Tri-Basin Irrigator

Volume 16, Issue 7 *July 28, 2016*

Program Information

EQIP, CSP, and ACEP:

EQIP – A targeted sign-up cutoff date for 2017 funds is October 21, 2016.

NSWCP: Applications can be taken 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

July 28-30: Gosper County Fair
Aug 1: CNPPID Board of Directors Meeting – 9 am
Aug 4: Corn Disease Update at 1:00 PM at the 4H Exhibit Building at Dawson County Fairgrounds in Lexington. See enclosed (postal-mail) / attached (e-mail) flyer.
Aug 9: TBNRD Tour and Board Meeting – 1:30 PM
Aug 11: Cover Crop Field Day near Lexington – 9:30 AM See enclosed (postal-mail) / attached (e-mail) flyer.

2012-2014 Pivot Irrigation Comparison – More from Issue #5 & #6

This comparison is on two pivots on a ½ section farmed exactly the same. It is all no-till. The only difference in the two pivots is how they are managed for irrigation.

I want to tie my observations from the line graph on the right side of this page to some work Steve Melvin, then UNL Extension Educator, did a few years back.

From 1996-2001 Steve did research at six sites, Arapahoe, Elsie, Dickens, Benkelman, North Platte, and McCook with different soils. Over the course of 6 years the following ***Table 1*** shows average yield and average water applied for all six sites.

Table 1	Producer Watered	Watered to meet ET	Water Miser	Deficit
Water Applied (Inches)	12	10.7	8.4	6.2
Yield (Bushels)	191	193	185	171

From 2003-2007, he did the same thing minus the producer information for Holbrook, Culbertson, Holdrege, Curtis, Arapahoe, Loomis, and Bartley. See ***Table 2*** below for these results.

Table 2	Producer Watered	Watered to meet ET	Water Miser	Deficit
Water Applied (Inches)		8	7.1	4.9
Yield (Bushels)		195	197	180

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Curtis's Column

NRCS

2012-2014 Pivot Irrigation Comparison – More from Issue #5 & #6:

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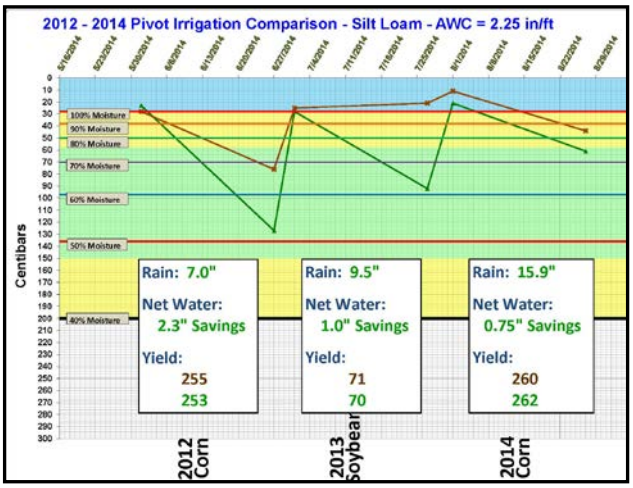
From ***Table 2*** (2003-2007) I want to average just Holdrege and Loomis which were both on a Holdrege Silt Loam soil. See ***Table 3*** below.

Table 3	Producer Watered	Watered to meet ET	Water Miser	Deficit
Water Applied (Inches)		5.4	4.2	2.9
Yield (Bushels)		222	223	223



Now, I will take the 2012 (dry year) and 2014 (wet year) for corn from my line graph above and average those out and put those in a table for comparison with Steve Melvin's work. There is no Water Miser or Deficit. This is simply an observation. See ***Table 4*** below.

Table 4	Producer Brown Line	Producer Green Line
Water Applied (Inches)	13.0	11.4
Yield (Bushels)	258	258

The point in all of this is, in doing different things at different times, the result still shows that there is room to save a couple of inches of water without hurting, maybe even increasing yield. Utilizing soil moisture sensors can help monitor soil moisture.

REMINDER!!!

SAM Registration Renewal

Website link located on page 4.

CNPPID NOTES

Kingsley Dam is rededicated at 75-Year Anniversary:

There was a full lake behind Kingsley Dam Saturday, July 22nd for its 75th Anniversary re-dedication. People came from far and wide to celebrate, including the children, grandchildren, great and great-great grandchildren of the men who built this impressive structure. The children spoke of the prosperity that came to their families as their employed fathers helped build Kingsley. So many farm families connected to the project water have been blessed beyond measure; many owe generational success to Kingsley Dam and the Big Mac water that has irrigated crops and recharged wells for 75 seasons. The chain of lakes created by the project has provided benefits for Nebraska water recreation and wildlife habitat in a big way. And, affordable hydro-electric power ushered in a new way of life for our rural communities and farms. We salute the visionaries, political leaders, lawyers, bankers, engineers, surveyors, construction workers, and all others that brought this project to completion. Well done gentlemen, very well done.

TRI-BASIN NRD NEWS

Irrigation Season Reminders:

Our staff has been busy this summer with routine chemigation inspections. Staff and our summer interns have also been busy taking samples from irrigation wells for our Water Quality testing program. Both of those programs should be wrapping up in the next couple of weeks.

We would like to remind you to periodically check your irrigation flowmeters to make sure they are working correctly. If you want to make sure your flowmeter is reading accurately, our staff or Curtis Scheele at the NRCS office can check flow rates using an ultrasonic flowmeter.

If you have a meter repaired during the irrigation season, it is a good idea to note the meter reading before operating that irrigation equipment. If we have that meter reading, it will be easier to reconcile any movement of the propeller when it was detached from the system. If you have questions about reinstalling your flowmeter or your meter readings, contact our office at 1-877-995-6688.

NEBRASKA EXTENSION EXTRAS

Late Season Corn Fertilization:

Area corn fields are mostly completely tasseled and shifting from vegetative to reproductive growth. So, producers may be wondering if late season fertilizer application is recommended? This is especially true with replanted corn fields in the Bertrand and Loomis region hit especially hard with late June hail events delaying growth stage progress. Usually, nutrient deficiency during corn pollination will have a strong probability of lowering ear kernel set with severely tipped back corn ears and smaller kernel sizes & ear girth. Whether side-dressing or chemigation is delayed, producers should still follow the "4R's" "(right source, right rate, right time and right place).

Six critical nutrients are usually the focus of most corn fertility studies: nitrogen (N); phosphorus (P); potassium (K); sulfur (S); zinc (Zn); and boron (B). At tasseling, the corn crop generally has taken up 73% of needed nitrogen and 85% of its needed potassium. In contrast, about half of the phosphorus and sulfur corn plant uptake will occur after the corn tasseling (VT/R1) stage. The zinc and boron micronutrients are favored by shorter intense periods of intake compared to the other four nutrients; but plant usage rate of Zn and B plateaus at the tasselling stage. Then, usage remains relatively constant similar to phosphorus and sulfur. Peak boron uptake usually pegs around the corn dent (R5) stage.

Over the next three weeks (following tasseling), the plants will cease rapid growth for one week and then focus on ear development for two more weeks. During these early stages of ear development, nutrient uptake slows as the plant shifts from producing leaves to producing grain. Then, between two and five weeks after pollination (roughly blister to full milk/dent kernel development stages), kernel fill proceeds rapidly until nutrient update is completed. At this time the root system will begin to senesce and die off as the lower leaves also die back.

Late-season corn nitrogen application studies at the University of Purdue demonstrated that corn can recover from significant nitrogen deficiency stress with side-dress nitrogen applications as late as V13 to V15 (prior to tasseling). This research further suggests that when nitrogen deficiency occurs due to saturated soils and ponding of fields, the resulting corn stands are often also compromised due to root damaged by the excessive soil moisture. Under these challenging conditions, corn may not respond as strongly to late applied nitrogen. Consequently, late-season nitrogen applications to severely nitrogen deficient corn should be limited to no more than 50 pounds of nitrogen per acre.

Dr. Charles Shapiro, Nebraska Extension Soil Scientist, advises using the UNL NebGuide, "Chlorophyll Meter to Improve N Management," (G1632) for crop canopy sensors nitrogen management. For those without sensors, Dr. Shapiro suggests walking through suspect fields and examining lower leaves for nitrogen deficiency visual signs such as yellowing lower leaves from the tip to the stalk in a V-shaped pattern. Through tasselling, the entire corn plant should be green.

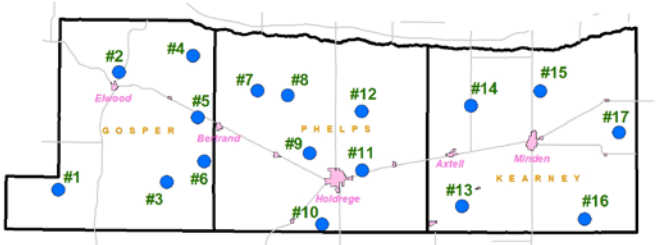
Although nitrogen can be applied at any time, Dr. Shaprio advises that corn nitrogen uptake reaches just over 70% of the total nitrogen by R1 (pollination) for normal growing corn. If it is nitrogen deficient, partial remediation is possible, if application is not delayed. After the R1 corn stage, nitrogen in the leaves moves to the grain, so some yellowing of the bottom leaves is normal. However, if all plant corn leaves stays green until physiological maturity (black layer kernel stage), this is likely a sign that the field was over fertilized.

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 11 – July 17		July 18 – July 24	
Site	Evaporation	Rain	Evaporation	Rain
1	1.40	0.58	1.70	0.36
2	1.50	1.45	1.70	0.71
3	1.60	0.60	2.00	0.00
4	1.60	1.00	1.60	0.19
5	1.60	1.35	1.70	0.07
6	1.50	1.60	1.90	0.00
7	1.30	1.50	1.50	0.00
8	1.40	1.00	1.60	0.05
9	1.70	1.35	1.90	0.00
10	1.70	0.94	2.10	0.00
11	1.50	1.30	1.80	0.00
12	1.30	1.08	1.40	0.03
13	1.70	0.80	1.60	0.10
14	1.50	0.67	2.00	0.03
15	1.40	0.71	2.10	0.00
16	1.70	0.49	2.20	0.00
17	1.70	0.58	1.90	0.50



2016 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 (R1--Silking to R2-Blister stage): We are at the peak water use stages of corn. Nitrogen and Phosphorous uptake is rapid. Environmental stress at this time can greatly reduce yield.
Avg. daily water use from July 18 – July 24 was 0.22"-0.35".

Soybeans (R3-Beginning Pod 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 18 – July 24 was 0.18"-0.35".

July 18–July 24 *(17 of 17 NAWMN sites reporting): Average weekly rainfall was 0.12 (range 0.00 to 0.71). Average weekly ET for corn was 2.01 and for soybeans was 1.86.*

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
R2	Blister	The kernels are white on the outside and resemble a blister in shape. 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
R3	Beg. Pod	At least one pod of 3/16" length present at any one of the four upper most main stem nodes having a fully developed leaf. It's not uncommon to see longer pods at the lower nodes.
R4	Full Pod	At least one pod of 3/4" length present at any one of the four upper most main stem nodes having 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.

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.

	July 26, 2016, 8:00 AM	*1 Year Ago*
Capacity of Lake McConaughy	**95.7%**	**NA%**
Inflows to Lake McConaughy	**718 cfs**	**1341 cfs**
Flows on the North Platte at North Platte	**1496 cfs**	**489 cfs**
Flows on the South Platte at North Platte	**311 cfs**	**1733 cfs**
Flows on the Platte at Overton	**1338 cfs**	**954 cfs**

Life is what we make it, always has been, always will be.

- Grandma Moses

Websites of Interest

SAM Registration	*www.sam.gov*
Climate	*agclimatenebraska.weebly.com*
NRCS Nebraska	*www.ne.nrcs.usda.gov*
Central Irrigation District	*www.cnppid.com*
TBNRD Home Page	*tribasinnrd.org*
Farm Service Agency	*www.fsa.usda.gov*
UNL Cropwatch	*cropwatch.unl.edu*
UNL Extension	http://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 *http://nerain.dnr.ne.gov/NeRAIN/docs/report.asp*.

Location:	July 14 – July 25	May 1 – July 25
Arapahoe 6.9 NW:	**0.45**	**8.79**
Bertrand 6.1 mi. SE:	**1.57**	**10.50**
Funk 4.1 mi. NNE:	**0.72**	**5.91**
Minden 0.855 mi. W:	**0.39**	**4.33**
Minden 8.8 mi. ESE:	**0.62**	**4.34**

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@ne.usda.gov. ******

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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
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308-955-6688

Nebraska Extension

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