Tri-Basin Irrigator

Volume 16, Issue 9 *August 25, 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. The Tri-Basin NRD has suspended approval of NSWCP applications for all practices except flow meters and soil moisture sensors until January 2017, due to a shortage of cost-share funds. Flow meter and soil moisture sensor applications will continue to be funded monthly. Applications must be signed by the owner. Installation work cannot be started until approved.

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

Sept 1: Cover Crop Plot Tour & Field Day near Bladen – Goto http://www.notill.org/upcoming-events for link and more information.
Sept 6: CNPPID Board of Directors Meeting – 9 am
Sept 13: TBNRD Board Meeting – 7:30 PM
Aug 26-Sept 5: Nebraska State Fair – Goto http://www.statefair.org/ for more information.
Aug 29: CNPPID 12 week irrigation run schedule ends.
Sept 13-15: Husker Harvest Days – goto http://huskerharvestdays.com/ for more information.

How much water did I apply in 2016?

As irrigation season comes to an end, you can read your flow meters and calculate how much water was pumped in 2016. Flow meters vary as to their unit outputs (ac-in * 0.01, gallons * 100, ac-ft * 0.001, etc.). You simply subtract your beginning year reading from the ending year reading to get gross water pumped. See chart below to convert flow meter units to inches. Gross inches pumped is what's used for allocations, irrigation reports, etc. For your own information, you can multiply gross inches pumped by an efficiency factor to calculate net water applied to the crop.

1. Acre-Inches / Acres = Inches Pumped
2. Gallons Pumped / 27,154 / Acres = Inches Pumped
3. (Acre-Feet * 12) / Acres = Inches Pumped

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4. Inches Pumped x Efficiency Factor* = Net Inches Applied

*Efficiency Factors
Subsurface Drip Irrigation = 0.95
Pivot - low pressure drops = 0.90
- med. & low pressure impacts = 0.85
- high pressure = 0.80
Surge Valve = 0.80
Gated Pipe - with reuse = 0.7
- without reuse = 0.5

Curtis's Column

NRCS

A Last Non-Irrigation Challenge on Corn:

My observations have been that free moisture is being left in the soil at years end. Using the NAWMN sites as a representation of the NRD, Table 1 below shows moisture levels for corn on silt loam soils at Black Layer for the previous five years. The goal is to get to 40% moisture at years end. At 40%, there is 34% available moisture left in the soil at seasons end on average (74% avg. minus the 40% goal). That is 3.06 inches of free moisture not being utilized.

If it's not too late, I challenge you to not run that pivot when you want to get that last 0.5-1.0 inch on. Just run it part way around depending upon how you can capture a reliable yield difference with yield monitor and map. Doing this can teach us if that last watering made a difference. How will we learn without trying. Afterall, on average, there is 3.06 inches in the profile to use and possibly at least another 0.33 inches of rain. If you try, I would like to see the results.

Year	Average Moisture to 4 Feet at Black Layer	Average Rainfall from 1/2 Milk Line to Black Layer
2015	74%	0.53 Inches
2014	88%	1.25 Inches
2013	72%	0.73 Inches
2012	62%	0.36 Inches
2011	72%	0.64 Inches
Average	74%	0.70 Inches

Table 1: This table shows average soil moisture levels at Black Layer for corn on silt loam soils for each of the last five years across the Tri-Basin NRD. It also shows average rainfall from 1/2 milk line to Black Layer.

Predicting Last Irrigation

	Growth Stage	Approx. Days to Maturity	Water Use To Maturity
Corn	Dough (R4)	34	7.5"
	Beg. Dent (R4.7)	24	5.0"
	¼ Milk Line (R5)	19	3.75"
	½ Milk Line (Full Dent)	13	2.25"
	¾ Milk Line	7	1.0"
	Maturity (R6)	0	0.0"
Soy Beans	Full Pod (R4)	37	9.0"
	Beg. Seed (R5)	29	6.5"
	Full Seed (R6)	18	3.5"
	Leaves Beg. To Yellow (R6.5)	10	1.9"
	Beg. Maturity (R7)	0	0.0"

REMINDER!!!

SAM Registration Renewal

Website link located on page 4.

CNPPID Notes

Palmer Amaranth:

Palmer Amaranth has become a nightmare for area soybean producers in 2016. It is aggressive, highly adaptable and prolific according to the Purdue University Extension paper WS-51: *Palmer Amaranth Biology, Identification, and Management*. Purdue and/or UNL Extension describe the issue further.

This weed may be resistant or tolerant to both glyphosate and ALS herbicides. Its seeds are small and likely spread from infected areas to new ones by farm machinery but can also be relocated by wind, humans, wildlife and cattle or manure.

The plants are either male or female and the seeds will be mature very soon. Multiple seed heads per plant can be 30 inches long and produce 100,000 to 500,000 tiny black seeds in a season. The plant competes aggressively with crops for water and for sunlight by elongating the main stem rapidly. It becomes herbicide resistant quickly and emerges continuously throughout the season. Two studies cited in the Purdue paper showed that crop yield decreases of 91% in corn and 79% in soybeans are possible without control. Purdue suggests an all-out war on this weed by all producers in an area and to maintain control by; reducing competition early in the season, prevent every plant from producing seed and avoid spreading the seed. The Purdue paper includes an extensive list of chemical treatment options that might be worth your time to read (found online or I can send you a copy). Other suggestions from them; crop rotation, deep tillage, a cereal rye cover crop to suppress emergence, hand rogueing and composting or burning pulled plants outside of the field, keeping ditches and field borders clean and harvesting the worst fields last to avoid bringing seeds into cleaner areas.

Tri-Basin NRD News

Reminders for the End of Chemigation:

Chemigation Inspection Follow-Up Appointments:

If you had a chemigation system fail inspection and have received a postcard about scheduling a follow-up inspection, call our office at 1-877-995-6688 as soon as possible to set up an appointment. **These systems must pass an inspection this season in order to be eligible for renewal in 2017.**

Drain Your Chemigation Check Valve:

When you are preparing your irrigation systems for colder weather, remember to drain your main line check valve to prevent freezing. This will extend the life of the check valve and may help prevent check valve failure.

Nebraska Extension Extras

Fall Corn Stalk Nitrate Testing:

Late growing season corn stalk nitrate testing has been used as a reliable end-of-season crop nitrogen use efficiency tool. Also, when chlorophyll meters are utilized in conjunction with end-of-season stalk nitrate-N tests, site-specific field nitrogen fertilizer recommendations may be improved for the next growing season. Fall stalk testing may provide feedback regarding whether the crop received the right amount of nitrogen when needed during the growing season.

As corn commodity prices continue dropping significantly, economic optimal nitrogen rates will likely be a high priority for the upcoming growing season. Groundwater nitrate levels are also an on-going environmental concern reinforcing the importance of not over-fertilizing crops. On the flip-side, producers should not under-fertilizer corn resulting in lower yields and reduced economic returns.

To conduct the stalk nitrate test, collect stalk samples similar to how you would collect soil samples. Generally, samples are taken when corn growth stages are between ¼ milk line (silage harvest stage) corn ear development and up to 3 weeks after corn kernel black-layer development. Harvest stalks from representative areas removing the sheaths. Avoid sampling diseased stalks; hail or insect damaged stalks; and disregard stalks without an ear or extremely small ears.

Cut 8-inch stalk samples using a hand pruner with the lower stalk cut at 6 inches above the soil surface and the upper cut being 14 inches above the ground. It is recommend to collect at least 15 stalks per lab sample test. Keep the samples cool and clean as you work. After the samples are collected, they can be cut into shorter pieces to promote drying. Then, wrap samples in paper (rather than plastic) to avoid mold growth; and mail to the testing laboratory as soon as possible for nitrate analysis.

End-of-season nitrate-N stalk levels above 2,000 ppm may indicate a “red” flag warning as the corn plants still have high nitrogen content. When more nitrogen is applied than the crop actually uses; a potential result is nitrate leaching below the roots and eventually into groundwater. Fields that tend to have high stalk nitrate levels are those where corn fields followed alfalfa; manure applied fields and/or areas where excess nitrogen fertilizer was applied. Also, hybrid corn production fields sometimes are over fertilizer when fertilizer rates have not been adjusted lowered to account for male rows destruction. Based on corn grain nutrient contents of 1.12 to 1.35 pounds of nitrogen removed per bushel of grain production. Therefore, when hybrid corn yields are generally 1/3 of standard irrigated corn yields, in-season target nitrogen rates per acre for hybrid corn production should be lowered accordingly.

If the stalk nitrate test results range from 700 to 2,000 ppm nitrate-N, then the nitrogen management program was likely near optimum. Conversely, if the stalk samples tested low (below 250 ppm) or marginal (250 – 700 ppm); then there is a strong probability that the crop lost yield due to lack of nitrogen.

Based on stalk nitrogen tests results, corn field managers may then make decisions for the upcoming growing season as a somewhat post mortem on this season. Were potential yield targets set too low for the field being evaluated? Was too much nitrogen lost during pre-season nitrogen applications? Were mid-season nitrogen leaf tissue reading correctly calibrated? Do research results support these new nitrogen rate decisions?

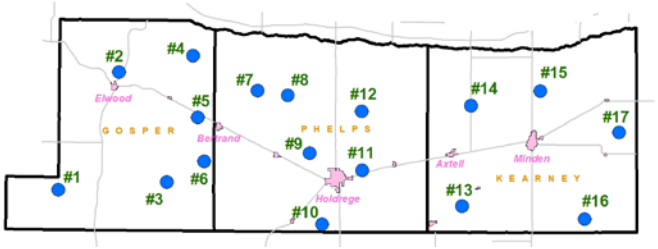
More information regarding corn stalk nitrate-N testing is available in “The Corn Stalk Nitrate Test” Nebraska Extension NebGuide publication NF01-49 through our Nebraska Extension website http://cropwatch.unl.edu.

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

	Aug 8 – Aug 14		Aug 15 – Aug 21	
Site	Evaporation	Rain	Evaporation	Rain
1	1.70	0.38	1.80	0.30
2	1.40	0.22	1.60	0.25
3	1.30	0.00	1.50	0.20
4	1.20	0.45	1.30	0.18
5	1.30	0.34	1.30	0.15
6	1.50	0.00	1.30	0.20
7	1.20	0.10	1.20	0.00
8	1.20	0.38	1.30	0.09
9	1.40	0.00	1.70	0.20
10	1.60	0.05	1.60	0.15
11	1.40	0.10	1.40	0.00
12	1.20	0.08	1.20	0.24
13	1.30	0.30	1.40	0.44
14	1.50	0.22	1.40	0.67
15	1.30	0.05	1.40	0.48
16	1.85	0.06	1.65	1.00
17	1.40	0.08	1.60	1.26



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 (R4.7-Beginning Dent to R5.5-Full Dent (1/2 Milk Line) stage): Stress at R5 will reduce yield by kernel weight, not kernel number. At the beginning of R5, kernels have about 55% moisture.
Avg. daily water use from Aug 15 – Aug 21 was 0.18"-0.28".

Soybeans (R5-Beginning Seed to R6-Full Seed stage): The rapid rate of dry weight and nutrient accumulation begins to slow in the whole plant shortly after R6, and in the seeds shortly after R6.5.
Avg. daily water use from Aug 15– Aug 21 was 0.19"-0.28".

Aug 15–Aug 21 *(17 of 17 NAWMN sites reporting): Average weekly rainfall was 0.34 (range 0.00 to 1.26). Average weekly ET for corn was 1.47 and for soybeans was 1.67.*

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
R5	1/4 Milk Line	All or nearly all kernels are dented. Starch line appears shortly after dent as a line across the kernel when viewed opposite the embryo side and will advance toward the cob.
R5.5	Full Dent - 1/2 Milk Line	The starch line is 1/2 the way down the kernel. Top 1/2 is hard, bottom 1/2 is softer near the cob.
R5.8	3/4 Milk Line	The starch line is 3/4 the way down the kernel, towards the cob.

Soybean Stage		DESCRIPTION
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.
R6.5	Yellow Leaf	Leaves begin to yellow, beginning in the lower canopy and progressing upwards.
R7	Beginning Maturity	At least one (normal) pod that has attained its final mature color (tan or brown, depending on variety) is present on any main stem node. 0.0 inches needed for yield.

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.

	August 25, 2016, 8:00 AM	*1 Year Ago*
Capacity of Lake McConaughy	**90.0%**	**NA%**
Inflows to Lake McConaughy	**2402 cfs**	**1361 cfs**
Flows on the North Platte at North Platte	**1655 cfs**	**1369 cfs**
Flows on the South Platte at North Platte	**213 cfs**	**417 cfs**
Flows on the Platte at Overton	**550 cfs**	**573 cfs**

He does best in God's great world who does his best in his own little world.

- Thomas Jefferson

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:	Aug 11 – Aug 24	May 1 – Aug 24
Arapahoe 6.9 NW:	**0.68**	**10.20**
Bertrand 6.1 mi. SE:	**0.85**	**12.61**
Funk 4.1 mi. NNE:	**1.17**	**7.71**
Minden 0.855 mi. W:	**1.32**	**6.64**
Minden 8.8 mi. ESE:	**1.17**	**6.14**

Average Rain for May-August in Holdrege = 14.21 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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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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Nebraska Extension

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