Tri-Basin Irrigator

Volume 19, Issue 5 *July 18, 2019*

Program Information

EQIP: Application cutoff for 2020 funds is projected to be in November 2019.

CStwP: Just received our 2019 funding. Pre-approved applicants will be notified shortly for contracting.

NSWCP: New funds came July 1st. First round of irrigation applications to be reviewed for approval needs applications signed by the owner by Aug. 28th.

Energy Efficiency Grant: Applications due October 31, 2019. Contact Kelley at Rural Development at 308-455-9837 or *kelley.messenger@usda.gov*.

Calendar of Events

July 20-25: Phelps County Fair
July 25-27: Gosper County Fair
Aug 5: CNPPID Board of Directors Meeting 9 am
Aug 9-11: Kearney County Fair
Aug 13: TBNRD Annual Tour and Board Meeting
Aug 22: West Central research & Extension Center Field Day in North Platte

No-Till On The Plains Events: Goto http://www.notill.org/upcoming-events for more info.
- July 30-Aug 1: Texas Panhandle Bus Tour
- Aug 13: Companion Crop Demo Field Day @ Tipton, KS
- Aug 29: Companion Crop Demo Field Day @ Osage City, KS
- Sept 10: Soil Health Field Day @ Almena, KS

Time to Step Up to the Plate

For years, I and others have talked about when and how to irrigate. That has been through this newsletter, in person, at meetings, etc. We have provided information to show you that we can irrigate better if we manage it and stay on top of it. Well, it's time for us to step up to the plate and actually irrigate. That's right. We now get to make decisions. I am on the TBNRD team that is managing a Subsurface Drip Irrigation field plot at the West Central Research and Extension Center in North Platte. This team consists of myself, an NRD staffer, a crop consultant and producer. The soil is Cozad Silt Loam, similar to Holdrege Silt Loam. We manage this field with nitrogen and irrigation. There are other management decisions we had to make such as plant population, hybrid, etc. I am only going to stick with irrigation at this time.

On the right hand side of this page at the top is a chart showing our soil moisture summary that is currently based off of 36 inch root depth. That's averaging nine sensors, one every 4 inches. This chart represents the last 14 days. It is current as of Thursday AM, July 18th. The up strokes are added water from rain or irrigation. Down strokes are water usage.

The green shaded area is the optimal water area. You will see a stair stepping downward trend. This is good. Each step represents high water usage during the day and a leveling off period during the night.

Cont'd under "Curtis's Column" on right side.

Curtis's Column

USDA United States Department of Agriculture
Natural Resources Conservation Service

Time to Step Up to the Plate - cont'd:

We can apply up to 0.50 inch max per irrigation. We can only water on Monday, Tuesday, Thursday, and Friday. Currently our corn is approaching tasseling/silking, the peak period for water use.

Management: So far we irrigated once on Tuesday, July 16th. You can see that with the latest up stroke. We will irrigate again today, July 18th which seems to take place midday. We will evaluate today and see if we need to irrigate tomorrow. Can't irrigate over the weekend so that's 2 days without added water. I think our plan may be to stay ahead of the game going into silking, meaning irrigate Friday and back off next week if need be rather than play catch up. Will see later today what we want to do. We want to leave room for rain as well.

Below is a chart showing each 4 inch depth sensor over the last 14 days.

Chart 1 – 1st foot (depths 4, 8, and 12 inch)

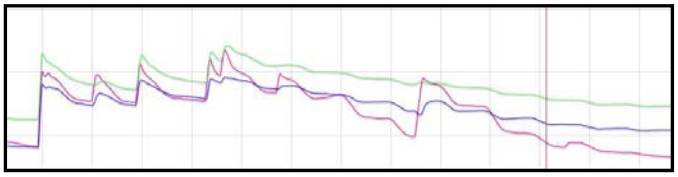


Chart 2 – 2nd foot (depths 16, 20, and 24 inch): The drip tape is around that 14 to 16 inch zpne. Note the up stroke of our 0.50 inch irrigation event on Tuesday in the second foot zone.

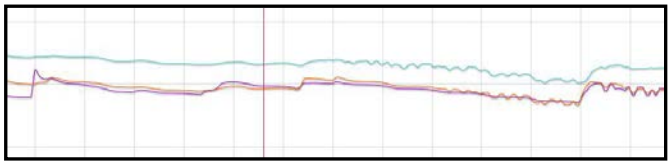
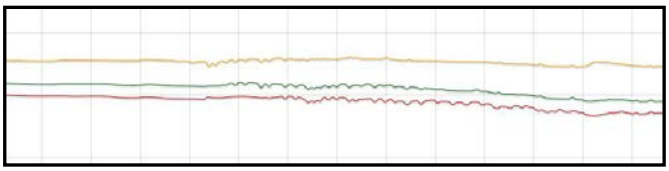


Chart 3 – 3rd foot (depths 28, 32, 36 inch):



This is a learning year for myself. I see these charts when producers turn them in at the end of the year. It's different, thus a learning curve, managing the soil water level. Watching it and following it, we can learn how to use it in our irrigation program.

CNPPID NOTES

Weather and Water:

The 2019 irrigation season is my 19th at the District; I have not yet seen two summers with similar crop growing conditions. This week, it is a relief to see the rain subside and the miserably hot and humid mid-July days arrive. The 2019 weather has called upon the "Nebraska Strong" in all of us and once again, all have measured up. I suspect most people have little knowledge or respect for the producers' ability to cope with changing weather each season to get their products to market.

Central's Irrigation Service Specialists, Engineers and the Gothenburg Control Center Staff should be commended for getting our 580 miles of canal water back to normal operating levels in less than a day during and after the recent widespread, heavy rain event; they even made space for pumping water in off flooded fields. All of them moved at lightning speed to make it happen. Please let them know the effort was appreciated; so much of their hard work is invisible to the general public.

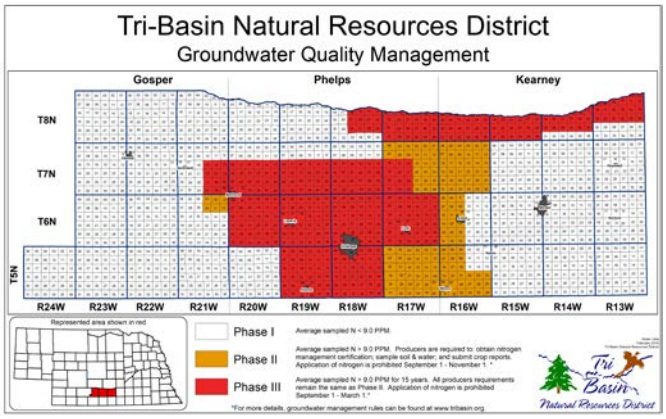
The Department of Environmental Quality (DEQ) samples recreational use water weekly for Microcystin and E. coli at many Nebraska lakes and reservoirs. Several DEQ field offices are staffed and can answer water quality questions/concerns regarding water recreation activities with the recent flooding. Our own Lake McConaughy and Johnson Lake are sampled weekly as are other lakes frequented by families in this area including; Harlan County Reservoir, Harry Strunk Lake, Hugh Butler Lake, Swanson Reservoir, Merritt Reservoir, Sherman Reservoir, Lake Maloney, the Calamus Reservoir and others. You will find the weekly sampling results for each water body for the current year at the DEQ website on the Beach Watch page; go to https://deq-iis.ne.gov/zs/bw/.

TRI-BASIN NRD NEWS

Remember to take water samples for Nitrogen Management Reports:

If you have fields in Phase 2 or Phase 3 of our Groundwater Quality Management Area (see map), you are required to sample your own irrigation water and test it for nitrates each year. With above average rains in some portions of the district causing a delayed start to the irrigation season, it's important to remember to collect the water samples once you start irrigating. If possible, you should take samples after the well has been running for a while, to get more 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 2020 Nitrogen Management Reports. Sample bottles are available at Tri-Basin NRD and the NRCS offices.



NEBRASKA EXTENSION EXTRAS

Fertigating Pollinating Corn:

Wet field conditions may have delayed fertigation nitrogen applications this summer. So, now that most corn fields are beginning to tassel, will fertigation application negatively impact pollination?

Dr. Tom Hoegemeyer, Nebraska Extension Corn Breeder, adjunct professor, says that fertigation nitrogen applications during pollination can lower pollen survival. Therefore, he recommends ***not*** fertigating through pivots on pollinating corn in the early morning (6 a.m. to noon). Further, viable corn pollination mostly occurs between 8:30 a.m. and noon when the temperatures are below 90°F to 95°F. During hot days, pollen is killed by heat and is seldom viable past 2:00 p.m.

Therefore, run pivots and applying nitrogen during the cooler morning hours is less likely to disrupt pollination. Fertilizer plant burn effects are further reduced by applying at least 0.25 inch of water with 30 lbs. of nitrogen per acre and at least 0.50 inch of water when applying 50-60 lbs. N.

Silks tend to be viable for three or four days even with higher temperatures (> 90°F), so if a plant isn't pollinated one day, generally the next day will work just fine. As a general rule, brown silks are a good visual sign for corn growers. Why?

Each corn silk provides a conduit to move shed pollen to one individual kernel. As individual corn kernels are successfully pollinated, each silk will detach from the kernel and brown on ear tips. Thus, when corn silks are still green long after tassel pollen, may indicate ear pollination problems; later resulting in blank kernel ear development.

Although there are risks associated with applying nitrogen on pollen during corn pollination; completely delaying nitrogen application until after the pollination period is not recommended either. Corn nitrogen needs during pre-tassel and again at kernel growth (1 to 3 weeks post pollination) are high. Dr. Hoegemeyer adds that corn plants deficient in nitrogen about seven to ten days post pollination (before brown silk) may have kernel abortion and potentially have serious yield losses.

Managing Soybean Insects:

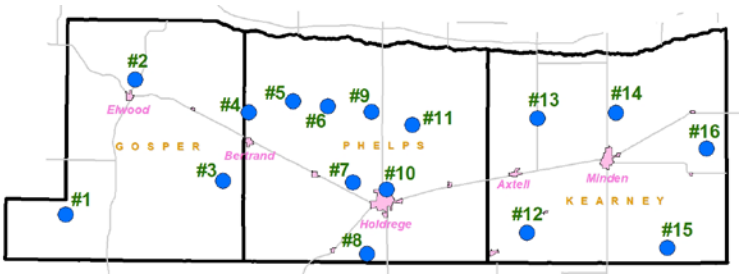
Bob Wright, Nebraska Extension Entomologist, says that our higher painted lady butterflies in late May/June were due to a wet season in Mexico allowing greater vegetative growth and survival for northern migration. Then, the cooler conditions may have caused more to stay here instead of moving north. Also, high numbers of thistle caterpillars (larvae of painted lady butterflies) offspring are still laying eggs. A painted lady female can lay up to 500 pale green eggs on plants individually instead of in egg masses. The larvae hatch in around a week; and can feed from 2-6 weeks depending on weather conditions. Other defoliators including various worms, grasshoppers, Japanese beetles when present. Thresholds for damage for all soybean defoliators is 20% defoliation of plants during the reproductive stages. If you're unsure what 20% defoliation in soybean looks like, check out the graphic in CropWatch at: https://go.unl.edu/v0ts. Our 2019 Nebraska Guide for Weed, Disease, Insect Management MF-150 (pgs. 308-314) regarding products that may work best.

NAWMN Crop ET Information

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

Inches of Crop Water Use (ET) = Evaporation x Kc

	July 1 – July 7		July 8 – July 14	
Site	Evaporation	Rain	Evaporation	Rain
1	1.60	1.10	1.70	5.15
2	1.60	1.17	1.80	5.54
3	1.50	6.90	1.70	3.68
4	1.50	2.70	1.70	4.04
5	1.50	2.45	1.40	8.35
6	1.30	1.70	1.30	9.00
7	1.50	3.12	1.60	6.10
8	1.50	1.00	1.50	1.45
9	1.40	3.13	1.70	8.50
10	1.60	2.40	1.80	6.00
11	1.10	2.90	1.00	3.69
12	1.60	2.20	1.70	2.60
13	1.30	1.37	1.50	2.70
14	1.40	2.46	1.50	4.35
15	1.40	2.18	1.60	3.70
16	1.10	2.19	2.00	5.15



2019 Map of NAWMN Sites across the Tri-Basin NRD.

Crop Coefficients (Kc)

Corn Stage	Kc	Soybeans 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 (V10-10 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 8 – July 14 was 0.15"-0.28".

Soybeans (R1-Beginning Bloom to R2-Full Bloom stage): Environmental stress from R3 through R6 (Full Seed) will reduce yield more than any other time. R4 (Full Pod) is the most crucial period.

Avg. daily water use from July 8 – July 14 was 0.17"-0.26".

July 8-July 14 (16 of 16 NAWMN sites reporting): Average weekly rainfall was 4.88 (range 1.45 to 9.00). Average weekly ET for corn was 1.53 and for soybeans was 1.70.

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
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.
R3	Milk	The kernels display a yellow color on the outside. Inner fluid is milky white. Silks are brown and dry or becoming dry.

Soybean Stage		DESCRIPTION
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.
R3	Beginning Pod	At least one pod of 3/16" length is present at any one of the four upper most main stem nodes. It is not uncommon to see pods of greater length at the lower nodes.

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 18, 2019, 8:00 AM	*1 Year Ago*
Capacity of Lake McConaughy	**91.6%**	**NA**
Inflows to Lake McConaughy	**1625 cfs**	**1356 cfs**
Flows on the North Platte at North Platte	**340 cfs**	**976 cfs**
Flows on the South Platte at North Platte	**676 cfs**	**302 cfs**
Flows on the Platte at Overton	**759 cfs**	**2069 cfs**

Water mingles with every kind of natural phenomenon; and more than one might imagine, it has also mingled with the particular destiny of mankind.

- Fernand Braudel (Memory and the Mediterranean)

Websites of Interest

Soil Health: *www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/*

Climate	*agclimatenebraska.weebly.com*
NRCS Nebraska	*www.ne.nrcs.usda.gov*
Central Irrigation District	*www.cnppid.com/*
TBNRD Home Page	*www.tribasinnrd.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:	July 5 – July 17	May 1 – July 17
Arapahoe 9.8 NNE:	**11.40**	**23.67**
Bertrand 6.1 mi. SE:	**10.90**	**22.43**
Holdrege 0.99 mi. E:	**8.09**	**21.32**
Minden 7.2 mi. W:	**5.84**	**17.90**
Minden 5.8 mi. E:	**7.46**	**18.75**

Average Rain for May-July in Holdrege = 11.32 Inches

WOWZA!!! WOWZA!!! WOWZA!!! WOWZA!!! WOWZA!!!

****** 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. ******

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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
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Holdrege, NE 68949
308-995-8601

Tri-Basin Natural Resources District

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308-955-6688

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