

## PROGRAM INFORMATION

### *EQIP, CSP, AND ACEP:*

**EQIP** – A TARGETED SIGN-UP CUTOFF DATE FOR 2017 FUNDS IS OCTOBER 21, 2016.

**CSP** – NEW 2016 APPLICATIONS HAVE BEEN PREAPPROVED. CONTRACT DEVELOPMENT IS UNDERWAY FOR THOSE PREAPPROVED.

**NSWCP:** NEW MONEY COMES JULY 1<sup>ST</sup>. APPLICATIONS CAN BE TAKEN ANYTIME AT YOUR LOCAL NRCS OFFICE.

**ENERGY EFFICIENCY GRANT:** SIGN-UP DEADLINE FOR 2017 FUNDS IS OCTOBER 31, 2016. FOR MORE INFORMATION CONTACT KELLEY MESSENGER AT THE KEARNEY USDA SERVICE CENTER AT 308-237-3118, EXT. 120.

## CALENDAR OF EVENTS

JUNE 19: FATHER'S DAY

JULY 5: CNPPID BOARD OF DIRECTORS MEETING – 9 AM

JULY 7-8: GAIL FULLER 2016 FIELD SCHOOL AT EMPORIA KS ABOUT BUILDING HEALTHY SOILS. **EARLY BIRD REGISTRATION DUE JULY 1<sup>ST</sup>**. LIMITED TO FIRST 150 PAID. CONTACT GAIL AT [FULLERFARMS@HOTMAIL.COM](mailto:FULLERFARMS@HOTMAIL.COM) OR AT (620)-344-3363.

JULY 12: TBNRD BOARD MEETING – 7:30 PM

NO-TILL EXPOS: GOTO [HTTP://WWW.NOTILL.ORG/](http://WWW.NOTILL.ORG/) FOR MORE INFO.

JUNE 21 @ WINSIDE, NE & JUNE 23 @ ALLIANCE, NE

## Tool to Determine Crop Water Use – Part 2

In the last issue, you were introduced to the 2016 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. As shown above, one can calculate daily water use. Another option is by 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



### Soil Moisture Levels - June 13 compared to May 31:

Some pivots have ran. On corn, a couple of 1 foot sensors were around 70-75% moisture. Looks like plenty of moisture. As crops grow and roots get deeper, these will start changing.

<b>Pivot Irrigated <i>Corn</i> (7 sites across TBNRD)</b>		
<b>5 out of 7 sites No-Till</b>		
<b>Average Rain from June 6 thru June 12 = 0.24 inches</b>		
Soil Depth	May 31, 2016	June 13, 2016
1 foot	100%	95%
2 foot	100%	100%
3 foot	100%	100%
4th foot	100%	100%
<b>Use 3 ft. avg.</b>	<b>100%</b>	<b>98%</b>

<b>Pivot Irrigated <i>Soybeans</i> (3 sites across TBNRD)</b>		
<b>All No-Till</b>		
<b>Average Rain from June 6 thru June 12 = 0.26 inches</b>		
Soil Depth	May 31, 2016	June 13, 2016
1 foot	100%	100%
2 foot	100%	100%
3 foot	100%	100%
4th foot	100%	100%
<b>Use 3 ft. avg.</b>	<b>100%</b>	<b>100%</b>

<b>Dryland <i>Corn</i> (1 site near Holdrege)</b>		
<b>No-Till</b>		
<b>Rain from June 6 thru June 12 = 0.45 inches</b>		
Soil Depth	May 31, 2016	June 13, 2016
1 foot	100%	100%
2 foot	100%	100%
3 foot	100%	100%
4th foot	100%	100%
<b>Use 3 ft. avg.</b>	<b>100%</b>	<b>100%</b>

## REMINDER

### Leaf Tissue Samples Prior to Tassel!!!

CSP participants with WQL04, Plant Tissue Testing and Analysis, in their contracts need to be getting tissue samples completed prior to tassel in order to meet contract obligations. Enhancement Sheets were sent earlier in the spring.

## REMINDER!!!

**SAM Registration Renewal**  
Website link located on page 4.

### **Spring turns to Summer:**

Spring turns to summer next Monday. The 2016 summer solstice is June 20 at 5:34 CDT when the sun will be directly in line with the Tropic of Cancer or 23.5°N, the northern most point of the year. Since this day last year, we have made a 584 million-mile trip around the sun at 67,000 mph while spinning in a 24,000 mile tilted-circle every day at 1,000 mph. This trip is critical to global and local crop production so it is good to know the orbit, rotation and tilt of the earth's journey around the sun is dependable and non-political; perhaps infallible for all time.

The dry heat of summer turns the slow spring fill and flow of the Central canal system into a dynamic, active workhorse, conveying water to over 108,000 acres of irrigated crops. Central Irrigation Service Specialists (ISS) call upstream for the exact amount of water needed at their patrol headgate daily. They accommodate each scheduled flowrate at every turnout for the 7,000-8,000 acres in their care. They must keep their laterals level without overtopping, even when pumps go off or it rains. Those calls go upstream to the main canal ISS. They meet all canal calls daily by putting an upstream call on the Supply Canal. The 2,250 cfs Supply Canal and Elwood Reservoir supply the water for all irrigation canals. A Central engineer meets the Supply Canal call and requests releases from McConaughy. He must forecast weather and consider travel time from McConaughy to a final delivery point in Kearney County and all points in-between. There is 24/7 oversight of the whole system at the Gothenburg Control Center. Gothenburg has automated remote control of McConaughy, Supply Canal, and main canal gates and four hydroplants. It is a big, complex system with many cross checks; built to run like an Olympian.

### **TRI-BASIN NRD NEWS**



### **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)?

### **New Soybean Management App Available:**

The new *free* SoyCal web app is available through Extension CropWatch at: <http://cropwatch.unl.edu/soycal>. This soybean management tool was developed by Josh Miller, University of Nebraska Agronomist, and is funded by the Nebraska Soybean Board. Using real-time soybean growth staging and GPS field locations, this app links current field conditions with University soybean management resources.

For example, the SoyCal app predicts that soybeans planted on May 10 in the Holdrege area are currently in the vegetative growth stages V2 – V3. Based on these growth stages, SoyCal lists the most common current possible insect pests: Dectes stem borers; spider mites; bean leaf beetles; green clover worms; stink bugs and grasshoppers. Potential soybean diseases may include: root & stem rots; foliar diseases; early sudden death syndrome; herbicide injury and soybean cyst nematodes. This app also charts weed species based on emergence. Educational YouTube demonstrations; NebGuides; and Exploratory research links are then provided related to soybean diseases; weed emergence and insect management.

### **Corn Ear Size Set Early in Development:**

As the summer solstice longest day of the year (June 21) is rapidly approaching; corn fields are also quickly moving through growth stages. Just three weeks after emergence, the number of ears per plant are set (prior to V6 growth stage). Then, by the V7 growth stage, the number of rows per ear are set. Generally, corn growth is based on vegetative and reproductive staging. Vegetative (V) stages are determined based on the number of leaf collars present on the corn plant. The leaf collar is the light-colored collar-like "band" located at the base of an exposed leaf blade (near the area where the leaf blade comes in contact with the plant stem). Leaves within the whorl, not fully expanded and with no visible leaf collar are not included. For example, a plant with 3 collars would be called a V3 plant, but may have 6 leaves showing on the plant.

Yield is directly correlated with the total number of kernels and kernel weights per acre, so any stresses that limit kernel development will also impact harvest totals. Although potential corn ear length is not fully set until after pollination is completed; any corn plant stresses, beginning at the V6 stage, can influence final kernels per ear counts. These stresses might include: low moisture; hail; frost; nutrient deficiencies; insect damage; and root pruning by cultivation.

So what are some recommendations for the early growing season? First, install any soil moisture monitoring probes in fields prior to V4 – V5 corn growth stages. This will help insure that field soil moisture growing conditions are right when the corn plants set the number of ears and kernels per rows in the early development. Second, if "hilling" or cultivating corn fields, complete the tillage early; since root pruning near the V6 stage can reduce final kernel counts. Third, start crop insect scouting early and limit insect feeding. Finally, consider using some early season leaf nutrient content monitoring tools. Note that nitrogen deficiency with corn plants before the V8 stage can cause irreversible decreases in corn ear diameter; kernels per ear; and ultimately less ear length.

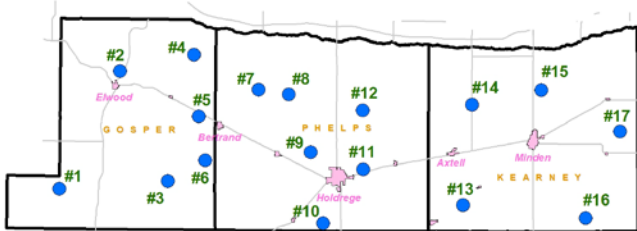
Between V15-V16 corn growth stages, potential ear length is determined with the final ear length set at the blister ear stage. Finally, the kernel weight is set at the silking (R1) reproductive stage. Typical corn plants develop 20 to 21 total leaves. The reproduction silking stage is usually 65 days after emergence with maturity around 60 days later. Variations occur based on hybrids, planting dates, weather & locations.

## 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	May 30 – June 5		June 6 – June 12	
	Evaporation	Rain	Evaporation	Rain
1	1.70	0.30	2.50	0.30
2	1.70	0.00	2.30	0.22
3	1.80	0.00	2.50	0.27
4	1.85	0.00	2.75	1.00
5	2.00	0.00	2.20	0.50
6	1.90	0.00	1.80	0.80
7	NA	0.00	2.30	0.82
8	1.75	0.00	2.40	0.95
9	2.10	0.29	2.80	0.65
10	1.90	0.00	2.60	0.14
11	2.10	0.40	2.60	0.20
12	1.70	0.00	2.00	0.43
13	1.80	0.00	1.90	0.15
14	1.80	0.00	2.40	0.11
15	2.20	0.00	1.70	0.09
16	1.80	0.00	2.70	0.07
17	2.00	0.16	2.50	0.09



2016 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 (V5-5 Leaf to V10-10 Leaf stage):** At 9-leaf, the tassel begins to develop. At about 10-leaf, a rapid steady increase in nutrient and dry weight accumulation begins. Nutrients and water are in greater demand starting at 10-leaf.

Avg. daily water use from June 6 – June 12 was 0.07"-0.28".

**Soybeans (V1-1<sup>st</sup> Node stage to V3-3<sup>rd</sup> Node stage):** From V2-V5, the lateral roots will grow rapidly in the top 6 inches between the rows. By V5, they will completely reach across a 30" row. Nitrogen-fixation begins at the V2-V3 stages.

Avg. daily water use from June 6 – June 12 was 0.05"-0.24".

June 6 – June 12 (17 of 17 NAWMN sites reporting): Average weekly rainfall was 0.40 (range 0.07 to 1.00). Average weekly ET for corn was 0.85 and for soybeans was 0.82.

### ET INFORMATION SITES

**NAWMN Sites:**

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

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

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

**CNPPID:** <http://www.cnppid.com/news-info/weatheret-data/>

**Water Use Hotline:** 1-800-993-2507

Corn Stage		DESCRIPTION
V6	6 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. <b>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.</b>
V10	10 Leaves	
V14	14 Leaves	
Soybean Stage		DESCRIPTION
V2	Second Node	Two trifoliate leaves with unrolled or unfolded leaflets. (3 nodes: 1 unifoliate + 2 trifoliates)
V(n)	Nth Node	Additional nodes grow as plant develops. The V"number" equals the number of trifoliates.
R1	Beg. Bloom	At least one open flower is present at any main stem node.

## 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://www.cnppid.com/wp-content/uploads/2016/05/WPelevation\\_flows.html](http://www.cnppid.com/wp-content/uploads/2016/05/WPelevation_flows.html).

	June 16, 2016, 8:00 AM	1 Year Ago
Capacity of Lake McConaughy	98.3%	89.4%
Inflows to Lake McConaughy	6041 cfs	5222 cfs
Flows on the North Platte at North Platte	3569 cfs	398 cfs
Flows on the South Platte at North Platte	3772 cfs	7626 cfs
Flows on the Platte at Overton	7465 cfs	11,576 cfs

*My father gave me the greatest gift anyone could give another person, he believed in me.*

- Jim Valvano

## WEBSITES OF INTEREST

**SAM Registration** [www.sam.gov](http://www.sam.gov)  
 Climate [agclimatenebraska.weebly.com](http://agclimatenebraska.weebly.com)  
 NRCS Nebraska [www.ne.nrcs.usda.gov](http://www.ne.nrcs.usda.gov)  
 Central Irrigation District [www.cnppid.com](http://www.cnppid.com)  
 TBNRD Home Page [tribasinnrd.org](http://tribasinnrd.org)  
 Farm Service Agency [www.fsa.usda.gov](http://www.fsa.usda.gov)  
 UNL Cropwatch [cropwatch.unl.edu](http://cropwatch.unl.edu)  
 UNL Extension <http://extensionpubs.unl.edu/>  
 K-State SDI Website [www.ksre.ksu.edu/sdi](http://www.ksre.ksu.edu/sdi)  
 No-till On The Plains [www.notill.org](http://www.notill.org)

## RAINFALL

Rainfall amounts listed below and other locations come from NeRAIN which can be found at website <http://nerain.dnr.ne.gov/NeRAIN/docs/report.asp>.

Location:	June 2 – June 15	May 1 – June 15
Arapahoe 6.9 NW:	0.00	3.87
Bertrand 6.1 mi. SE:	0.55	5.99
Funk 4.1 mi. NNE:	0.00	4.04
Minden 0.855 mi. W:	0.11	3.18
Minden 8.8 mi. ESE:	0.23	3.15

**Average Rain for June in Holdrege = 3.98 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](mailto: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 2<sup>nd</sup> 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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