

PROGRAM INFORMATION

EQIP AND FARM PROGRAM BENEFITS:

EQIP – EPHEMERAL GULLY CONTROL INITIATIVE

IF YOU FARM HIGHLY ERODIBLE LAND THAT MUST FOLLOW A CONSERVATION PLAN TO REMAIN IN COMPLIANCE FOR USDA PROGRAM BENEFITS, THEN YOU NEED TO KEEP READING.

IN MY FIRST ISSUE OF THIS NEWSLETTER (MAY 24, 2018), I MENTIONED THAT EPHEMERAL GULLY EROSION HAS TO BE CONTROLLED.

THIS EQIP INITIATIVE IS A PROGRAM WHERE YOU CAN RECEIVE FINANCIAL ASSISTANCE TO HELP GET YOU STARTED IN CONTROLLING THESE ERODITIVE AREAS. FINANCIAL ASSISTANCE WILL BE PROVIDED FOR SUCH THINGS AS COVER CROPS, GRASSED WATERWAYS, TERRACES, EROSION CONTROL STRUCTURES, ETC.

APPLICATION CUTOFF FOR THIS PROGRAM IS JULY 20, 2018.

CALENDAR OF EVENTS

- JUNE 27:** WEEDS AND CROPS FIELD DAY NEAR CLAY CENTER
GOTO [HTTP://AGRONOMY.UNL.EDU/FIELDDAY](http://agronomy.unl.edu/fieldday) FOR MORE INFO.
- JULY 2:** CNPPID BOARD OF DIRECTORS MEETING 9:00 AM
- JULY 4:** INDEPENDENCE DAY – GOV'T OFFICES CLOSED
- JULY 10:** TBNRD BOARD MEETING 1:30 PM
- JULY 22-26:** BOTH THE KEARNEY AND PHELPS COUNTY FAIRS
- JULY 26-28:** GOSPER COUNTY FAIR

Tool to Determine Crop Water Use – Part 2

In the last issue, you were introduced to the 2017 NAWMN. This network is a tool for area and participating producers to determine how much water their crops are using. The following is an example of how to use this tool.

Step 1: You need to know the crop stage of the crop in the field you are working with. There are descriptions at the bottom of page 3 in each issue of this newsletter to assist you. Once you know your crop stage, you can determine your crop coefficient (Kc), also found on page 3. In our example, corn is at 12 leaf, so the Kc equals 0.88.

Step 2: Go to one of the two websites found on page 3 of each newsletter (under "NAWMN Sites"). Select an atmometer station nearest your field and determine the amount of evaporation (reference ET) that has taken place. A general map of atmometer locations is shown on page 3. In this example, evaporation will be 1.8 inches for the week.

Step 3: Calculate ET or Crop Water Use. Multiply evaporation (reference ET) by your crop stage coefficient (Kc): 1.80 inches * 0.88 Kc = 1.584 inches used by your corn for the respective week. To calculate average daily water use, divide by 7 days: 1.584 inches / 7 days = 0.226 inches used per day.

As a side note, when you go to either of these websites, there will be charts showing you weekly crop water use, thus eliminating your need to calculate the weekly use.

As one gets used to this tool, one can tweak it to better work for their irrigation water management program. Knowing the weather forecast, one can project an estimated crop water use over the next few days.

If questions, call Curtis Scheele at 308-995-6121, Ext. 3.

CURTIS'S COLUMN



Irrigation Water Management Recordkeeping for Program Participants:

Now that irrigation season is in full swing, with some relief from the recent rains, there is information that needs kept throughout the irrigation season for producers receiving financial assistance through EQIP and CSP. **Below is a list of items that you need to be keeping track of during the irrigation season.** This information then needs to be submitted to your local NRCS office in order to receive your payments.

Irrigation reporting requirements include:

- i. Irrigation system flow meter readings at beginning and end of each irrigation water application.
- ii. Date and depth of irrigation water applied for each application.
- iii. Crop growth stage and crop water use (ET).
- iv. Date and amount of each rainfall event during the growing season.
- v. Available water content of the soil across the root zone.
- vi. Field notes that document periodic irrigation scheduling decisions.
- vii. Field location(s) of soil moisture monitoring site(s) with an explanation of why each site was chosen.
- viii. Soil moisture content displayed in graphical format for each sensor representing different depths across the root zone along with an end of season summary graph, which are both clearly labeled with pertinent soil / water relationship information that includes:
 1. Soil moisture readings as a percentage of available water content over time.
 2. A line that identifies Field Capacity.
 3. A line that identifies the producer defined maximum allowable depletion (MAD).

CSP Contract Holders Leaf Tissue Samples

For CSP contract holders who need to complete corn leaf tissue samples as a part of your CSP requirements for your 2018 payment, now would be a good time to start planning for this. The following are guidelines:

Prior to tassel, collect from 15-20 plants, to make a sample, the youngest mature leaf off each plant (top leaf with a collar, the collar is a discolored line where the leaf meets the stalk).

Dirty or dusty samples should be lightly rinsed. Over-rinsing can leach out soluble nutrients.

Samples should be air dried or placed in a paper bag for shipping.

Contact your lab for additional information on sampling and analysis.

Managing canal water through the storms:

Jeff Bunger, Irrigation Service Specialist (ISS) for the Phelps Main Canal began listening to the forecasts and watching the direction, size and speed of the approaching Tuesday storm on radar. As the storm hit our area, he was able to “see” the intensity and location of the downpour along the 56 miles of the Phelps Main and 191 miles of Phelps lateral canals by watching a series of digital rain gauges from his computer. He made the call to the Gothenburg Control Center to “cut strong”. That call set in motion a series of reductions in the water gate openings throughout the canals; temporarily holding up water scheduled for deliveries into the series of small Central lakes between North Platte and Lexington. Continuing communications kept the canal sections high enough for those needing to continue irrigating, made room to take on water from field in-drains and allowed room for irrigation stops by choice or due to a power failure. As the remaining Phelps ISS arrived at work early Wednesday morning, the main canal was ready to take on additional water from their patrols as they made final flow adjustments. Over the next few days, they will be fine tuning gate settings according to the changed irrigation demand, inflow from the field in-drains and inputs from those needing to pump water from their fields into several canal sections.

“Many decisions cannot be made until the storm actually happens and the final amounts of rainfall and locations are known” according to Tim Long, Irrigation Area Supervisor for the Phelps Canal. “The ISS gain a good sense of how to control their sections of the canal as their years of experience add up. It is more difficult to manage canal levels through large storms than in dry weather and they all do it very well.”

Check Chemigation Systems Before Using Them:

Do you plan to apply fertilizer or ag chemicals to your fields through your center pivot system? If so, you will need a chemigation permit from Tri-Basin NRD for each system you plan to use. Call our office at 1-877-995-6688 for more information about the permitting process.

If you already have chemigation permits, it's a good idea to check your safety equipment over at least once a year to make sure all the equipment is in working order.

When NRD staff conduct a chemigation safety equipment inspection, the well and pivot system need to be started and operating at normal operating pressure for at least one minute. NRD staff will then check the following:

- Did some water discharge from the low pressure drain and then stop as the system's pressure increased? (Also, remember that you're supposed to have 20 feet of hose attached to your low-pressure drain to carry contaminated water away from the well.)
- Is the chemical injection line check valve free of water leaks? During shutdown of the system, NRD staff check:
- Does the injection pump shut off when the system shuts off?
- Was air drawn into the pipeline through the vacuum relief valve?
- Is the irrigation pipeline check valve watertight?
- Did some water discharge from the low pressure drain and then stop (this will occur if the pipeline check valve is not leaking)?

Nebraska Extension Crop Hail Damage Resources:

Hail strikes Nebraska crops each year, creating uncertainty and questions: “Does the level of damage warrant replanting? Will the remaining stand yield better than a replant would? How should field inputs be adjusted for the remaining season?”

Answers to these hail-related questions and more are included in the new Nebraska Extension “Hail Know” resource guide. Videos, infographics, and articles by a team of Extension experts (agronomists, engineers, technologists, economists and disaster education specialists) are linked in this Extension hail-related resource.

Nebraska Extension's Hail Know focuses on six key topics:

- 1) hail formation and storms;
- 2) damage assessment;
- 3) crop insurance & risk management;
- 4) replanting considerations;
- 5) managing a recovering crop; and
- 6) cover crops.

Hail Know is also on social media. On Twitter follow <https://twitter.com/HailKnowUNL> and like Hail Know on Facebook at <https://www.facebook.com/HailKnowUNL/> for all the latest information and updates.

Hail Know is also a section of <https://cropwatch.unl.edu/>, Nebraska Extension's crop production and crop pest management website.

In-Season Nitrogen Management:

Nebraska Extension corn researchers recommend applying in-season nitrogen application between the vegetative growth stages V8 to V14. This growth period is when the corn plants are rapidly uptaking nitrogen.

Brian Krienke, Nebraska Extension Soils Educator, says that it takes about two weeks before soil-applied nitrogen can move fully into the corn plant. Therefore, since corn has a high need for nitrogen during the VT (tasseling development stage); most nitrogen fertilizers should be applied prior to the V14 stage. The ‘two weeks application prior to need’ principle follows that the fertilizer nitrates must be converted by soil microbes into useable ammonium-nitrate forms for corn roots uptake. Then, time is needed for the nitrogen to move up the corn stalk to the leaves to be converted into useable amino acids through photosynthesis.

Daran Rudnick, Nebraska Extension Irrigation Engineer, says that this nutrient timing is in slight contrast to the highest efficiency irrigation water timing. For example, the most critical water stress for corn is growth stage tasseling (VT) to blister kernel reproductive stage (R2). The next critical water stress period occurs prior to tasseling; followed by the grain filling growth stage.

Despite proper nitrogen fertilizer application timing, sensor technology may need fine tuned to exactly match when the corn plants reach their highest need for irrigation / water. Also, although new sensor-based application studies have not always shown sensors providing the highest profit returns when fertigation modeling software each year.

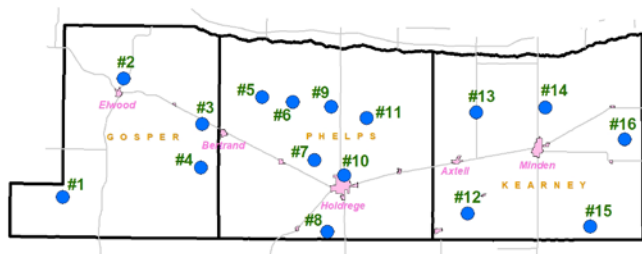
During the 2017 Nebraska Extension TAPS fertigation research study at North Platte, a 30 lbs. per acre fixed side-dress fertigation rate was the simplest method to implement; and on average was pegged the most profitable and most nitrogen efficient application method. As more research is completed, the sensor-based technology combined with fine-tuned Nebraska Extension Maize-N algorithm yield goal recommendations will likely result in higher profits and nitrogen use efficiency. For now, sensors-technology may be ahead of the applied science for maximum profitability.

NAWMN CROP ET INFORMATION

Additional Information and other ET resources can be found at websites listed under "ET Information Sites" below.

$$\text{Inches of Crop Water Use (ET)} = \text{Evaporation} \times K_c$$

Site	June 4 – June 10		June 11 – June 17	
	Evaporation	Rain	Evaporation	Rain
1	1.90	0.73	2.70	0.00
2	2.50	0.16	2.30	0.10
3	1.80	0.10	2.10	0.05
4	2.30	0.12	2.50	0.04
5	2.20	0.25	2.30	0.00
6	1.90	0.33	2.10	0.00
7	2.20	0.24	2.60	0.00
8	2.30	0.52	2.30	0.00
9	2.10	0.37	2.30	0.00
10	2.00	0.40	2.10	0.00
11	2.30	0.45	2.30	0.00
12	2.30	0.15	2.60	0.00
13	2.40	0.20	2.40	0.00
14	1.80	0.19	2.40	0.11
15	2.50	0.40	2.30	0.00
16	2.00	0.18	2.40	0.00



2018 Map of NAWMN Sites across the Tri-Basin NRD.

Crop Coefficients (Kc)

Corn		Soybeans	
Stage	Kc	Stage	Kc
2 leaf	0.10	Cotyledon (VC)	0.10
4 leaf	0.18	1st Node (V1)	0.20
6 leaf	0.35	2nd Node (V2)	0.40
8 leaf	0.51	3rd Node (V3)	0.60
10 leaf	0.69	Beg. Bloom (R1)	0.90
12 leaf	0.88	Full Bloom (R2)	1.00
14 leaf	1.01	Beg. Pod (R3)	1.10
16 leaf	1.10	Full Pod (R4)	1.10
Silk – Beg. Dent	1.10	Beg. Seed (R5)	1.10
¼ Milk Line	1.04	Full Seed (R6)	1.10
Full Dent (½ Milk)	0.98	Yellow Leaf (R6.5)	1.00
¾ Milk Line	0.79	Beg. Mat. (R7)	0.90
Black Layer	0.60	Full Mat. (R8)	0.20
Full Maturity	0.10	Mature	0.10

CROP STAGE INFORMATION

Corn (V7-7 Leaf to V13-13 Leaf stage): Corn at the 12-leaf stage should be drawing moisture from 2 feet. The 15-leaf stage is the beginning of the most crucial period of plant development in terms of seed yield.

Avg. daily water use from June 11 – June 17 was 0.13"-0.36".

Soybeans (V3-3rd Node to R1-Beginning Bloom stage): Soybeans at R1 should be drawing moisture from 2 feet. Vertical root growth increases sharply at R1. Secondary roots and root hairs proliferate after R1 in the top 9 inches.

Avg. daily water use from June 11 – June 17 was 0.19"-0.35".

June 11-June 17 (16 of 16 NAWMN sites reporting): Average weekly rainfall was 0.02 (range 0.00 to 0.11). Average weekly ET for corn was 1.31 and for soybeans was 1.71.

ET INFORMATION SITES

NAWMN Sites:

<https://www.cnppid.com/weatheret-data/nebraska-agricultural-water-management-network/>

<https://nawmn.unl.edu/ETdata/DataMap>

CropWatch: <https://cropwatch.unl.edu/gdd-etdata>

CNPPID: <https://www.cnppid.com/weatheret-data/>

Water Use Hotline: 1-800-993-2507

Corn Stage		DESCRIPTION
V10	10 Leaves	Leaf stage is defined by number of leaves with visible collars. The collar is a discolored line where the leaf meets the stalk. This line circles the stalk. TIP: Mark the 6th leaf or a higher leaf by cutting a notch in it or some other way so as to know that leaf number. Reason is the lower leaves will be lost as the plant develops. Flag or somehow mark the plant in the field as a reference plant when determining later leaf (vegetative) stages.
V12	12 Leaves	
V14	14 Leaves	
Soybean Stage		DESCRIPTION
R1	Beginning Bloom	At least one open flower is present at any main stem node.
R2	Full Bloom	At least one open flower is present at any one of the two uppermost main stem nodes that have fully developed leaves.

LAKE AND RIVER LEVELS

CNPPID Reservoir Elevation and Platte River Flow data listed below and other locations can be found on CNPPID's website at <http://cnppid.com/wp-content/uploads/2016/06/lakeRiverData.html>.

	June 21, 2018, 8:00 AM	1 Year Ago
Capacity of Lake McConaughy	86.1%	NA
Inflows to Lake McConaughy	1189 cfs	2009 cfs
Flows on the North Platte at North Platte	521 cfs	325 cfs
Flows on the South Platte at North Platte	448 cfs	749 cfs
Flows on the Platte at Overton	2630 cfs	871 cfs

Happy Birthday America!!!

"In the truest sense, freedom cannot be bestowed; it must be achieved."

– Franklin D. Roosevelt



WEBSITES OF INTEREST

Soil Health:

www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/

Climate aqclimatenebraska.weebly.com
 NRCS Nebraska www.ne.nrcs.usda.gov
 Central Irrigation District www.cnppid.com/
 TBNRD Home Page www.tribasinrnr.org/
 Farm Service Agency www.fsa.usda.gov
 UNL Cropwatch cropwatch.unl.edu
 UNL Extension extensionpubs.unl.edu/
 K-State SDI Website www.ksre.ksu.edu/sdi
 No-till On The Plains www.notill.org

RAINFALL

Rainfall amounts listed below and other locations come from NeRAIN which can be found at website <https://nednr.nebraska.gov/NeRain/Maps/maps>.

Location:	June 7 – June 20	May 1 – June 20
Arapahoe 9.8 NNE:	2.83	7.67
Bertrand 6.1 mi. SE:	2.46	5.32
Funk 4.1 mi. NNE:	2.10	6.51
Minden 0.855 mi. W:	1.41	5.67
Minden 8.8 mi. ESE:	0.26	4.58

Average Rain for May–June in Holdrege = 8.04 Inches

*** If you wish to receive this newsletter via e-mail, or have any questions, comments or ideas, feel free to contact Curtis Scheele at the NRCS office in Holdrege or you can email him at curtis.scheele@ne.usda.gov. ***

USDA - Natural Resources Conservation Service



1609 Burlington Street
 PO Box 798
 Holdrege, NE 68949-0798
 308-995-6121, Ext. 3

309 Smith Street
 PO Box 41
 Elwood, NE 68937-0041
 308-785-3307, Ext. 3

1005 South Brown Street
 Minden, NE 68959-2601
 308-832-1895, Ext. 3

Central Nebraska Public Power & Irrigation District



415 Lincoln Street
 PO Box 740
 Holdrege, NE 68949
 308-995-8601

Tri-Basin Natural Resources District



1723 Burlington Street
 Holdrege, NE 68949
 308-955-6688

Nebraska Extension



1308 2nd Street
 Holdrege, NE 68949
 308-995-4222

PO Box 146
 Elwood, NE 68937
 308-785-2390

424 North Colorado
 PO Box 31
 Minden, NE 68959
 308-832-0645

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