Tri-Basin Irrigator

Volume 19, Issue 2 *June 6, 2019*

Program Information

EQIP: Funds for 2019 contracts have been pre-approved or obligated. Should slippage funds become available, we will fund additional applications.

CSTWP: 2019 applicants are currently being interviewed and ranked. Ranking deadline is June 21st.

NSWCP: New funds come July 1st so get your irrigation applications in by August 31st in order to have first dibs.

ENERGY EFFICIENCY GRANT: Sign-up deadline for 2020 funds will be October 31, 2019. For more information contact Kelley at Rural Development at the Kearney USDA Service Center at 308-445-9837 or *KELLEY.MESSENGER@USDA.GOV*.

Calendar of Events

June 10: CNPPID 12 week irrigation run schedule starts
June 14: Flag Day
June 16: Fathers Day
June 18: TBNRD Board Meeting 1:30 PM - NOTE: This is a week later than the regular monthly schedule of the 2nd Tuesday of the month.
July 1: CNPPID Board of Directors Meeting 9 am

Tool to Determine Crop Water Use – Part 1

The **N**ebraska **A**gricultural **W**ater **M**anagement **N**etwork (**NAWMN**) is underway for the 2019 crop season across the Tri-Basin NRD. This network is a tool for participating and area producers to use when scheduling irrigations. The information gathered is used to determine how much soil moisture their crops are using. This information can be found on 2 websites listed on page 3 of this newsletter. They are under the "NAWMN Sites" portion of the section "ET Information Sites". If you get this via email, just click the links.

There are only 6 weather stations within or neighboring the entire NRD where producers can get crop water use information. This network adds 16 additional locations. See map on page 3. Having this information more localized allows producers to better determine what their crops are using for soil moisture. They also get to use their own crop stage of growth. Having these sites closer to a producers fields and being able to use their own crop stages, this network serves as an excellent tool in determining crop water usage by field. Knowing your crop water use allows you to better schedule irrigations which can mean more money in the bank, water for future generations, prevent leaching of nitrates into the water supply, etc. etc.

On page 3 of each Tri-Basin Irrigator issue, information from the prior two weeks will be provided for all 16 sites. Because this newsletter is sent bi-weekly, it's highly recommended to use the websites for the most accurate and current information. The websites are updated by Tuesday of each week. In the next issue of this newsletter, an example of using this network will be provided.

If you have any questions, call Curtis Scheele at 308-995-6121, Ext. 3 or email to *curtis.scheele@ne.usda.gov*.

Curtis's Column

Now is the Time to Install Soil Moisture Sensors:

If you have soil moisture sensors to install, now is the time to be getting them installed. You want to install these at emergence or shortly thereafter for the following reasons:

- This gives the sensors and surrounding soil time to gel by irrigation season so as to provide the most natural soil conditions in the field.
- This prevents the cutting of crop roots from taller crops, thus allowing all the roots to grow naturally around the sensors.
- This prevents the breaking of larger crops that get in the way causing potential crop voids in the field that can affect soil moisture uptake.

Accurate soil moisture readings can help you better schedule your irrigations, potentially saving you money.

If you are getting paid for sensors from EQIP or CSP contracts, you need to get these installed. If you don't have them yet, you need to be getting them so that they can be installed in a timely manner for 2019. Contact your local NRCS office for more information.

Soil Moisture Sensors, More Important When Wet:

We are starting the 2019 crop season with a full soil moisture profile. I've heard folks say, there's not a rush on installing sensors, it's wet so nobody is going to be irrigating anyway. Others have said if it stays wet, they won't need the sensors much so why have them. The mindset is if wet, we don't need sensors. Well the opposite is true and here's why:

1. Sensors need to be installed so they are as ready as ready can be when needed. See article above.
2. In dry years, the systems need to keep running to keep up with crop demands. Not much need for sensors when dry except for first and last irrigation.
3. In 2019, there will be a time when a decision will need made, irrigate or not? It's that first irrigation. Do we know when that is without sensors? We can deduct EvapoTranspiration (ET) each day but do we know how much moisture is in the soil and when to start deducting? Also, rains between now and first irrigation, how much entered the profile and to what depth? The same holds true as we turn off irrigation due to rains. When is it time to start irrigating again?
4. Soil water moves in the soil and can even move upward. As wet as the profile is in 2019, as crops start taking moisture, some moisture from below will creep up in the profile making the profile last a little longer than normal.
5. In wet years, roots will not go as deep. We need sensors to help us in knowing how deep our roots are so we know how to manage our irrigations due to a shallower profile.
6. Too much moisture in the soil reduces yields due to a lack of oxygen to the roots. Has the wet profile dried down enough before irrigation?
7. Not knowing moisture levels can leach out valuable nitrogen from rain or irrigation. One needs to know how much room in the profile is available for added moisture.

Sensors in wet years are much more valuable than in dry. If we don't know what's going on in the soil, it's tough to manage. Good management decisions are based on good information. The result can be money in the pocket.

CNPPID Notes

Current Platte Basin Water Supply:

Ongoing precipitation events; rain here and more snow in the high mountain areas, means the 2019 Platte Basin water supply continues to grow. Brian Fuchs; Climatologist for the National Drought Center and Martha Shulski; State Climatologist for Nebraska reported Tuesday (6/4) the next three weeks will be cool and wet in Nebraska and they are forecasting a cooler and wetter than normal period through July and August as well but with more variability than in June.

Upstream of Lake McConaughy, the North Platte Basin in Wyoming has three large Reclamation Reservoirs; Seminoe Pathfinder and Glendo. They are 72%, 80% and 106% full respectively. Tyler Thulin, Civil Engineer for Central reported to the Board on Monday (6/3) that flood pool releases of the Glendo water will likely begin this week. He also reported flows in the South Platte River are high and likely to increase as the Colorado snowmelt makes its way through the valley. South Platte water cannot be stored in Lake McConaughy but it can enter the Central Supply Canal at North Platte and be used to fill canals and deliver irrigation water to customers.

Lake McConaughy is at elevation 3258.1 ft. on Wednesday morning (6/5) or 6.9 ft. short of full capacity. There is space yet to store 203,100 acre-feet of water. On Wednesday morning, half of the 3,167 cfs inflow is being stored and half released to generate power and fill the irrigation canals for the scheduled season that begins on Monday, June 10th. There will likely be few if any deliveries in the next few weeks, however, with so much water in the system, we will keep the main canals topped off and ready to go. Canal seepage will be providing beneficial aquifer recharge in the tri-county area through this period.

Tri-Basin NRD News

Check Flowmeters Before Starting Irrigation:

We would like to remind producers to check the flowmeters on their wells before starting irrigation this season. It's a good idea to make note of the meter reading at the beginning of the season, to make sure it matches the reading from the end of last season. Checking the meter periodically throughout the season to make sure it is working properly benefits both Tri-Basin NRD and you, as an irrigator, so that you can keep accurate irrigation records. It is the responsibility of the producer to make sure the flowmeter is functioning properly during the irrigation season.

It has also come to our attention that producers who have Senninger brand flowmeters may want to make sure the batteries they are using are the correct size. These meters take lithium 3.6 volt batteries instead of standard 1.5 volt AA batteries. Using standard AA batteries will cause these flowmeters to not work properly.

Nebraska Extension Extras

Replant Decisions:

Saturated and/or flooded soil conditions have been common issues for fields this Spring. And, in some cases, flooded crop emerged zones may require replanting. Since these replant decisions may be challenging, our Nebraska Extension CropWatch at http://cropwatch.unl.edu has several research articles as decision tools.

Generally plants submerged under water for less than 1 day, there is usually no long-term damage. However, damage increases if the water becomes stagnant; and the plants remain under water for more than four days. For example, no seedling corn will likely survive after four-days of continuous flooding.

Roger Elmore, Nebraska Extension Cropping Specialist, provides the following check-list in the CropWatch "Replanting Corn: Things to Do and Think About."

New leaf growth will usually occur on recovering plants within 3-5 days after the flood with favorable temperatures. Wait up to a week after flooding to take field population counts.

Randomly calculate plant populations using zig-zag across fields 1/100 or 1/1000 of an acre method. Row length needed in feet to equal 1/1000th of an acre for 30-inch row spacing is 17.5 feet. Check the growing point for corn and soybeans for new regrowth after waiting 3-5 days after the severe event for final decisions. If the growing point is discolored and soft, the plant won't survive.

For soybeans, usually replanting is not advised if at least 60,000 plants per acre (non-irrigated) and 75,000 plants per acre (irrigated) populations are still viable. Nebraska Extension research irrigated soybean plots in 2018 at York compared 90K, 102K and 150K final plant stands of 60,000; 88,000; and 122,000 plants per acre with yields pegging 93; 94; and 97 bu/ac.

Wheat Plot Tour – June 20 – Alma – 5:00 p.m.

Terry and Travis Woollen are 2019 Nebraska Extension Wheat Varieties Performance West Central Test Plot cooperators. Their study field is located 5 miles north of Alma OR 18 miles south of Holdrege just east of the intersection of Highway 183 and 714 Road.

Although wheat acres have declined due to lower grain prices, interest in this crop have been gaining momentum as irrigators expand their rotations. Wheat is a strong crop to improve soil health and provide forage tonnage such as wheatlage & green chop; hay; straw and cover crops link.

Therefore, you are invited to attend a *free* Nebraska Extension Wheat Varieties Tour at Woollen's Field location on Thursday, June 20, 2019 beginning at 5:00 PM. Featured topics will include: "Wheat Varieties Selection – Robert Klein, UNL WC Crops Specialist; "Cover Crops after Wheat" – Mary Drewnoski. UNL Beef Systems Specialist; and "Manure & Nutrient Management following Wheat" – Todd Whitney, Nebraska Extension Cropping Educator. A *free* prime rib sandwich supper & refreshments will be provided compliments of Schnuerle Seeds.

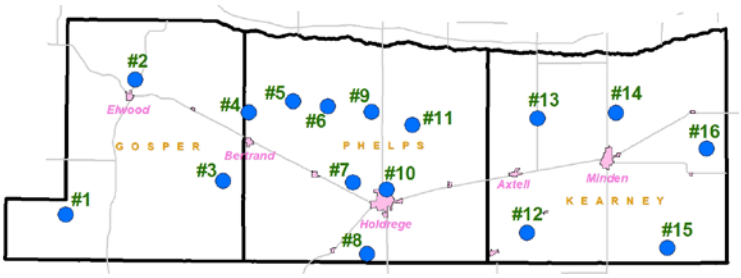
This year's plot features 48 hard red winter wheat varieties including: Rugged; Wolf, Monument; Grainfield; Whistler; Canvas; Eastwoodl Sunrise; Legend; Overland; Turkey; Revere; Winterhawk; Chrome; Avenger; Langin; Robidoux; Freeman; Settler; Ruth; Breck; and Tatanka. More information is available on the Nebraska Extension CropWatch website or see the attached promotional flyer for more details.

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

	May 20 – May 26		May 27 – June 2	
Site	Evaporation	Rain	Evaporation	Rain
1	0.60	3.75	1.20	1.08
2	1.00	3.82	1.50	2.29
3	0.80	4.40	1.10	0.54
4	NA	3.81	1.30	0.43
5	0.50	3.55	1.10	1.75
6	NA	NA	NA	NA
7	0.40	3.90	1.00	2.24
8	0.80	1.23	1.20	0.48
9	NA	NA	NA	NA
10	0.50	3.85	1.00	2.94
11	0.50	2.00	0.80	3.00
12	0.90	5.50	1.10	0.61
13	0.80	6.35	1.00	1.00
14	0.70	6.50	1.20	1.15
15	0.80	4.55	1.20	1.45
16	0.90	4.24	1.10	2.17



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 (Planted to V6-6 Leaf stage): Hail, wind, or frost that damages the exposed leaves at the 3-leaf stage have little or no effect on yield due to the below ground growing point. At about 5-leaf, the growing point and tassel is at or near the soil surface.

Avg. daily water use from May 27 – June 2 was 0.00"-0.08".

Soybeans (Not Planted to V1-1st Node stage): Loss of one cotyledon has little effect on plant growth, but both can reduce yields 8-9%. After V1, photosynthesis by the developing leaves is adequate for the plant to sustain itself.

Avg. daily water use from May 27 – June 2 was 0.00"-0.04".

May 27-June 2 (16 of 16 NAWMN sites reporting): Average weekly rainfall was 1.51 (range 0.43 to 3.00). Average weekly ET for corn was 0.19 and for soybeans was 0.21.

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
V4	4 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.
V6	6 Leaves	
V8	8 Leaves	

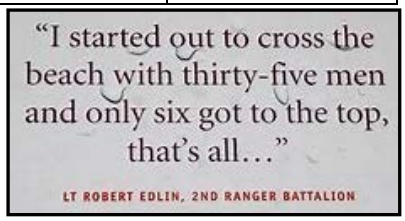
Soybean Stage		DESCRIPTION
VC	Cotyledon	Shortly after emergence. Cotyledons and unifoliate leaves are unfolded. (1 node)
V1	First Node	One trifoliate leaf has 3 leaflets. V1 is the first trifoliate leaf with unrolled or unfolded leaflets. Leaflet edges are no longer touching. (2 nodes = 1 unifoliate + 1 trifoliate)

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 6, 2019, 8:00 AM	*1 Year Ago*
Capacity of Lake McConaughy	**88.5%**	**NA**
Inflows to Lake McConaughy	**NA cfs**	**939 cfs**
Flows on the North Platte at North Platte	**NA cfs**	**347 cfs**
Flows on the South Platte at North Platte	**NA cfs**	**963 cfs**
Flows on the Platte at Overton	**NA cfs**	**2148 cfs**

D-Day
June 6, 1944
75th Anniversary
Thank You is not enough to all those who fought and died for America, other nations, and the world.



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:	May 23 – June 5	May 1 – June 5
Arapahoe 9.8 NNE:	**4.06**	**6.84**
Bertrand 6.1 mi. SE:	**4.76**	**6.94**
Holdrege 0.99 mi. E:	**5.72**	**8.39**
Minden 7.2 mi. W:	**5.66**	**7.78**
Minden 5.8 mi. E:	**5.81**	**8.56**

Average Rain for May in Holdrege = 4.06 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

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

N EXTENSION

WHEAT VARIETY TEST PLOT TOUR

JUNE 20, 2019

5:00 PM

ALMA, NE

PLOT LOCATION:
5 miles North of Alma
at the intersection of Hwy 183 & 714 Road
Terry Woollen & Travis Woollen, Cooperators

48 Wheat Varieties including:
Rugged, SY Wolf, SY Monument,
Whistler, Winterhawk, Turkey, Breck, SY Sunrise,
Crescent AX, Scout 66, etc.

Variety Discussion and Field Plot Comments
Robert Klein, Nebraska Extension Cropping Specialist

Cover Crops After Wheat
Dr. Mary Drewnoski, Nebraska Extension Beef Systems Specialists

Manure and Nutrient Management following Wheat
Todd Whitney, Nebraska Extension Cropping Systems Educator

Prime Rib Sandwiches & Refreshments Provided by Schnuerle Seeds