Tri-Basin Irrigator

Volume 16, Issue 8

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 6: CNPPID BOARD OF DIRECTORS MEETING – 9 AM SEPT 13: TBNRD BOARD MEETING – 7:30 PM AUG 23: Systems Approach to Cropping and Irrigation Management Field Day at the UNL West Central Research and Extension Center in North Platte. Goto

<u>HTTP://EXTENSION.UNL.EDU/STATEWIDE/WESTCENTRAL/MAIN_PDF/</u> 2016%20WATER%20%26%20CROPS%20Field%20Day%20BR <u>OCHURE.PDF</u> FOR BROCHURE WITH REGISTRATION INFO.

AUG 25: SOYBEAN FIELD PLOT TOUR AT BERTRAND. NEED TO REGISTER FOR FREE MEAL COUNT. SEE THE ARTICLE UNDER THE NEBRASKA EXTENSION EXTRAS SECTION ON PAGE 2.

AUG 25: SOIL HEALTH FIELD DAY AT CULBERTSON. SEE ATTACHED FLYER FOR MORE INFORMATION.

AUG 26-SEPT 5: NEBRASKA STATE FAIR. GOTO <u>HTTP://WWW.STATEFAIR.ORG/</u>FOR MORE INFORMATION. AUG 29: CNPPID 12 WEEK IRRIGATION RUN SCHEDULE ENDS. AUG 30 OR 31: SAFETY TRAINING AT CCC-COLUMBUS CAMPUS. SEE ATTACHED FLYER FOR MORE INFORMATION.

Preparing for Last Irrigation!

If corn is in dough, the chart to the right says you need 7.5 inches of water to get corn to maturity. Soybeans at Full Pod, you need 9.0 inches. Some of the crops are further along than this. It seems like a long season is left. However, the end is just around the corner. If we don't start managing our soil moisture levels, the end will sneak up on us and we will end the season with more moisture than necessary. Especially if we catch some rain. Then there will be no room for off-season, FREE, moisture.

My observations the last number of years are that corn seems to shut down rather quickly. Moisture that we thought was going to be used was not. We've ended up with more moisture at maturity than predicted.

If you haven't already started utilizing the FREE subsoil moisture, you need to start. Monitor your crop stage, moisture levels, and root depth. Use the predicting example on this page.

CURTIS'S COLUMN



August 11, 2016

Predicting Last Irrigation:

Needed info: **1.** Available Water Capacity (AWC) of soil, **2.** current amount of plant available water to a four foot depth (unless roots are not that deep due to compaction, too much water early, etc.), **3.** current crop stage, and **4.** normal water use from current crop stage to maturity. This prediction assumes no rainfall to crop maturity. If rainfall occurs, the process must be reevaluated.

The following is a chart for normal water use requirements from various crop stages to maturity.

	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"
	1/2 Milk Line (Full Dent)	13	2.25"
	¾ Milk Line	7	1.0"
	Maturity (R6)	0	0.0"
Soy	Full Pod (R4)	37	9.0"
Beans	Beg. Seed (R5)	29	6.5"
	Full Seed (R6)	18	3.5"
	Leaves Beg. To Yellow (R6	6.5) 10	1.9"
	Beg. Maturity (R7)	0	0.0"

You can get a copy of NebGuide G1871 "Predicting the Last Irrigation of the Season" online at

http://extensionpublications.unl.edu/assets/pdf/g1871.pdf.

Predicting Last Irrigation Example

Crop: <u>Corn</u> Growth Stage: Beg. <u>Dent</u> Moisture: <u>80%</u> Water Use To Maturity (see chart on left side of page: 5.0 <u>in.</u> Soil Type: <u>Holdrege Silt Loam = an AWC of 2.25 in. per ft.</u> (Soil information available at your local NRCS office)

1. AWC x root zone (4 ft. depth) = 9.0 in. Total AWC

- Maximum water depletion of 60% x 9.0 in. = <u>5.4 in. of</u> maximum water depletion in 4 ft. root zone
- Current soil water already depleted (measured) = <u>1.80 in.</u> 80% avg. soil moisture to 4 ft. (20% avg. depletion) 0.20 x 2.25 in./ft. x 4 ft.
- 4. Remaining plant available water = <u>3.6 in.</u> (5.4 maximum water depletion minus 1.8 already depleted)
- 5. Irrigation requirement = $\frac{1.40 \text{ inches of irrigation water}}{1.40 \text{ inches of irrigation water}}$ (5.0 in. of water to reach maturity minus 3.6 in. of water available)

Note: This all assumes no rainfall. Should rainfall occur, the process needs to be repeated. It's also recommended to periodically check soil moisture & crop stages and repeat this process through crop maturity.

REMINDER!!! SAM Registration Renewal

Website link located on page 4.

CNPPID NOTES



New Employees and Position Changes at Central

Two Irrigation Service Specialists, Karl Boutwell and Justin Warning are replacing retiring Medium Equipment Operators and two new employees began delivering water on their former patrols in 2016. Nick Smith is serving customers taking water along the Phelps main canal from north of Funk to northeast of Minden. Bryon McDorman is serving customers on all of the north/south lateral canals coming off the Phelps main canal north of Holdrege and just to the east or west of Hwy 183.

Dave Zorn was hired to replace retiring Mark Peyton as Senior Biologist. Dave is administering Central's habitat management and biological research programs in Gothenburg.

Personnel changes have also occurred in the area of Land Management. Luke Ritz has replaced Kent Aden as Land Administrator; Kent has retired. Deanna Bartruff, a former Administrative Assistant in Land Management has taken a new job as a Land Administrator. Luke is housed in the Gothenburg Office and Deanna will remain in Holdrege; both will work with land and shoreline management issues at the lakes.

Josh Clark has been hired in the Holdrege Office as a Computer Systems Analyst. He will assist with all management components of Central's custom and packaged computer hardware and software, provide office support to staff and support the master and remote SCADA terminals.

Beth Ignowski has been hired as an Administrative Assistant in Holdrege and will replace Kristin Dorsey who is moving outof-state. Beth's job will include legal and contract work, and FERC, special project and emergency management support. We wish our new recruits and those in new positions long and rewarding careers with Central.

TRI-BASIN NRD NEWS

TBNRD Reminders Before Irrigation Season Ends:

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.

Irrigation Water Samples for Nitrogen Management Reports:

If you have crop ground in Phase 2 or Phase 3 of Tri-Basin NRD's Groundwater Quality Management Area, remember to take irrigation water samples. The sample results you get this

year will be used in completing your 2017 Nitrogen Management reports.

Year End Flow Meter Readings for Water Use Reports:

As the irrigation season winds down and you are picking up irrigation pipe or bedding down irrigation engines, remember to record the ending meter readings for your Water Use reports.



NEBRASKA EXTENSION EXTRAS

Soybean Plot Tour – Aug. 25th:

The Nebraska Extension On-Farm "High Yielding Soybean Field Plot Tour" is scheduled for Thursday, Aug. 25, 2016 beginning at 5:00 pm in the Community Center (small room) across from the Bertrand High School in Bertrand, NE. This educational meeting will focus on the Nebraska Extension On-Farm Research Plot hosted by Dennis Gengenbach on his farm between Bertrand and Smithfield.

Patricio Grassini, Nebraska Extension Agronomist, will kickoff this event the presentation: "How to produce 80+ bu/ac soybeans?" Now into the 2nd year monitoring of five statewide multi-year irrigation high-yielding soybean studies, Patricio will provide an overview of Gengenbach's research location using a soybean plot virtual tour format. (Special thanks to the Aurora COOP for using an unmanned drone to video the research plot). This On-Farm research study seeks to quantify more precisely when soybeans might respond to nitrogen fertilization & when to most efficiently supplement nitrogen. Maximizing sunlight capture for increasing yields will be another focus of Patricio's enhanced power point presentation.

Daran Rudnick, Nebraska Extension West Central Irrigation Specialist, will then provide his "Increasing Irrigation Efficiency" topic. Daran has initiated an in-depth comparison of soil moisture monitoring probes including capacitance probes; neutron probes; gypsum blocks; and electrical resistance soil moisture sensing devices. During his presentation, Daran will outline how these on-farm research studies may help local irrigators more efficiently manage their irrigation systems.

Herbicide resistant weed populations have been prominent during this growing season. Therefore, Todd Whitney, Nebraska Extension Educator, will next share best management practices (BMP) updates during this soybean plot tour update. In Nebraska, there are currently 17 known herbicide resistant weed species. Of these species, the early resistant weed species challenges have been waterhemp followed by kochia and marestail (horseweed). During this tour session, Todd will expand on the newest high concern with herbicide resistant (tolerant) Palmer amaranth.

This event is free for the public. As an added incentive for attendance at this public soybean field day, the Aurora COOP – Bertrand; Dow Chemical and Pioneer/Dupont Seeds (Scott Ford dealer) are providing a free meal. Therefore, pre-registration for meal count is very appreciated. Contact the Nebraska Extension – Phelps county office at 308-995-4222 to register. Last Corn Irrigation:

Corn "black layer" kernel development is approaching. Since this condition usually occurs when the grain moisture lowers to 30 to 35% moisture, this signals irrigators that crops have reached physiological maturity. At this stage, the kernel has reached maximum dry weight & irrigation season is closing.

Black layer begins on ear tips and progresses down the ear to the base. Although hybrids may vary on their physiological maturity, black layer usually occurs 55 to 65 days after corn silking or 33 days after the corn ear kernels reach the "dent" stage of development.

Nebraska Extension has three free tools available for determining the last few irrigation. First, the UNL Extension publication G1871, "Predicting the Last Irrigation of the Season," provides irrigation scheduling timing. Second, the UNL CropWater mobile App may eliminate over irrigation. This App calculates water stored using watermark sensor information and predicts end use water needs. Finally, the UNL CornSoyWater App provides free "last irrigation" recommendations.

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 25 – July 31		Aug 1 – Aug 7	
Site	Evaporation	Rain	Evaporation	Rain
1	1.10	0.15	1.40	0.18
2	1.20	0.78	1.20	0.00
3	1.00	0.75	1.70	0.00
4	0.90	0.95	1.10	0.13
5	1.20	0.93	1.10	0.00
6	0.90	1.10	1.50	0.00
7	1.00	0.50	1.40	0.05
8	1.20	0.60	1.20	0.17
9	1.30	0.70	1.50	0.00
10	1.30	0.67	1.40	0.46
11	1.20	0.30	1.40	0.05
12	1.10	0.15	1.40	0.13
13	1.20	1.05	1.20	0.42
14	0.90	0.75	1.40	0.06
15	1.20	1.42	1.20	0.00
16	1.50	0.56	1.50	0.11
17	1.00	0.43	1.60	0.50



2016 Map of NAWMN Sites across the Tri-Basin NRD.

Crop Coefficients (Kc)				
Corn		Soybeans		
Stage	Kc	Stage	Кс	
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 (1/2 Milk)	0.98	Yellow Leaf (R6.5) 1.00	
34 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 (R3-Milk to R4.7-Beginning Dent stage): At Beginning Dent, kernels are beginning to dent at the base of the ear. Full Dent is when the milk line is $\frac{1}{2}$ way down the kernel. Knowing this will help in determining last irrigation. Avg. daily water use from Aug 1 – Aug 7 was 0.17"-0.27".

Soybeans (R4-Full Pod to R5-Beginning Seed 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.

Avg. daily water use from Aug 1 – Aug 7 was 0.17"-0.27".

Agu 1–Aug 7 (17 of 17 NAWMN sites reporting): Average weekly rainfall was 0.13 (range 0.00 to 0.50). Average weekly ET for corn was 1.51 and for soybeans was 1.49.

ET INFORMATION SITES

NAWMN Sites:

http://www.cnppid.com/news-info/weatheretdata/nebraska-agricultural-water-management-network/ https://nawmn.unl.edu/ETdata/DataMap CropWatch: http://cropwatch.unl.edu/gdd-etdata

CNPPID: <u>http://www.cnppid.com/news-info/weatheret-data/</u> Water Use Hotline: 1-800-993-2507

Corn Stage		DESCRIPTION	
R4.7	Beg. Dent	Kernels at base of ear are beginning to dent.	
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 base of the kernel.	
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.	
Soybean Stage		DESCRIPTION	
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.	
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.	

AKE AND RIVER LEVELS

CNPPID Reservoir Elevation and Platte River Flow data listed below and other locations can be found on CNPPID's website at <u>http://www.cnppid.com/wp-</u>

content/uploads/2016/05/WPelevation_flows.html.

	August 11, 2016, 8:00 AM	1 Year Ago
Capacity of Lake McConaughy	92.3%	NA%
Inflows to Lake McConaughy	2436 cfs	1182 cfs
Flows on the North Platte at North Platte	1524 cfs	989 cfs
Flows on the South Platte at North Platte	258 cfs	564 cfs
Flows on the Platte at Overton	526 cfs	2414 cfs

The family is one of nature's masterpieces. - George Santayana

WEBSITES OF INTEREST

www.sam.gov agclimatenebraska.weebly.com www.ne.nrcs.usda.gov www.cnppid.com tribasinnrd.org www.fsa.usda.gov cropwatch.unl.edu http://extensionpubs.unl.edu/ www.ksre.ksu.edu/sdi www.notill.org

RAINFALL

CENTRAL

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:	<u> July 28 – Aug 10</u>	<u> May 1 – Aug 10</u>
Arapahoe 6.9 NW:	0.40	9.19
Bertrand 6.1 mi. SE	. 0.44	11.76
Funk 4.1 mi. NNE:	0.29	6.54
Minden 0.855 mi. W	. 0.28	5.32
Minden 8.8 mi. ESE	. 0.44	4.97

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. ***

309 Smith Street

Elwood, NE 68937-0041

308-785-3307, Ext. 3

PO Box 41

USDA - Natural Resources Conservation Service

1609 Burlington Street PO Box 798 Holdrege, NE 68949-0798 308-995-6121, 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

Elwood, NE 68937

PO Box 146

308-785-2390

1005 South Brown Street Minden, NE 68959-2601

308-832-1895, Ext. 3

424 North Colorado PO Box 31 Minden, NE 68959 308-832-0645

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JAFELY I KAINING

2 dates to choose from August 30 or August 31

TOPICS OF DISCUSSION

- Entanglements
- Fall Hazards and Protection
- Grain Bin Entry
- Agricultural Confined Spaces

August 30 or August 31

8:30 am to 5:00 pm CCC-Columbus campus Rooms 176-177 West Education Center Cost: \$10.00 per person

Registration deadline:

Register by August 23rd.





Sponsored By:







Soil Health Field Day

Soil Health Workshop focused on using diverse rotations to achieve maximum soil health

August 25

Hitchcock County Fairgrounds Culbertson, Nebraska

8:00-8:30 - Registration

- 8:30-9:30 Rainfall Simulator Candy Thomas, NRCS
- 9:30-12:00 Field Tour, Soil Pit, Grazing Tools
- 12:00 Lunch at Fairgrounds
- 1:00-1:30 Grazing Forages John and Jake Miller
- 1:30-2:15 Cover Crop Management and Uses Michael Thompson
- 2:15 Increased Soil Function Decreases Dependency on Chemical Inputs – Ray Archuleta, NRCS

RSVP by August 18 to 308-350-0034 or lazyjmranch@gmail.com

Sponsors:

Middle Republican Natural Resource District





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Natural Resources Conservation Service