

## Comments by the IAM President



**Alan Peterson,  
IAM President**

Dear Irrigators,  
This past legislative session we saw some amendments pertaining to irrigation introduced. One was to eliminate the gathering of well data for 1 ½ miles around a new irrigation well. Since much of this information is already available through MDH this seemed to be an unnecessary burden on irrigators. Another amendment deals with well interference. The amendment changes the statute to say if a well has been sealed you cannot file a well interference claim.

A third amendment pertains to days you can irrigate. If you noticed on your appropriation permit, we can only irrigate between May 1st and September 30th. We are looking to change those dates to April 15th and November 15th. This does not change the amount of water you are allowed to pump; only the dates.

A fourth amendment deals with trout streams. The DNR has said they are going to reevaluate all trout streams and decide which ones should still be designated as trout streams. There will be a working group put together this summer that will involve IAM and other groups concerned with trout streams. A fifth amendment asks for an independent review of the Bonanza Valley GWMA. The irrigators on the advisory committee for Bonanza Valley GWMA are not in agreement with claims that DNR is making about the Bonanza Valley aquifers. We had hoped to include the Straight River GWMA, but at this time only Bonanza Valley GWMA is included. This amendment instructs the DNR to have

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## New Irrigation Resources

### New Irrigation Resources - University of Minnesota Extension Crop News

<http://www.extension.umn.edu/agriculture/irrigation/irrigation-management/>

A new *Irrigation Extension website* is up and running, and contains several new resources as well as some of the past resources, note the website above.

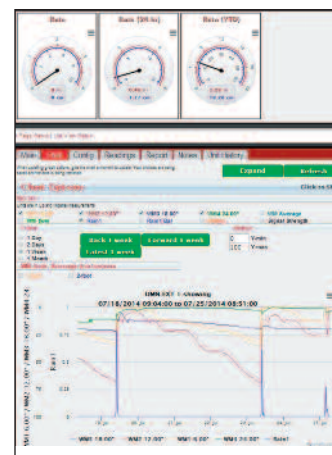
**Irrigation scheduling checkbook method:** A guide to the checkbook scheduling method for irrigation, including required items and instructions needed for effective scheduling, and PDF worksheets and a downloadable Excel spreadsheet version of the North Dakota-Minnesota checkbook method.

**Soil Moisture Monitoring:** The University of Wisconsin Extension Service produced a new resource, Methods to Monitor Soil Moisture information bulletin

**Soil Moisture Monitor Sources:** There are several telemetered soil moisture monitoring systems marketed in Minnesota by local dealers: Website shows linkages to several of these new products for review.



**Figure 1. Soil moisture monitoring. This telemetry unit incorporates a tipping bucket rain gauge in addition to soil moisture sensors.**



**Figure 2. Telemetered soil moisture monitoring readout.**

**Irrigation guide for Minnesota** (9.4 MB PDF) Viewable document developed by the Soil Conservation Service and U.S. Department of Agriculture, 1976.

For additional Blog updates on irrigation, view page: <http://blog-crop-news.extension.umn.edu/2015/04/new-irrigation-resources.html>

For More Information – Contact: Joshua Stamper, University of Minnesota - Irrigation Extension Specialist, CPAg/CCA, 439 Borlaug Hall 1991 Upper Buford Circle St. Paul, MN 55108-6028, Google Voice/Cell: 612-405-3006, email: [jstamper@umn.edu](mailto:jstamper@umn.edu) or office number at 612-626-4986.

## Welcome to the Summer 2015 Newsletter



**Jerry Wright,  
IAM Membership  
Secretary**

This newsletter comes to you thanks to the support of the enclosed advertisers and the current IAM irrigator and industry membership and those Extra Mile Supporters listed in the newsletter.

The IAM Board of Directors' invites you to become a member if you have not already joined. We all need each others ideas, experience and support to continue the IAM activities into the coming year especially in keeping a watchful eye on **our Irrigation Water**

**Rights**, at the **Legislative Session** as well as represent the interests of irrigation practices across the state.

To become a member return the application form on the last page of this newsletter with a check made payable to the "IAM". 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.



## New N Guidelines for Corn Grown on Irrigated Sandy Soils

**John A. Lamb, University of Minnesota Extension Nutrient Management Specialist**

A revised guidelines for fertilizing corn grown on irrigated sandy soils were released on March 6, 2015, by the University of Minnesota. Minnesota has about 500,000 acres of irrigated sandy soils. Corn is grown on about half of these acres in any one year. With the use of irrigation and fertilizer, sandy soils are very productive.

In 2000, the guideline for nitrogen application for sandy soils was around 230 lb N/acre. In 2006, the University of Minnesota joined several North Central Land Grant Universities to develop a common method of developing N guidelines for corn. This method was called the Maximum Return To Nitrogen (MRTN). The goal of this process was to improve the predictability, involve economics, include some adjustment for the user attitude towards risk, and to use a similar method for developing N guidelines across the region. To make the MRTN method work well, a database with a large number of corn responses to N fertilizer was needed.

*GUIDELINES continued on page 5*

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If you have a topic that you would like to see discussed in a future newsletter 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, MN manages advertiser space and edits, prints and mails the newsletter.

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



# Reminder–Permit Needed When Applying Fertilizer (and Pesticide) Through Irrigation System

This is a reminder that you must obtain a permit from the Minnesota Department of Agriculture (MDA) when applying pesticide or fertilizer through an irrigation system.

As Minnesotans look ahead to another growing season, the Minnesota Department of Agriculture (MDA) is issuing a reminder to those with irrigation systems: If you plan to apply fertilizer or pesticide through your irrigation system, you are required to obtain a chemigation permit from the MDA.

A permit for chemigation is required for farms, greenhouses, golf courses, nurseries and other settings where agricultural chemicals are applied through an irrigation system that is directly connected to a water supply. Agricultural chemicals include fertilizers and pesticides. A person operating the system is responsible for obtaining the permit and complying with all regulatory requirements.

**Operators must:**

- Complete an application form ([www2.mda.state.mn.us/webapp/erenewal/apply.jsp](http://www2.mda.state.mn.us/webapp/erenewal/apply.jsp))
- Pay a one-time required fee (\$250 for pesticide only, \$250 for fertilizer and pesticide, or \$50 for fertilizer only).

By filling out the application, the operator must certify that all antipollution requirements have been met; all antipollution devices are properly installed and functional prior to each use; and, other requirements intended to prevent surface and/or groundwater contamination are followed.

*More information on a chemigation permit, including forms and fact sheets, can be found at [www.mda.state.mn.us/chemicals/fertilizers/chemigation](http://www.mda.state.mn.us/chemicals/fertilizers/chemigation)*

*If you have questions contact MDA Chemigation Consultants  
Jim Freiling at 320-243-7384, Jeff Lorentz at 320-223-6547*



## Pope Soil & Water Conservation District will be hosting their Annual Rosholt Research Farm Plots Day

on **Thursday July 16th** next to Westport, MN  
along State Hwy 28 between Glenwood and Sauk Centre.

This field day involves partnership from several organizations including Prairie Lakes, the SWCD's, the U of M and MDA.

The purpose of the research at the Rosholt Farm is to provide a better understanding of nitrogen fertilizer management and the water quality impacts on irrigated, sandy soils.

The study will assess nitrogen loss resulting from different nitrogen fertilizer application rates, application timing, application methods and slow release nitrogen fertilizer products all under irrigation.

For more information, keep watch on their website at  
**<http://www.popeswcd.org>**

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a separate entity do a full ground water model for the Bonanza Valley GWMA. IAM supports research of aquifers in highly concentrated areas of irrigation in our state. As irrigators, we also recognize the importance of monitoring our water resources for years to come.

These amendments are all included in the large Omnibus Environmental Finance bill. This bill funds MPCA, BWSR, etc. Because some amendments deal with MPCA, in particular the amendment to abolish the MPCA Citizen Advisory

Committee, Governor Dayton vetoed this bill. As of this writing there is still no special session agreement or date yet. We are hopeful that when an agreement is reached, everything IAM has supported will remain in the bill. IAM will continue to meet with the DNR and discuss issues that pertain to both sides.

*Alan Peterson, Irrigators Association  
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DEADLINE

## ADVERTISERS: Minnesota Irrigator DEADLINE for ads is August 1, 2015.

To send advertisements, inquire about advertising rates and information contact:  
**Kevin True, Hutchinson Leader Ad Director • 170 Shady Ridge Road, Suite 100 • Hutchinson, MN 55350 • [true@hutchinsonleader.com](mailto:true@hutchinsonleader.com)**

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# Realize Savings: Take Irrigation Water Nitrate Credits

By following the nitrogen fertilizer BMP of taking appropriate irrigation water nitrogen water credits, irrigators can protect key groundwater resources and potentially reduce the cost of their nitrogen inputs. Successful irrigation nitrogen water crediting is a simple process that requires knowledge of nitrate-N concentrations in your irrigation water and an estimate of the amount of water you would normally apply (inches per acre) to your crop prior to silking (when the plant is actively taken up nitrogen).

According to the new University of Minnesota Extension publication “Fertilizing Corn Grown on Irrigated Sandy Soils” irrigators should account for the amount of nitrate-N supplied in season by irrigation water only if levels exceed 10 parts per million (ppm). In areas of Minnesota with high groundwater nitrate content, it is critical to account for all nitrogen sources when determining nitrogen inputs to your crop.

Knowing the nitrate-N concentration in your irrigation water has just been made easier through a free testing program being offered by the Minnesota Department of Agriculture (MDA) and participating sponsors - details to follow.

Here is a typical example of the benefit of applying the appropriate irrigation nitrogen credit to your operation:

If irrigation water shows 20 ppm nitrate, and 6 inches per acre of water is applied prior to silking, there would be an available 27 pounds per acre of nitrogen credit. If 28% UAN costs \$350 per ton, you would save \$17 per acre by crediting the nitrogen in your irrigation water! You might also be able to reduce or eliminate one full fertigation event. This table provides example economic nitrogen savings per acre that can easily be determined based on your unique testing results.

Analyzing irrigation water for nitrate-N can be performed by many county health departments or an accredited testing lab at

a modest price. This season the MDA is assisting with analyzing irrigation water through a no-charge program. Results are strictly confidential and only used at the irrigators discretion. In addition to providing nitrate-N analysis of irrigation water, the MDA can assist irrigators in converting lab results into real on-farm nitrogen fertilizer savings.

## Free nitrate-N irrigation water sample kits in June

Starting June 2015, MDA is providing free nitrate-N irrigation water sample kits through participating sponsors in seven counties. Typical sponsors include fertilizer dealers, irrigation dealerships and SWCD offices. Watch for information and sample kits at your local sponsoring locations in the selected counties or

simply contact your closest MDA staff listed below for more information.

**Ryan Lemickson – (Dakota, Goodhue, Washington county irrigators):**  
[Ryan.Lemickson@state.mn.us](mailto:Ryan.Lemickson@state.mn.us) or 612-209-9181

**Dan Langseth – (Douglas, Kandiyohi, Pope & Stearns county irrigators):**  
[dan.langseth@state.mn.us](mailto:dan.langseth@state.mn.us) or 320-808-5834

# Need A New Irrigation System

## Check Out AgCountry’s Irrigation Lease Program.

### Program Features:

- Above ground irrigation: pipe, tower structure, motor, gear drive box, pivot point structure and control panels.
- Terms of 3, 5, 7, or 10 years
- 25% - 10% Residual Buyout
- Fixed Payment Program

Economic Examples of Crediting Irrigation Water Nitrate (Based on 20 ppm N and 6 inches Irrigation Water Applied Annually)			
32 lbs. N/acre Credit			
Majority N source	N Price (/ton)	N Price (/lbs.)	N Savings (/acre)
Urea (46-0-0)	\$560.00	\$0.61	<b>\$16</b>
Anhydrous (82-0-0)	\$650.00	\$0.40	<b>\$11</b>
28% UAN (28-0-0)	\$350.00	\$0.63	<b>\$17</b>

This table is nitrogen value only and does not account for any additional electricity costs.

To take advantage of this program contact  
AgCountry Equipment Finance at  
**800-282-4117**  
**AgCountry**  
Equipment Finance



# DNR Administrative Penalty Order Plan for Water Appropriations Permit Program Finalized and Published, MINNESOTA STATUTES CHAPTER 103G.299

## STATE REGISTER ANNOUNCEMENT

**June 1st 2015:** The Department of Natural Resources (DNR) announced finalization of its "Plan for the Use of Administrative Penalty Authority" through the State Register – dated Monday, 1 June 2015 in Volume 39, Number 48 - Pages 1659 - 1660 ([http://www.comm.media.state.mn.us/bookstore/stateregister/39\\_48.pdf](http://www.comm.media.state.mn.us/bookstore/stateregister/39_48.pdf))

## Administrative Penalty Order Authority:

The 2014 Minnesota Legislature authorized the Department of Natural Resources (DNR) to issue an administrative penalty order (APO) for violations of Minnesota Statutes, sections 103G.271 and 103G.275 (Minnesota Statutes, section 103G.299). The APO authority is an enforcement tool to gain compliance with water appropriation law so that Minnesota's water resources are protected for current and future needs. The state's water appropriation permit program provides for equity and fairness among water users and compliance with this permit program helps to ensure the best use of Minnesota's water resources for economic, environmental and social interests.

APO will be used to address appropriation of water without a required permit. The document outlines a set of actions DNR may take to ensure that water users comply with water appropriation laws. A water appropriation permit is required for any use of surface water or groundwater that exceeds 10,000 gallons per day or one million gallons per year. DNR's goal is to ensure compliance with the state's water appropriation law, not to exact penalties. As the plan makes clear, a violator will be given ample opportunity to come into compliance and thus avoid a monetary penalty.

## APO Plan Development:

The process for developing the APO Plan included publication of the draft document in the state register for a 37-day public review and comment period last fall (The DNR went through an extensive public comment period on its Draft Administrative Penalty Order Plan during the period of November 12 to December 19, 2014). DNR modified the draft plan, improving it based on comments it received.

The APO plan outlines how the DNR will use this new authority to achieve compliance with water appropriation laws. The law (M.S. 103G.299) states that penalties should be assessed based on the potential for harm and the degree of deviation from compliance, with consideration of other factors. A penalty for a violation is limited to \$1,000 for a minor violation, \$10,000 for a moderate

violation, and \$20,000 for a severe violation. The APO plan describes DNR's process for evaluating violations for potential APO action and includes a worksheet for calculating penalty amounts.

## APO WEBSITE:

The DNR has posted its plan for use of administrative penalty order for water appropriation program violations on its website at [mndnr.gov/apoplan](http://mndnr.gov/apoplan)

## CONTACT FOR MORE INFORMATION:

If you have questions regarding the APO Plan, please contact your Area Hydrologist and or the APO Coordinator, [apoplan.dnr@state.mn.us](mailto:apoplan.dnr@state.mn.us)

## ALTERNATIVE FORMAT AND AGENCY CONTACT PERSON

Upon request, the DNR will make this information available in an alternative format, such as large print, braille, or audio. Questions and requests to receive a copy of the Administrative Penalty Order Plan should be directed to: Minnesota Department of Natural Resources, Attn: APO Coordinator, 500 Lafayette Road, St. Paul, MN 55155-4025 or [apoplan.dnr@state.mn.us](mailto:apoplan.dnr@state.mn.us)

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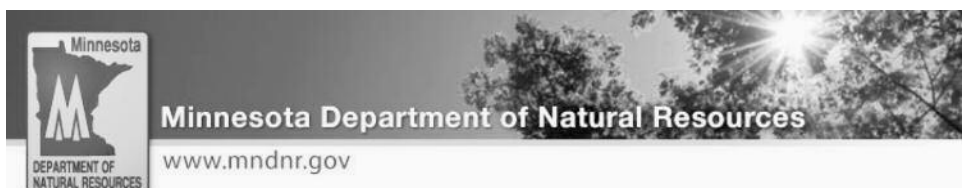
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#### Dan Girolamo

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GUIDELINES continued from page 1

Minnesota had a large number of response information for highly productive non-irrigated soils, but did not have adequate information for corn grown on irrigated sandy soils at the time the MRTN was first developed. Because of a lack of data specific to irrigated soils, a decision was made to use the guideline for corn grown on non-irrigated highly productive soils for corn grown on irrigated sandy soils. This was not a good decision. The MRTN economic involve the ratio of the price of N per pound to the price of corn per bushel. At the common 0.10 ratio (\$0.50 N to \$5.00 corn) the 2006 guideline was 140 lb N/A with a range of 120 to 165 lb N/A for corn grown after corn or group 2 crops. This was too low.

New studies were established starting in 2006 and data was collected from 22 irrigated sandy soil corn N response studies over the past 8 years. The sites were fertilized with urea with seven to eight N rates. Nitrogen BMP's were followed for application timing. The N

fertilizer was split into two equal applications, the first at planting and the second at growth stages V3 or V4. Eighteen of those sites were used in the MRTN calculation. When the data was analyzed, there was no relationship between the optimum N rate and corn grain yield. This reinforces the nonuse of a grain yield goal in the guideline determination. The MRTN was calculated and also the range around the MRTN that would result in a loss of \$1 per acre. The new N guidelines based on the MRTN are reported in Table 1. At the common 0.10 price ratio the new MRTN is 209 lb N/acre. This compares to 140 lb N/acre from the 2006 guidelines. The new MRTN is similar to the irrigated sandy soil N guidelines from the University of Wisconsin. See **Table 1**.

What are the environmental consequences of this change? There is little field data to document the effect of N application rate from the 2006 guideline to the new guideline in Minnesota. We are currently gathering this information from experiments at the Rosholt Irrigation Farm near Westport. We know that increasing N

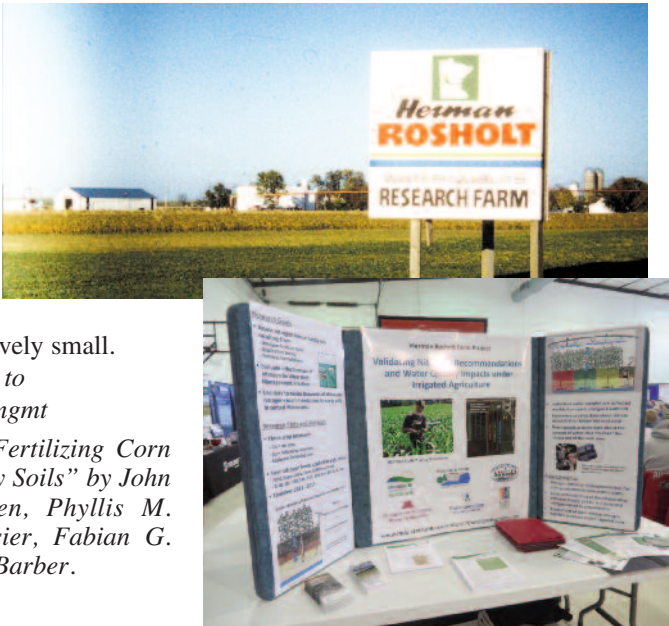
For these new N guidelines for corn grown on irrigated sandy soils, the following conditions must be met:

- 1. Use the MRTN
- 2. Apply N fertilizer as at least a 2 time split.
- 3. No pre-plant N1
- 4. Count N in starter and P fertilizer sources.
- 5. Count N in irrigation water if the N concentration in it is above 10 ppm.
- 6. Use irrigation scheduling. (do not over water).
- 7. Guard against volatilization – use a proven product if needed.
- 8. Take credit for previous crop and manure application. (ie. Soybean is a 30 lb N/A credit)
- 9. Do not over apply!

rate beyond the optimum for grain yield will dramatically increase the amount of N available for loss. The corn plant uses nitrogen applications efficiently up to the point where optimum grain yields occur. Because of this the amounts lost are relatively small.

For more information, go to [www.z.umn.edu/nutrientmgmt](http://www.z.umn.edu/nutrientmgmt)

The bulletin with title “Fertilizing Corn Grown on Irrigated Sandy Soils” by John A. Lamb, Carl J. Rosen, Phyllis M. Bongard, Daniel E. Kasier, Fabian G. Fernandez, and Brian L. Barber.



**TABLE 1.** Guidelines for use of N fertilizer for corn grown on irrigated sandy soils.

N price/Crop value ratio	MRTN lb N/acre	Acceptable range
0.05	233	214 – 252
0.10	209	192 – 225
0.15	191	177 – 206
0.20	177	164 - 190



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**Alan Peterson-left and MDNR Director Luke Skinner of the Department of Ecological and Water Resources Division.**



**At left-Joshua Stamper, Irrigation Extension Specialist, speaking at the 2015 Annual IAM Convention.**



**Right-President Alan Peterson-right, awards the 2015 IAM Service award to Warren Formo, Executive Director of the MAWRC (Minnesota Agriculture Water Resource Center)**



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# Irrigation: The Past, Present and Future

By Katie Winkelman, Soil Conservationist, Stearns County Soil and Water Conservation District

Irrigation has continued to be a hot topic across Minnesota, making news headlines across most portions of the state. Headlines have not always been supportive of this agricultural practice. It is important for people to understand that irrigators have a significant amount of responsibilities; irrigators must manage their resources for sustainability, while balancing the economics of their production, all while being under the watch glass of neighbors, regulatory entities, legislators, friends, critics and media. It is just as important for irrigators to acknowledge that in most of society's eyes, a single irrigator represents the ENTIRE agricultural community and that today's society is demanding a more transparent operation.

There is a fear of transparency. Do we dare let people see the ins and outs of our operation? What consequences will occur because of this? But on the other hand can we afford NOT to be transparent. Let us take the challenge of proving to the critics that irrigation can be sustainable and that the agricultural community is working hard at balancing crop production, and natural resource management.

An article by Liz Morrison in the March 2014 edition of Corn and Soybean Digest, points out that, "Sophisticated irrigation management tools are helping growers make the best use of their water

resources." Each irrigator should ask themselves what they are doing to promote sustainable water use and is there more that can be done.

In order to make this assessment it is imperative to know what tools are currently available.

## OLDIES BUT GOODIES:

### Irrigation Checkbook Scheduling

Irrigation scheduling is planning when and how much water to apply in order to maintain healthy plant growth during the growing season. Effective irrigation is possible only with regular monitoring of soil water and crop development conditions in the field and with the forecasting of future crop water needs (University of MN Extension). The following links provide resources for completing irrigation scheduling based on the checkbook method.

<http://www.extension.umn.edu/agriculture/water/irrigation-scheduling-checkbook-method/>

<http://www.ag.ndsu.edu/extension-aben/irrigation/irrigation-scheduling> (ND & MN ET)

[http://agwx.soils.wisc.edu/uwex\\_agwx/sun\\_water/index](http://agwx.soils.wisc.edu/uwex_agwx/sun_water/index) (Wisc & Minn ET estimates)

### Uniformity Testing (Catch Can Test)

A uniformity check on irrigation pivots determines water application efficiency. This is a simple test that can locate inefficiencies in the system that cause inefficient water and energy use. Contact your local Soil and Water Conservation District for more information on who offers uniformity testing or how to complete a test on your own.

### Atmometers or ETgages

Atmometers or ETgages act as mini weather stations to provide reference evapotranspiration (ET) information for nearby fields. A University of Nebraska Crop Watch article sums up ETgages as such: "think of ETgages as being the opposite of a rain gauge. Instead of measuring rainfall, it measures how much the water level has dropped. ETgages take into account the humidity, temperature, solar radiation, and air movement of the area to provide an accurate estimate of potential crop evapotranspiration (ET)."

### Hot Items on Today's Market

#### Soil Moisture Sensors and Web-Based Irrigation Scheduling

Soil-moisture sensors measure changes in soil water content in the root zone. Soil moisture sensors have been around for years; however, the efficiency and ease of

use has substantially improved from earlier models. One limitation of sensors is placement, it is imperative to select the proper representative location for the placement of the sensors AND that the sensors are installed properly. It is ALWAYS a good idea to check the soil water condition using the hand feel method to make certain technology is working properly.

Through the simple and economical combination of ETgages and soil moisture sensors, the guesswork of irrigation management can be significantly reduced.

Web-based irrigation scheduling uses interactive computer modeling to generate customized irrigation recommendations based on soil type, local weather data, plant growth stage and daily crop water use. Some examples of product currently on the market are AgSense-Aqua Trac, John Deere's Field Connect, SoyWater, AquaSpy/Valley Irrigation SoilPro1200. All programs and devices have different levels of capabilities and it is strongly encouraged to speak to a dealer to match your water management goals with the proper tool.



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Using satellite, cellular networks or other telemetry systems, remote pivot controls give growers the opportunity to turn pivots and chemigation on and off, change speeds and monitor position without having to drive out to the field. This technological option allows more precise management options when dealing with Mother Nature's curve balls.

### Variable-Rate Irrigation

Variable-Rate Irrigation is not new product to the irrigation market. This water-efficiency technology is however, starting to come on stronger. Variable Rate Irrigation is ideal for fields with multiple soil types and varying topography. The technology allows for management zones, granting the ability to more precisely apply water where it is needed or more importantly not apply where it is not needed.

### The Next Generation of Irrigation:

Technology is evolutionary, it is consistently changing, adapting...evolving. What will be next for irrigation technology?

### In Conclusion

The tools noted in this article were structural tools that can be purchased or downloaded, but it is just as important to note that there is also technical support available. Contact your local Soil and Water Conservation District (SWCD) or

Natural Resources Conservation Service (NRCS) for more information on Irrigation Water Management and other irrigation related technical and financial assistance.

This article does not provide an all-inclusive list of irrigation water management tools. It does, however, demonstrate the fact that there are tools on the market to assist in sustainable water use. It is up to each individual irrigator to use the tools that best fits your operation. Irrigation may likely remain a hot topic in coming years. As irrigators, you have the challenge or the opportunity to demonstrate sustainable water use.

*Best wishes from Stearns County SWCD for a productive and safe 2015 crop season.*

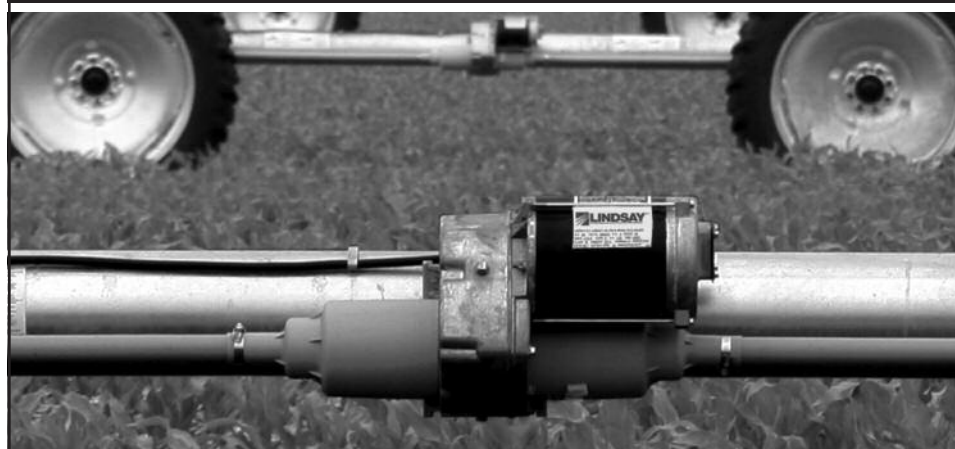
### Stearns County Soil and Water Conservation District

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## MN Agricultural Water Resource Center

The Minnesota Agriculture Water Resources Center (MAWRC) is a research and education organization comprised of the primary farm organizations in Minnesota, working together to identify and address water issues. Since its inception in 2008, MAWRC programs have evolved in response to constantly evolving water concerns, but the one constant is our commitment to providing useful information to Minnesota farmers and ranchers.

The Minnesota Agriculture Water Resource Center is a non-profit research and education organization dedicated to assisting Minnesota farmers in addressing water quality concerns.



Its members and supporters include agricultural organizations representing more than 50,000 farmers and those who advise them. Visit their website <[www.mawrc.org](http://www.mawrc.org)> to learn more about their research programs, Discovery Farms Minnesota, and their environmental assessment program, Green Star Farms Initiative.

Minnesota is a great place to grow crops and livestock, and the diverse network of farms and ranchers ranks among the best in the nation in the production of corn, soybeans, wheat, sugar beets, sweet corn, peas, poultry, hogs, beef cattle, and dairy products. Growing interest in fresh

vegetables and other foods offered at farmers markets provides an opportunity for some farmers, particularly those located near the Minneapolis/St. Paul area. Yet as diverse as Minnesota agriculture is, all farmers, regardless of what they grow or how they grow it, have one thing in common - they all have the potential to impact water and the opportunity to minimize potential impacts.


Tilling the soil, adding nutrients and removing weed and insect pests allow farmers to grow crops efficiently, but each also presents an environmental risk. Variable weather presents yet another layer of environmental risk. Farmers address environmental risks by drawing from a vast toolbox, each building a complete system, tailored to meet the challenges facing their particular farm setting. During the last half twentieth century, Minnesota farmers led the way in adopting practices that minimize soil erosion. And while there are still a few places in need of solutions to address soil erosion, attention is turning to concerns associated with tile drainage.

The MAWRC is here to help farmers identify and address environmental risks, and to help others understand farm systems.





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The Minnesota Department of Agriculture (MDA) has partnered with the East Otter Tail Soil and Water Conservation District (EOT SWCD), Pope County SWCD and Benton County SWCD to install new weather stations in central Minnesota to provide this data to local farmers.

Beginning in April 2015, local daily crop water use information will be available from a total of eleven (11) weather stations.

This network has grown in response to the needs of irrigating producers in this region. The daily crop water use (also known as evapotranspiration) data provided by these stations is a critical piece of information for growers to efficiently schedule their irrigation water applications. Throughout the growing season, the East Otter Tail SWCD website will provide daily updates on crop water use and ag weather information.

### DATA AVAILABLE:

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Daily Crop Water Use (ET)

Growing Degree Days (GDD)



The Central Minnesota Ag Weather Network webpage contains a map showing the location of weather stations as well as more information about how to access local weather data.

To learn more about irrigation scheduling contact your nearest SWCD office in this area or the East Otter Tail SWCD at 218-346-4260 extension 3. Information taken from websites at <http://www.eotswcd.org/> and <http://agweathernetwork.com/> and <http://www.mda.state.mn.us/en/protecting/cleanwaterfund/gwdwprotection/irrigationworkshops/weatherinfo.aspx>

*University of Minnesota Extension Ag Weather Network - This is a rapidly expanding network of ET weather stations that are administered by local Soil and Water Conservation Districts through the Minnesota Department of Agriculture and the Minnesota Clean Water, Land and Legacy Amendment. These stations deliver precipitation, temperature, wind speed, solar radiation, relative humidity and ASCE Penman evapotranspiration.*



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# CHECKBOOK SPREADSHEET USERS –NDSU has updated the program

Authors Dean Steel and Tom Scherer from NDSU posted an updated copy of the irrigation scheduling checkbook spreadsheet and user’s manual at:

<http://www.ag.ndsu.edu/irrigation/irrigation-scheduling>

Please share this message along to checkbook spreadsheet users or give it a try yourself.  
Dean D. Steele, Ph.D., P.E. Associate Professor / Agricultural & Biosystems Engineering Department.

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