows alfalfa, preplant or early postemergence applications of herbicides, along with additional time for or between field

operations, may be required for adequate termination of alfalfa. Strategies for successful alfalfa termination are available at <http://z.umn.edu/rotation>.

Nitrogen management guidelines for first- and second-year corn following alfalfa are available at <http://z.umn.edu/fertilizingcorn>. These guidelines are based on factors such as soil texture, age of alfalfa at termination, and alfalfa termination timing.

More educational resources on corn production are available at Extension's Corn Production website.

For more information: Phyllis Bongard, Educational Content Development & Communications Specialist, University of Minnesota Extension at Farmington, MN, 651-480-7757 or [bonga028@umn.edu](mailto:bonga028@umn.edu)



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## Minnesota Department of Agriculture (MDA) Chemigation Permit Requirements

Chemigation permits are issued by the Minnesota Department of Agriculture (MDA) to operators who apply fertilizer (fertigation) and/or pesticide through an irrigation system that is connected to a water source.

To obtain a chemigation permit, the operator must submit a permit application to



the MDA, pay the required fee, and meet the permit requirements that include the installation of the required antipollution device(s). A new permit is required when the operator of the system changes typically due to the sale or lease of the farming operation or business.

In center pivot chemigation systems an-

other name for an antipollution device is a check valve. Two (2) MDA approved check valves in a series must be installed when applying a pesticide. When applying fertilizer, a single MDA approved main line check valve is required. A check valve must also be installed on the injection pump or line. The fertilizer and/or pesticide must to be injected into the irrigation stream after the main line check valve(s).

Visit <https://www2.mda.state.mn.us/webapp/erenewal/apply.jsp> to apply on-line for a chemigation permit. Fees are \$50.00 for a fertilizer only; \$250.00 for a pesticide only or combination pesticide/fertilizer permit.

For more information or for a list of MDA approved check valves, please contact the MDA Chemigation Permit Line at 651-201-6057 or go to the MDA's webpage: <http://www.mda.state.mn.us/chemicals/fertilizers/chemigation.aspx>



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U of M Extension launches new soil management and health website

by Phyllis Bongard, Educational Content Development & Communications Specialist, U of M Extension

Balancing the economic and environmental benefits of soil management strategies can be a challenge. U of MN Extension Crops team has launched a website that offers research-based resources to help producers improve soil and crop productivity, while minimizing environmental risks. The website, Soil management and health, features articles and videos in three primary sections:

- **Soil properties** – includes descriptions of Minnesota soils and how they are formed, the importance of soil structure and the roles of organic matter and soil biology in building structure.
- **Tillage and soil management** – includes resources for re-

ducing soil compaction and erosion, managing crop residue, and evaluating tillage systems.

- **Cover crops** – includes discussions on the benefits of cover crops and resources for selecting, establishing and maintaining them.
- **Soil fertility** - provides a direct link to the U of M Extension Nutrient management website, which houses current crop fertilizer suggestions and data from the U of M.

The website also includes presentations, an A to Z library to find topics more easily, and links to other University soil websites. Visit the new soil management and health website at [z.umn.edu/soil](http://z.umn.edu/soil)

For more information: Phyllis Bongard, University of Minnesota Extension at Farmington, MN, 651-480-7757 or [bonga028@umn.edu](mailto:bonga028@umn.edu)



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