Tri-Basin Irrigator

Volume 21, Issue 6 **July 22, 2021**

Program Information

EQIP: **Sign up anytime for 2022 funds.**

CSP: **sign up anytime for 2022 funds.**

NSWCP: **First chance at irrigation practice approval, have your irrigation applications in by Aug. 31st. They must be signed by the owner.**

ENERGY EFFICIENCY GRANT: **Signup anytime for 2022 funds. deadline is October 31, 2021. For more information contact Kelley at Rural Development at the Kearney USDA Service Center at 308-455-9837 or *KELLEY.MESSENGER@USDA.GOV*.**

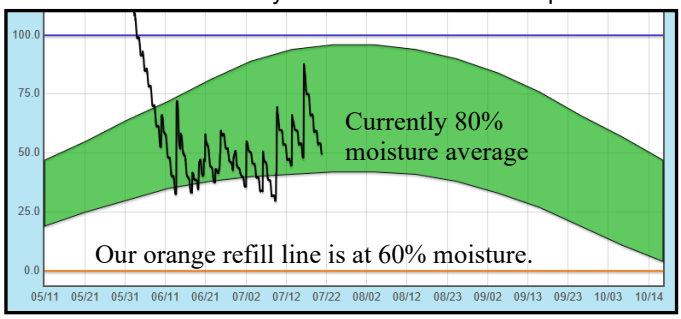
Calendar of Events

July 25-29: Phelps County Fair
July 28: South Central Field Day east of Hastings – Info and link on page 2 under Nebraska Extension Extras
July 29-31: Gosper County Fair
Aug 2: CNPPID Board Meeting
Aug 10: TBNRD Annual Tour and Board Meeting
Aug 26: West Central Field Day at North Platte – Goto *https://extension.unl.edu/statewide/westcentral/*

TBNRD TAPS Team Update - SDI System Corn following Soybeans

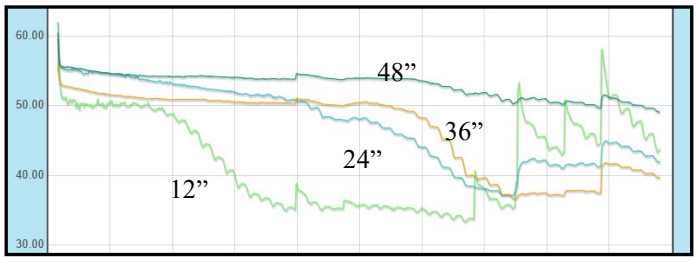
Summary Chart in full season view

- 48 inch summary – roots are at 48 inches plus



Individual Sensor Chart in current data view

- 1.5 inches irrigation to date
- 2 fertigations adding another 0.4 inches of moisture
- Full profile in May. Rain since June 1st is 4.0 inches.
- Same four sensors as described in the quiz answer

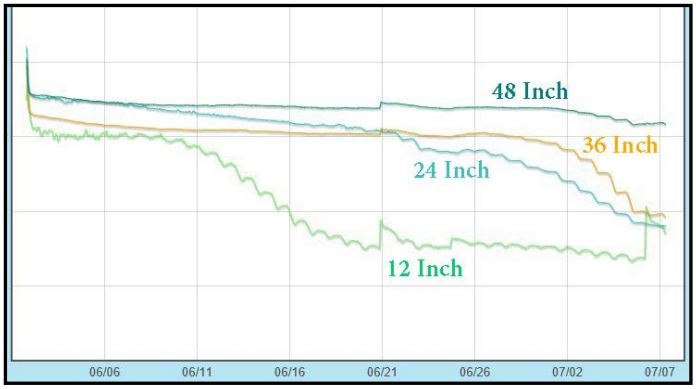


Curtis's Column

USDA United States Department of Agriculture
Natural Resources Conservation Service

ANSWER to Last Issues QUIZ Question – Soil Moisture Sensors!!!

Can you tell which line represents the following 4 sensor depths: 12 Inch, 24 Inch, 36 inch, 48 inch?



These sensors are on our TAPS plot in North Platte which is on a subsurface drip irrigation field. - Left side of the chart is early season, right side is most recent. Moving left to right as the days go by. - Upward movement is the addition of moisture. Downward is the plant using moisture or a reduction in soil moisture. Level lines mean no gain or loss of soil moisture.

12 Inch line is the green. Level line early because of no roots to utilize moisture. Once the roots got to the 12 inch depth, notice the moisture uptake from the soil. This would be the line in a downward trend. The 12 inch line then leveled off about half way to the latest chart date. The leveling off is from some nice rains in combination with the continued root growth to deeper depths with moisture.

24 inch is the aqua kinda color. It tapered a little but pretty much stayed status quo until the half way point. When the 12 inch started leveling the 24 inch moisture was starting to get used by the roots. A rain or irrigation may have caused it to level off there for a bit before the roots really started to take in the soil moisture.

36 inch is the orange. It stayed level until the roots got to that depth and started utilizing the moisture which you can tell by the drop off. It leveled off there on the last couple of days due to a rain event. Again it leveled off due to no gain or loss in the moisture level at that depth.

48 inch is the dark blue-green on top. It has stayed level all year and has just started to use a little moisture towards the end of this chart. It even leveled off the last couple of days due to rain.

In summary, you can tell which line represents which depth based on seeing a downward trend of utilizing soil moisture. The moisture will not get used until the roots get there. So, the shallower depths will show root activity or a reduction in moisture before the deeper depths.

There is the answer you have all been waiting for.

CNPPID Notes

Proactive Project

A major proactive project to address the 80-year old critical infrastructure associated with the E-65 Canal System is in the beginning stages of planning.

Background

The E-65 Canal System serves irrigation water to 42,000 acres and Elwood Reservoir. The E-65 inlet starts above Johnson Lake inlet, where it conveys water through three siphons totaling 7,250 feet of buried steel pipe. The siphons capacity is 350 cfs, which is unable to meet the 500 cfs irrigation demand on the E-65 Canal System. In order to meet the irrigation demand, Elwood Reservoir was constructed in the late 1970's to supplemental demand. Water is placed into Elwood using three high capacity pumps. Over the years, the siphons have needed numerous costly repairs to extend their serviceability.

Proactive Planning

In 2019, the Gering-Fort Laramie Irrigation District suffered a tunnel collapse that left 107,000 acres without irrigation water. The collapse was declared a State of Emergency by both Nebraska and Wyoming. Learning from the tunnel collapse at Fort Laramie, CNPPID is proactively looking to address the E-65 siphons from suffering a similar catastrophic failure to its vital infrastructure and local economy.

The concept design utilizes approximately 5,400 ft. of buried 98" HDPE pipe (to serve as a siphon) that would directly discharge into Elwood Reservoir, eliminating the reliance on pumps. The 100-year design life secures the long-term reliable delivery of water for irrigators and Elwood Reservoir. Additionally, the new design would have a greater capacity (400-500 cfs) than the existing siphons. Completion of the project helps ensure uninterrupted delivery of water to 42,000 acres for irrigation well into the future.

Several important statewide benefits would be impacted should the E-65 siphons fail, including;

- Fisheries at Elwood
- Groundwater Recharge (Platte and Republican)
- Conveyance of water into the WPA's

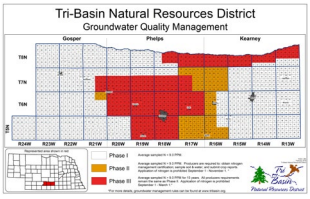
Central hopes that the statewide importance of the E-65 siphons is supported through a Water Sustainability Fund grant application. If funding is awarded, CNPPID would have a shovel ready project (without irrigation delivery disruption) completed for year 2023….Providing security to our next generation of farmers beyond the year 2123!!

Tri-Basin NRD News

Time to Take a Water Sample

If you have a field in Phase II or Phase III Groundwater Quality Management Area (map below), you are required to sample your irrigation water and test it for nitrates every year. It is important to collect the water samples once you start irrigating. Take the sample after the well has been running for a while, so you have accurate results.

The results from the samples you take this irrigation season will be used in nitrogen planning for next year's crop and reported on your 2021 Nitrogen Management Crop Report. Sample bottles are available at Tri-Basin NRD or NRCS offices.



Nebraska Extension Extras

UNL SCAL Field Day – July 28

The UNL South Central Agricultural Lab (SCAL) summer field day is scheduled for **Wednesday, July 28th from 8:45 a.m. – 4:00 p.m.** More than 100 applied irrigation field research trials will be highlighted. Topics will include: Irrigation Soil Fertility; Water Management; Entomology; Weeds; Diseases and Cropping Systems. This educational event is free (rolls, coffee, and noon lunch). SCAL Ag Lab is located 13 miles east of Hastings just south of Highway 6. Register by Monday, July 26th at: *https://extension.unl.edu/statewide/enre/2021-south-central-agricultural-laboratory-field-day/*

Corn Southern Rust Disease Online Monitor

As irrigation season reaches mid-point, potential corn diseases such as 'Southern Rust' need monitored. Usually, rust diseases blow into Nebraska later in the growing season from the south. As of July 19th, southern rust has been documented in mid-Kansas (Reno county – Wichita, KS). Follow nationwide rust movement at: *https://corn.ipmpipe.org/southerncornrust/*

2021 UNL Ag Land Leasing Webinar

The next free Nebraska Extension Ag Economics (Questions and Answers) online webinar series is scheduled for **Monday, August 16th beginning at Noon.** This session will focus on "2021 Ag Leasing provisions." Updates will include: 2021 Cash Rental Rates & Land Values prepared by the Nebraska Farm Real Estate Market survey and other leasing considerations. Special focus will be on the **September 1st deadline to terminate** verbal leases. Register at: *https://agecon.unl.edu/landmanagement/*

This information will also be available through a 'face-to-face' event at the Hall County Extension Office (College Park, 3180 W Highway 34, Grand Island, NE on **Tuesday, August 3rd** from **10:30 a.m. to 1:30 p.m**. It will offer updated land values and cash rental rates along with strategies for equitable leasing & farm succession issues. Farm transition and **carbon credit contract** updates for ag producers and landlords will also be discussed. This event is free, but please pre-register by calling the Hall Co. Extension Office (308-385-5088); this will assist with free lunch plans provided by Peoples Company. *https://cap.unl.edu*

Fertigating High Yield Soybeans

Soybeans require high nitrogen levels to reach maximum yields. The first critical period was pre-plant, so starter fertilizer rates of up to 20 lbs. per acre may have bridged the nitrogen needs for three weeks as soybean roots to formed nitrogen producing nodules. However, soybeans may soon be moving into the next critical development stages **R3 (beginning pod production)** to R4 **(about 60 days after planting).** Fertilization during these stages may reduce flowering & pod abortion to increase yields.

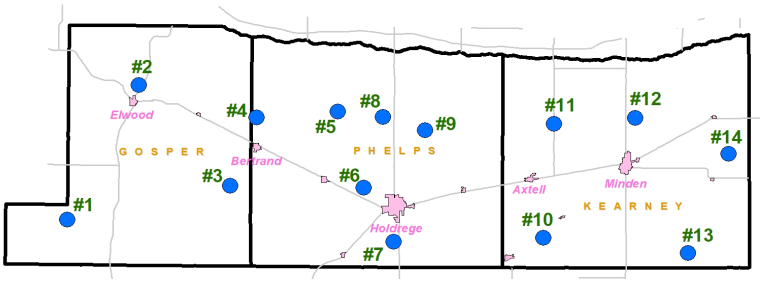
Finally, the **reproduction stage R5 (beginning seed development**) to **R6 (full seed development**) is an efficient nitrogen supplementation stage. It is during this time that the soybeans reach maximum height; set final node numbers; and develop their largest leaf area. This is also the time when the plants reach their peak nitrogen fixation rates. High-yielding (100+ bu./A) soybeans may require at least some extra nitrogen as well as adequate phosphorus, potassium, and other critical elements. Since soybean root nodules are limited on growing season nitrogen fixation, higher-yields may require 20-30 lbs/A of supplemental nitrogen during early pod set to raise yields.

TBAWMN 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 (ETr) x Kc

	July 5 – July 11		July 12 – July 18	
Site	Evaporation	Rain	Evaporation	Rain
1	1.70	0.05	1.40	1.30
2	1.70	0.60	1.20	1.43
3	1.20	1.00	1.10	1.95
4	1.50	1.92	1.30	2.03
5	1.50	1.50	1.10	2.20
6	1.50	0.86	1.10	1.92
7	1.30	0.60	1.00	1.60
8	1.50	1.51	1.15	2.34
9	1.20	1.45	1.00	3.78
10	1.50	0.39	1.20	2.92
11	1.20	0.85	1.10	1.79
12	0.90	0.64	0.90	1.64
13	1.50	0.58	1.20	2.10
14	1.20	0.64	1.10	2.12



2021 Map of NAWMN Sites across the Tri-Basin NRD.

Crop Coefficients (Kc)

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

Crop Stage Information

Corn (V16-16 Leaf to R1-Silking stage): Silking is the peak water use period for corn. Moisture stress at this time causes poor pollination and seed set. The result will usually be a nubbin.

Avg. daily water use from July 12 – July 18 was 0.14"-0.22".

Soybeans (R2-Full Bloom to R4-Full Pod stage): Demand for water and nutrients is large throughout the rapid seed filling period. Environmental stress from now til shortly after R6 (Full Seed) needs to be avoided. R4 (Full Pod) is the most crucial period.

Avg. daily water use from July 12 – July 18 was 0.13"-0.22".

July 12-July 18 (14 of 14 NAWMN sites reporting): Average weekly rainfall was 2.08 (range 1.30 to 3.78). Average weekly ET for corn was 1.26 and for soybeans was 1.14.

Crop ET Information

NAWMN Sites:
Tri-Basin NRD: https://www.tribasinnrd.org/nawmn
Email: Contact Curtis at 308-995-6121, Ext. 3
CropWatch: https://cropwatch.unl.edu/gdd-etdata
CNPPID: https://www.cnppid.com/weatheret-data/
Texting: Contact TBNRD at 308-995-6688
Email: Contact CNPPID at 308-995-3555

CORN STAGE		DESCRIPTION
R1	Silking	Begins when any silks are visible outside the husks.
R2	Blister	The kernels are white on the outside and resemble a blister in shape. The cob should be close to, if not, at full size by R2. The silks are beginning to dry out and darken in color.

SOYBEAN STAGE		DESCRIPTION
R3	Beginning Pod	At least one pod of 3/16" length is present at any 1 of the 4 upper most main stem nodes with a fully developed leaf. There can be pods of greater length at the lower nodes.
R4	Full Pod	At least one pod of 3/4" length is present at any 1 of the 4 upper most main stem nodes with a fully developed leaf.
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. You can hold a pod up to the bright sky to see the small developing seeds in the pod cavities.

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.

	July 22, 2021, 8:00 AM	1 Year Ago
Capacity of Lake McConaughy	66.4%	NA
Inflows to Lake McConaughy	426 cfs	558 cfs
Flows on the North Platte at North Platte	298 cfs	2490 cfs
Flows on the South Platte at North Platte	162 cfs	131 cfs
Flows on the Platte at Overton	723 cfs	1390 cfs

In the everyday "stuff" of life, we find our daily blessings.

- unknown

Websites of Interest

NRCS Nebraska	www.ne.nrcs.usda.gov
Farm Service Agency	www.fsa.usda.gov/
TBNRD Home Page	www.tribasinnrd.org/
Central Irrigation District	www.cnppid.com/
HPRCC	hprcc.unl.edu/
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
Soil Health:	www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/
NE State Irrig Assoc	www.nebraskastateirrigationassociation.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 8 – July 21	May 1 – July 21
Elwood 0.26 mi. S:	1.83	7.71
Bertrand 6.1 mi. SE:	2.07	11.90
Holdrege 0.99 mi. E:	0.94	8.25
Minden 7.2 mi. W:	2.30	10.30
Minden 5.8 mi. E:	1.85	8.12

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. ****

USDA - Natural Resources Conservation Service

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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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