

## PROGRAM INFORMATION

**EQIP:** CONTRACTS CURRENTLY BEING WRITTEN ON PRE-APPROVED APPLICANTS. AS ADDITIONAL FUNDS BECOME AVAILABLE, ADDITIONAL PRE-APPROVALS MAY TAKE PLACE.

**CSP:** NEW 2020 PRE-APPROVED APPLICATIONS ARE CURRENTLY HAVING CONTRACTS SIGNED AND SUBMITTED FOR OFFICIAL CONTRACT OBLIGATION. – RENEWAL APPLICATIONS WILL BE ASSESSED AND RANKED AFTER OCTOBER 1<sup>ST</sup>.

**NSWCP:** NEW FUNDS HAVE ARRIVED. GET YOUR IRRIGATION APPLICATIONS IN BY AUGUST 31<sup>ST</sup> FOR FIRST CHANCE APPROVALS.

**ENERGY EFFICIENCY GRANT:** SIGN-UP DEADLINE FOR 2021 FUNDS IS OCTOBER 31, 2020. FOR MORE INFORMATION CONTACT KELLEY AT RURAL DEVELOPMENT AT THE KEARNEY USDA SERVICE CENTER AT 308-455-9837 OR [KELLEY.MESSENGER@USDA.GOV](mailto:KELLEY.MESSENGER@USDA.GOV).

## CALENDAR OF EVENTS

**AUG 11:** TBNRD BOARD MEETING

**AUG 27:** VIRTUAL WC WATER AND CROPS FIELD DAY.

MORE INFORMATION FORTHCOMING

**SEPT 7:** LABOR DAY – GOV'T OFFICES CLOSED

**SEPT 8:** CNPPID BOARD OF DIRECTORS MEETING

## Soil Moisture Sensor Charts

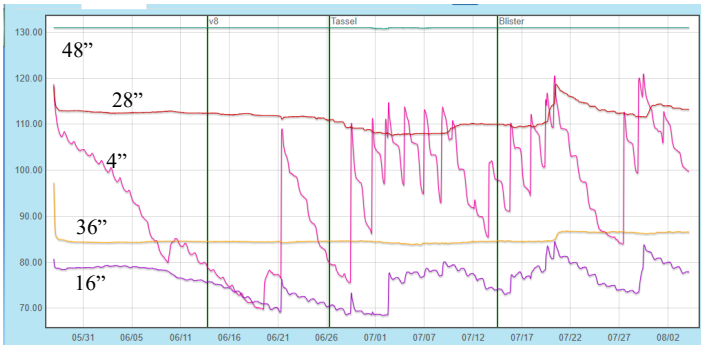


Chart 1 (Data View): Individual Sensors representing 4, 16, 28, 36, and 48 Inch Depths.

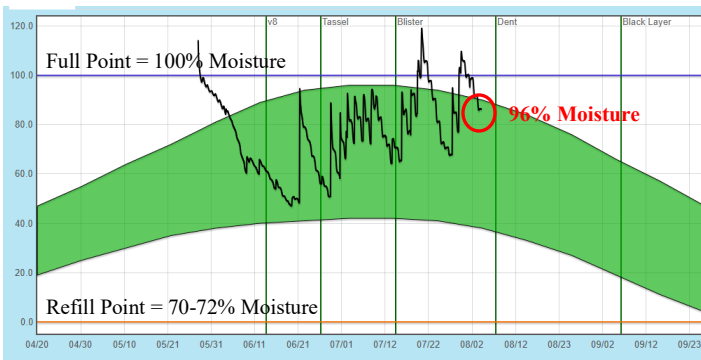


Chart 2 (Season View): Summary Chart based off root depth. This chart represents 11 out of 12 sensors to a 44 inch depth.

## CURTIS'S COLUMN

### CSP and EQIP REMINDERS!!!

1. For those needing to plant cover crops, contact your local NRCS office.
2. Make an appointment at your local NRCS office to turn in your fertilizer, pesticide, irrigation, etc. records.

### Soil Moisture Sensor Charts:

This article is referring to the two sensor charts shown on the left side of this page. Both charts represent the same field as of August 4<sup>th</sup>. This is only one type of sensor. There are multiple types in the field that have their own way of presenting the information. Depending upon the sensor you have, hopefully this article will help you understand what you are seeing and possibly stir up some thinking while providing you with questions that you can ask your dealer.

#### Chart 1 – Shows the individual sensor depths individually:

1. In this chart, you can see the 4" sensor really move up and down. Up spikes are rains and irrigations. Downward, stair-stepping (day/night effect) is the crop using moisture. The deeper the depth, the ups and downs are more subtle.
2. Since sensor installation (left side of chart), the 48" sensor has stayed level. The crop isn't using moisture at that depth. Roots are not there. – At the 36" depth, the roots just started taking moisture around July 1<sup>st</sup>. The irrigations and rains since have kept the crop from using moisture at this depth. Level lines mean moisture not being used due to dryness, no roots, or an input/output equilibrium.
3. The numbers on the left of the chart are representative numbers only and need to be treated solely for each sensor. Notice how each sensor never starts on the same scale. Treat them individually.
4. The level part of each sensor line early in the season will represent full water or 100% moisture. There can be an exception to this if no moisture refilled the profile during the off-season. That is usually not the case. The full point numbers can be manually overridden in the program.
5. If your current sensor reading is 60 and your full water number is 80, divide 60 by 80 and you get 75% moisture.

#### Chart 2 – Summary of entire profile based on root depth:

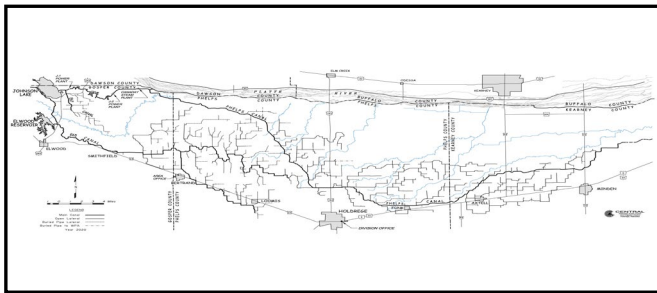
1. The black line is your moisture summary for the entire profile based on root depth.
2. On this chart, the orange refill point line is usually calculated at 70-72% moisture. This can be manually overridden in the program.
3. The scale on the left has 5 sections between refill and full point. With a 30% moisture difference from full to refill then each number/section represents 6% moisture. That means current profile summary (black line) is about 96% moisture.
4. The trend in the summary line is moving upward. This is adding moisture to the profile and thus a sign of overirrigation, rains on top of irrigations, or too much rain.
5. Keeping the black line in the bottom half of the green and irrigating when at the bottom edge is good. During peak use on this chart, the bottom of the green is at 82% moisture. Plenty good. Save the top half for rain.
6. End the year at the orange line (70-72%) or below. We can get below that at 60-65%. Across the TBNRD, we end the year at 76% moisture on average at crop maturity. It will take some getting used to and trust in sensors to get there.

Soil moisture sensors do a really good job of telling you what's going on in the soil. You need to understand what they are saying and what is going on around them. This gives you a starting point. You will need to communicate with your dealers and others who use them. Remember the learning curve with your cell phone? Same thing. You may need to leave your comfort zone to develop a trust in the sensors. You are investing in soil moisture sensors to help you in your irrigation scheduling. Patience and trust is a part of that investment.

### Irrigation Service Specialists Duties:

Central Nebraska Public Power & Irrigation District employs 15 Irrigation Service Specialists (ISS) to serve the irrigated area with irrigation water. These ISS work 7 days a week from April to September and are in contact with our customers on a daily basis to efficiently serve irrigation water to them on their scheduled days. In February, the ISS create 1 week or 2 week schedules (depending on what the customer wants) for the customers to follow during the irrigation season.

During the off season, these ISS join the 10 Equipment Operators Central employs in the irrigated area to help repair and improve Centrals delivery systems for the next irrigation season. Along with the repairs and improvements during the winter months, Central's ISS also deliver water to different Waterfowl Production Areas groundwater recharge projects throughout the irrigated area, which is a whole new challenge with cold weather and ice.



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## TRI-BASIN NRD NEWS



### Irrigation Season Reminders:

**Chemigation:** Our staff has been busy with new and routine chemigation inspections. If your systems are due for a routine inspection, you will receive a call from our office to schedule those. New permit inspections must be conducted prior to use and routine inspections due this year must be completed by the end of this irrigation season.

**Water Samples:** Our staff are also taking samples from irrigation wells for our Water Quality testing program.

If you have crop reports due each year, do not forget to take water samples from your irrigation wells for those reports.

**Irrigation Meters:** You should periodically check your irrigation flowmeters to make sure they are working correctly. If you do not think your meter is working correctly, our staff or Curtis Scheele at NRCS office can check flow rates using an ultrasonic flowmeter.

If you have a meter repaired during the irrigation season, please contact the NRD and note the meter reading before removing. Doing so will make it easier to reconcile any movement of the propeller while the meter was being repaired. If you have questions about reinstalling your flowmeter or about your meter readings, contact our office at 1-877-995-6688.



### Predicting Last Soybean Irrigation:

Soybean maturity is dependent upon day length; also, water usage can vary depending on the year. Generally, irrigators start reducing stored soil profile moisture as crops start drying down four to six weeks before crop physiological maturity. The average target is soils dried down to 40% available water by maturity. Physiological maturity with corn and grain sorghum is defined as the time when kernels or seeds form a black layer at the kernel tip. For soybeans, beginning maturity is when one normal pod on the main stem has reached its mature pod color.

Our Nebraska Extension NebGuide G1871 "Predicting the Last Irrigation of the Season" provides end of season irrigation worksheets for corn, grain sorghum and soybeans. Usually, soybeans are only 10 days from beginning maturity when the plants reach R6.5 growth stage or when the leaves begin to yellow. At this point, the soybean will likely need 1.9 inches of water to complete dry matter production.

ETgages and soil water sensors can be helpful for timing the last soybean irrigation for the growing season. ETgages measure crop water usage while the soil water sensors record how much water is still remaining in the soil profile. These tools can then help irrigators calculate how much water the crop will need either through irrigation or rainfall to finish out the year. The Nebraska Extension "cornsoywater.unl.edu" app or crop water app can also be useful with determining the last irrigation.

### 2020 Nebraska Extension Wheat Plot Results:

The new 2020 Nebraska Extension Winter Wheat Varieties Performance Test Results are now on our CropWatch website: <https://cropwatch.unl.edu/winter-wheat-variety-test-results>.

Terry Woollen again hosted a replicated South Central rainfed test plot on his wheat field NW of Alma, NE. The 2020 wheat plot average was 66 bu./A compared to 100.50 bu./A the previous year. This year's plot featured 33 different wheat varieties with yields ranging from 38 to 94 bu./A. with the top 12 varieties including: Westbred-WB4699; Westbred-Grainfield; Limagrain-LCS Link; Limagrain-LCS Chrome; UNL NW15443; Westbred-WB4269; UNL-NHH144913-3; Agri-Pro Syngenta-SY Monument; AgriMaxx-AM Cartwright; CROPLAN Winfield United-CP7869; and Kansas Wheat Alliance-Zenda.

Irrigated wheat comparison is also available through the Box Butte Panhandle location which includes both irrigated and rainfed plot results. Other locations include: Red Willow County -McCook; Lincoln County-North Platte; & Perkins County-Grant.

### Nebraska Extension Cover Crop Selector Tool:

A free Cover Crop Selector Tool was released in 2019 and now includes cover crop mixes. This tool compliments the Midwest Cover Crops Field Guide: ID-433 <http://mccc.msu.edu/covercroptool/covercroptool.php> and also links the Midwest Cover Crops Council: <http://mccc.msu.edu>.

Users can prioritize inputs such as: nitrogen source, nitrogen scavenger, soil building, erosion fighter, weed fighter, good grazing, quick growth, lasting residue, and winter survivability. The user can then click on the individual cover crop description and learn specific information, such as planting rates and timing, termination methods and timing, and benefits & disadvantages of growing cover crops.

These resources will guide new growers through cover crop planning and preparation, fall work, spring work, and adjustments needed for cropping rotations with cover crops to improve soil health

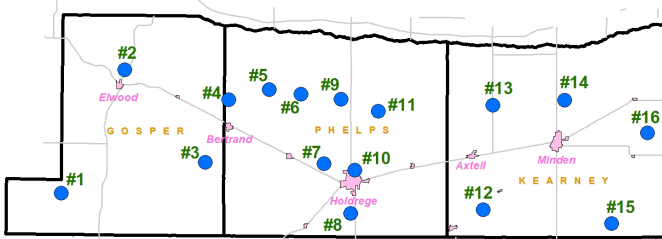
## NAWMN CROP ET INFORMATION

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

Inches of Crop Water Use (ET) =

Evaporation x K<sub>c</sub>

Site	July 20 – July 26		July 27 – Aug 2	
	Evaporation	Rain	Evaporation	Rain
1	1.70	0.99	1.70	0.63
2	1.40	3.20	1.40	0.48
3	1.50	0.57	1.40	0.42
4	1.60	0.92	1.50	0.88
5	NA	NA	NA	NA
6	1.40	0.57	1.20	0.80
7	1.30	0.54	1.20	1.12
8	1.20	0.48	1.10	1.50
9	1.40	1.02	1.25	1.52
10	NA	NA	NA	NA
11	1.60	0.60	1.30	1.49
12	1.30	0.50	1.10	0.56
13	1.20	0.22	1.50	0.13
14	1.30	0.03	1.50	0.08
15	1.40	0.60	1.10	0.33
16	1.40	0.38	1.30	0.13



2020 Map of NAWMN Sites across the Tri-Basin NRD.

Corn Stage		DESCRIPTION
R3	Milk	Kernels are a yellow color on the outside. Inner fluid is milky white. Silks are brown and drying.
R4	Dough	Most kernels contain semi-solid, pasty material.
R4.7	Beg Dent	Kernels at base of ear are beginning to dent.

Soybean Stage		DESCRIPTION
R4	Full Pod	At least one pod of 3/4" length is present at one of the four uppermost main stem nodes that have fully developed leaves.
R5	Beginning Seed	At least one pod containing small seeds is present at one of the four uppermost main stem nodes that have fully developed leaves. Holding a pod up to the bright sky will show small developing seeds in the pod cavities.
R6	Full Seed	At least one pod whose cavities are completely filled with green seeds is present at one of the four uppermost main stem nodes that have fully developed leaves.

Crop Coefficients (K <sub>c</sub> )			
Corn		Soybeans	
Stage	K <sub>c</sub>	Stage	K <sub>c</sub>
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 (R2-Blister to R4-Dough stage):** Stress at milk stage, although not as severe as at silking, can still have a profound effect on yield. However, one can start taking advantage of subsoil moisture in the 3<sup>rd</sup> and 4<sup>th</sup> foot.

Avg. daily water use from July 27 – Aug 2 was 0.17"-0.27".

**Soybeans (R3-Beginning Pod to R5-Beginning Seed stage):** Environmental stress from now til shortly after R6 (Full Seed) needs to be avoided. However, one can slowly start utilizing moisture from the 3<sup>rd</sup> and 4<sup>th</sup> foot.

Avg. daily water use from July 27 – Aug 2 was 0.17"-0.27".

July 27-Aug 2 (14 of 16 NAWMN sites reporting): Average weekly rainfall was 0.72 (range 0.08 to 1.52). Average weekly ET for corn was 1.48 and for soybeans was 1.40.

### CROP ET INFORMATION

**NAWMN Sites:**

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

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

Email: NRCS: 308-995-6121, Ext. 3

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

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

**Texting:** TBNRD: 308-995-6688 or UNL: 308-995-4222

Email: CNPPID: 308-995-3555

## 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>.

	August 6, 2020, 8:00 AM	1 Year Ago
Capacity of Lake McConaughy	68.5%	NA
Inflows to Lake McConaughy	NA cfs	NA cfs
Flows on the North Platte at North Platte	NA cfs	NA cfs
Flows on the South Platte at North Platte	NA cfs	NA cfs
Flows on the Platte at Overton	NA cfs	NA cfs

*BLESSED are they who see beautiful things in humble places where other people see nothing.*

- Camille Pissarro

## WEBSITES OF INTEREST

Soil Health:

[www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/](http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/)  
 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 [www.tribasinrrd.org/](http://www.tribasinrrd.org/)  
 Farm Service Agency [www.fsa.usda.gov](http://www.fsa.usda.gov)  
 UNL Cropwatch [cropwatch.unl.edu](http://cropwatch.unl.edu)  
 UNL Extension [extensionpubs.unl.edu/](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 <https://nednr.nebraska.gov/NeRain/Maps/maps>.

Location:	July 23 – Aug 5	May 1 – Aug 5
Elwood 0.26 mi. S:	3.47	11.37
Bertrand 6.1 mi. SE:	1.09	10.75
Holdrege 0.99 mi. E:	1.52	9.18
Minden 7.2 mi. W:	0.28	9.08
Minden 5.8 mi. E:	0.27	11.06

**Average Rain for May-July in Holdrege = 11.32 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@usda.gov](mailto:curtis.scheele@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

PO Box 146  
 Elwood, NE 68937

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

308-995-4222

308-785-2390

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