Tri-Basin Irrigator

Volume 21, Issue 9 **September 2, 2021**

Program Information

EQIP: Sign up anytime for 2022 funds.

CSP: sign up anytime for 2022 funds.

NSWCP: Next round of approvals for irrigation applications need to be signed by the owner and submitted to NRCS prior to December 3, 2021.

ENERGY EFFICIENCY GRANT: Signup anytime for 2022 funds. Deadline is October 31, 2021. For more information contact Kelley at Rural Development at the Kearney USDA Service Center at 308-455-9837 or kelley.messenger@usda.gov.

Calendar of Events

Sept 6: Labor Day – Gov't offices closed
Sept 7: CNPPID Board Meeting
Sept 14: TBNRD Annual Tour and Board Meeting
Sept 14-16: Husker Harvest Days – For more info, goto: https://www.huskerharvestdays.com/en/home.html

How Much Water did I Apply in 2021?

As irrigation season comes to an end, you can read your flow meters and calculate how much water was pumped in 2021. Flow meters vary as to their unit outputs (ac-in * 0.01, gallons * 100, etc.). Simply subtract your beginning year reading from the ending year reading to get gross water pumped. See chart below to convert units to inches. Gross inches pumped is used for allocations, irrigation reports, etc. You can multiply gross inches pumped by an efficiency factor to calculate net water applied to the crop.

How to Calculate Gross Inches Pumped

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

How to Calculate Net Inches Applied to the Crop

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

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

CSP and EQIP REMINDERS!!!

1. **Submit to your local NRCS office your fertilizer, pesticide, irrigation, etc. records by mid-September.**

Curtis's Column

USDA United States Department of Agriculture
Natural Resources Conservation Service

** CSP Participants **

Leaf Tissue Samples did not get done.
Still time to complete Stalk Tests.

If you did not complete your required Leaf Tissue Samples in a timely manner, you can still get paid for your nutrient enhancement by completing the Stalk Test. Here are the Stalk Test requirements.

- **--- 1 sample per 40 acres**
- **--- Samples must be taken 1-3 weeks after black layer has formed on 80% of the kernels**
- **--- A sample consists of fifteen 8-inch stalk segments taken 6 inches above the ground**
- **--- Send samples to a lab for analysis**
- **--- Provide the analysis reports to your local NRCS**

Predicting Last Irrigation Chart

See the last issue of the Tri-Basin Irrigator for more information.

	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"

Last Irrigation???

Below is some guidance for last irrigation when your crop is at the stage mentioned. For a goal of ending the season at 60% moisture to a 4-foot depth, this chart tells you how much moisture is needed to finish the crop based on what percent moisture you are at when your corn is at the stage mentioned.

As I finish writing this, it's raining and looks like it potentially could rain all day. So most, if not all, are probably done with irrigation. But rains have been spotty, so just in case, sending anyway.

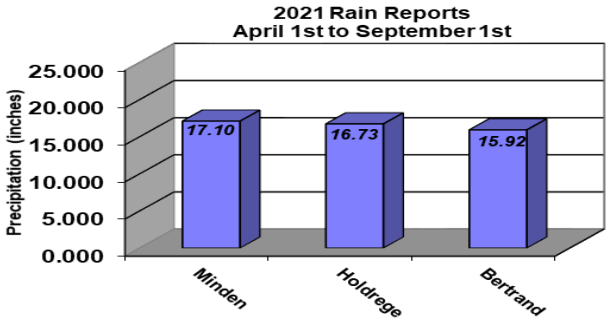
Corn: 1/2 Milk Line (Full Dent) - Holdrege Silt Loam
Needs 2.25 inches - Calculations to 4 feet of depth
Goal: 60% moisture at seasons end
90% Moisture: Done
80% Moisture: Needs 0.45 Inches
70% Moisture: Needs 1.35 inches
60% Moisture: Needs 2.25 inches

Soybean: Leaves begin turning yellow - Holdrege Silt Loam
Needs 1.90 inches - Calculations to 4 feet of depth
Goal: 60% moisture at seasons end
90% Moisture: Done
80% Moisture: Needs 0.10 Inches
70% Moisture: Needs 1.00 inches
60% Moisture: Needs 1.90 inches

CNPPID Notes

Irrigation Season Ending

The scheduled irrigation season has ended at Central Nebraska Public Power & Irrigation District for the 2021 irrigation season. The 2021 season brought a decent amount of "timely" rainfall to the area, compared to other parts of the country. The following graph shows the five month rainfall accumulation that has been recorded in Centrals rain gauges for 2021. The 20-year average rainfall accumulation for the six month growing season (April 1st to September 30th) in the Holdrege rain gauge is 18.54", with only 10.36" of rainfall recorded in 2020. Central is anticipating the average inches per acre of water applied for the 2021 season will be slightly lower than it was a year ago.



Find us at www.cnppid.com or @CNPPID on Facebook, Instagram, Twitter and LinkedIn.

Tri-Basin NRD News

Reminders Before Irrigation Season Ends:

Chemigation Inspections
Routine chemigation inspections must be completed every three years. If you are one of the few who have not been inspected or had a failed inspection this year that needed repaired. Contact us to have it inspected so it can be renewed in 2022. Please call the TBNRD office at 308-995-6688 to schedule.

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.

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 2022 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

Corn (Growing Degree Days)

The "Black layer" growth stage in corn occurs when the sugar supply stops feeding the kernel; thus causing several layers of cells connecting kernels to the cob to die and turn black. For irrigators, the goal is to time irrigation so that the stored soil water matches corn development needs just to this final stage.

The GDD's (Growing Degree Days) concept has been a tool used to predict final irrigation prior to black layer stage. This formula tracks corn development based on "heat units." Corn matures faster with warmer, rather than cooler, day and night temperatures; so the formula adjusts, since corn tends not to grow faster when temperatures exceed **86°F**; and corn growth effectively stops when temperatures fall below **50°F.** For example, daily GDD accumulation might be 29 GDD during a hot summer day and only 2 GDD on a cool late September day.

Based on Useful to Useable (U2U) GDD calculations, accumulated heat units for 2021 is 2450 GDD's, which in comparison, is running just slightly behind last year. The early season hybrids likely reached black layer on Aug. 24 (2400 GDD's). Medium-season hybrids will need 2500 GDD's; while full-season hybrids will need 2750 GDD's (predicted to occur on Sep. 8).

Final ET Texting Data Updates

Thanks to Tri-Basin NRD for providing ET (evapotranspiration) "free" text messaging for our 2021 Irrigation Season. This was our second season where irrigators received daily ET Text updates based on our Nebraska Extension High Plains Regional ET Local Weather Stations sponsored by Tri-Basin NRD and CNPPID.

Even though our Extension office will no longer be sending daily ET Text messages this growing season through the Tri-Basin NRD, the CNPPID website under 'News & Information' will continue daily and weekly ET and GDD's updates. Also, refer to our UNL NebGuide G1871 "Predicting Last Irrigation."

If you would like to enroll in the 2022 'free' ET Irrigation Scheduling Text Messaging Service, please contact Tri-Basin NRD. Those enrolled in 2021 will be automatically enrolled for next year.

2021 Husker Harvest Days

The 2021 Husker Harvest Days farm show is scheduled for Sep. 14-16. The UNL Extension 'Big Red Building' at lot 827 theme will be: "**Knowledge that Cultivates Opportunities."** An agriculture careers program will be in a large white tent east of the Big Red building.

UNL Extenison educational booths will include: Digital Ag and On-Farm Research; Water Quality and Quantity; Cover Crops; Manure Management; Beef Production; Ag Economics; Ag Leadership; Farm Family Wellbeing; Ag Careers; Crop Pest Management; and Tree Culture.

Thin Alfalfa Stands Fall Options

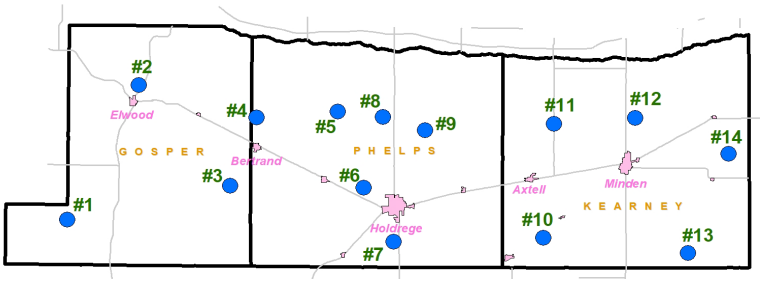
Since growing alfalfa roots emit an ethylene chemical toxin into soil impeding growth of new alfalfa, seeding more alfalfa seed into thin older alfalfa stands is not a viable option. Rather wait at least four weeks after established alfalfa plants have died before planting new alfalfa seeds. Other thin alfalfa options might incorporate fall or winter graze-out of fields; interseeding perennial grasses such as brome, fescue, orchard grass or native grasses; and delaying final thin alfalfa fields fall harvest.

TBAWMN Crop ET Information

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

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

	Aug 16 – Aug 22		Aug 23 – Aug 29	
Site	Evaporation	Rain	Evaporation	Rain
1	1.60	0.90	1.80	0.68
2	1.20	1.27	1.60	1.97
3	1.10	1.93	1.30	0.90
4	1.30	2.55	1.50	1.33
5	1.15	1.72	1.40	0.80
6	1.20	3.21	1.50	0.70
7	1.10	2.05	1.40	0.80
8	1.20	1.69	1.50	0.73
9	1.20	2.39	1.40	1.48
10	1.30	1.40	1.60	1.22
11	1.30	2.12	1.50	0.44
12	1.60	1.27	1.00	0.42
13	1.40	1.20	1.50	0.44
14	1.00	2.10	1.60	0.63



2021 Map of NAWMN Sites across the Tri-Basin NRD.

Crop Coefficients (Kc)

Corn Stage	Kc	Soybeans Stage	Kc
2 leaf	0.10	Cotyledon	0.10
4 leaf	0.18	1st Node	0.20
6 leaf	0.35	2nd Node	0.40
8 leaf	0.51	3rd Node	0.60
10 leaf	0.69	Beg. Bloom	0.90
12 leaf	0.88	Full Bloom	1.00
14 leaf	1.01	Beg. Pod	1.10
16 leaf	1.10	Full Pod	1.10
Silk – Beg. Dent	1.10	Beg. Seed	1.10
¼ Milk Line	1.04	Full Seed	1.10
Full Dent (½ Milk)	0.98	Yellow Leaf	1.00
¾ Milk Line	0.79	Beg. Mat.	0.90
Black Layer	0.60	Full Mat.	0.20
Full Maturity	0.10	Mature	0.10

Crop Stage Information

Corn (R5-1/4 Milk Line 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 23 – Aug 29 was 0.18"-0.27".

Soybeans (R6-Full Seed to R6.5-Full Seed/Yellow Leaf stage): Rapid leaf yellowing over the plant begins shortly after R6. Root growth is complete after R6.5. Stress from R6 to R6.5 may cause large yield reductions.

Avg. daily water use from Aug 23 – Aug 29 was 0.17"-0.28".

Aug 23-Aug 29 (14 of 14 NAWMN sites reporting): Average weekly rainfall was 0.90 (range 0.42 to 1.97). Average weekly ET for corn was 1.57 and for soybeans was 1.71.

Crop ET Information

NAWMN Sites:
UNL: https://nawmn.unl.edu/ETdata/DataMap
Tri-Basin NRD: https://www.tribasinnrd.org/nawmn
Email: Contact Curtis at 308-995-6121, Ext. 3
CropWatch: https://cropwatch.unl.edu/gdd-etdata
CNPPID: https://www.cnppid.com/weatheret-data/
Texting: Contact TBNRD at 308-995-6688
Email: Contact CNPPID at 308-995-3555

CORN STAGE		DESCRIPTION
R5.5	Full Dent - 1/2 Milk Line	The milk or starch line is 1/2 way down the kernel working towards the cob. Top 1/2 is hard and 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.
R-6	Black Layer	The starch line has advanced to the cob. Physiological Maturity. Black layer formed, kernel moisture is between 25%-35% moisture. 0.0 inches needed for yield.

SOYBEAN STAGE		DESCRIPTION
R6.5	Full Seed / 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://cnppid.com/wp-content/uploads/2016/06/lakeRiverData.html*.

	Sept. 2, 2021, 8:00 AM	1 Year Ago
Capacity of Lake McConaughy	56.9%	NA
Inflows to Lake McConaughy	527 cfs	691 cfs
Flows on the North Platte at North Platte	307 cfs	637 cfs
Flows on the South Platte at North Platte	123 cfs	119 cfs
Flows on the Platte at Overton	139 cfs	563 cfs

Websites of Interest

NRCS Nebraska	www.ne.nrcs.usda.gov
Farm Service Agency	www.fsa.usda.gov/
TBNRD Home Page	www.tribasinnrd.org/
Central Irrigation District	www.cnppid.com/
HPRCC	hprcc.unl.edu/
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
Soil Health:	www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/
NE State Irrig Assoc	www.nebraskastateirrigationassociation.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:	Aug 19 – Sept 1	May 1 – Sept 1
Elwood 0.26 mi. S:	2.62	11.03
Bertrand 6.1 mi. SE:	1.28	14.73
Holdrege 0.61 mi. N:	3.42	17.03
Minden 7.2 mi. W:	3.55	14.91
Minden 5.8 mi. E:	3.15	13.65

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@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
308-832-2280, Ext. 3

Central Nebraska Public Power & Irrigation District

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Tri-Basin Natural Resources District

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