

PROGRAM INFORMATION

EQIP: SIGNUP ANYTIME FOR 2023 FUNDS.

CSP: SIGN UP ANYTIME FOR 2023 FUNDS.

NSWCP: NEXT ROUND OF IRRIGATION APPROVALS WILL BE AT THE DECEMBER BOARD MEETING. APPLICATIONS MUST BE SIGNED BY THE OWNER.

ENERGY EFFICIENCY GRANT: SIGN-UP ANYTIME FOR 2023 FUNDS. FOR MORE INFORMATION CONTACT JOLENE JONES AT RURAL DEVELOPMENT AT THE KEARNEY USDA SERVICE CENTER AT 308-455-9840.

CALENDAR OF EVENTS

AUG 26-SEPT 5: NEBRASKA STATE FAIR

SEPT 5: LABOR DAY – GOV'T OFFICES CLOSED

SEPT 6: CNPPID BOARD OF DIRECTORS MEETING

SEPT 13: TBNRD BOARD OF DIRECTORS MEETING

SEPT 13-15: HUSKER HARVEST DAYS

A Hot, Dry Year; the Best to Learn From!

A hot, dry, demanding irrigation year may not be fun, but we can learn a lot from it if we want to invest the time and effort. Rain can hide uniformity problems. Poor uniformity from older and underperforming systems can significantly reduce yields, especially in dry years. Even in a wetter year where we can't visibly see the problem, subtle yield differences over an entire pivot could have an impact on your bottom line.

Water application uniformity can be affected by:

- Sprinklers can blow out of their holes.
- Sprinklers can be plugged or worn out.
- Sprinklers can stop rotating, or rotate out of control.
- Pivot sprinkler spacing may be too wide.
- Swing arms.
- Tall crops preventing full sprinkler water pattern.
- SDI tape spacing can be too wide.
- SDI emitters can be plugged.
- Leaks in gates, gaskets, SDI tape, etc. causing reduction in water application.
- Pumping water level declines so the system flow rate and pressure no longer match original design.

Application uniformity issues can also lead to over or under irrigation based on soil moisture sensor locations. Both over and under irrigating can affect yields negatively.

Assess your system. It'll give you a good idea of changes needed in the off-season. Waiting can lead to additional years of affected yields; ultimately cutting into your bottom line.

Photo at right says "20-40 Bushel Yield Variation was Recorded".

For aerial photos showing examples, see photos on the attached page.

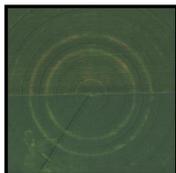


Photo Courtesy of UNL

CURTIS'S COLUMN



How Much Water did I Apply in 2022?

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.

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 root 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.

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

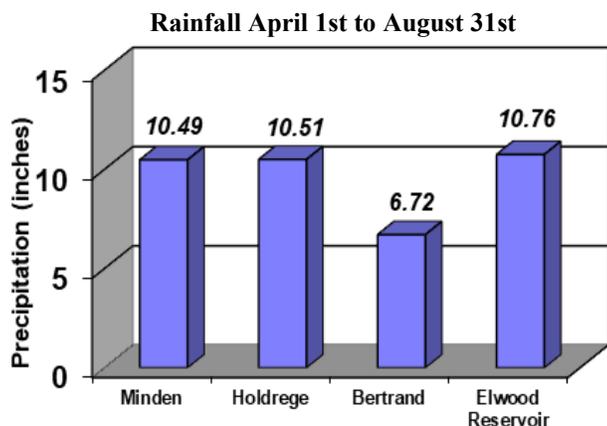
Soybean: Leaves begin turning yellow - Holdrege Silt Loam
Needs 1.90 inches - Calculations to 4 feet of depth
Goal: 60% moisture at seasons end
90% Moisture: Done
80% Moisture: Needs 0.10 Inches
70% Moisture: Needs 1.00 inches
60% Moisture: Needs 1.90 inches

I recommend monitoring this till crop maturity, especially if we get a rain. For corn, I believe it shuts down rather quickly so we may not need all of the inches mentioned.

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

2022 Irrigation Season Ends

The 2022 irrigation season ends this week at Central Nebraska Public Power & Irrigation District. The amount of the accumulated precipitation received during the 2022 irrigation season increased the demand for irrigation to be applied during the scheduled season. The following graph shows the accumulated rainfall that has been recorded from east to west across the district in four of Central's rain gauges since April 1st.



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TRI-BASIN NRD NEWS



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

If you have fields in Phase 2 or Phase 3 of Tri-Basin NRD's Groundwater Quality Management Area, remember to take water samples from your irrigation wells. The sample results you get this year will be used in completing your 2023 Nitrogen Management Reports.

Year End Flow Meter Readings for Water Use Reports

Irrigation season will be winding down soon. When you are picking up irrigation pipe or bedding down irrigation engines, remember to record the ending meter readings for your Water Use Reports.



Last Soybean Irrigation

Soybean maturity follows day length changes and can vary depending on the year. Generally, irrigators start reducing stored soil profile moisture as crops start drying down four to six weeks before crop physiological maturity. The average target is soils dried down to 40% available water by maturity. Physiological maturity with corn and grain sorghum occurs when the kernels or seeds form a black layer. Whereas, for soybeans, beginning maturity is when one normal pod on the main stem has reached its mature pod color.

→ R6.9 → R7.0 → R7.1 → R7.5 → R8.0



Soybeans reach physiological maturity at growth stage R7.0. When the membrane inside the soybean pod is no longer attached to the seeds (R7.1), water is no longer transferred to seeds; and further irrigation provides no benefits.

Our Nebraska Extension NebGuide G1871 "Predicting the Last Irrigation of the Season" provides end of season irrigation worksheets for corn, grain sorghum and soybeans. Usually, soybeans are only 10 days from maturity when the plants reach R6.5 growth stage or when the leaves begin to yellow. At this point, the soybeans will likely need 1.9 inches of water to complete dry matter production.

ETgages and soil water sensors can be helpful for timing the last soybean irrigation for the growing season. ETgages measure crop water usage while the soil water sensors record how much water is remaining in the soil profile. These tools can then help irrigators calculate how much water the crop will need either through irrigation or rainfall to finish out the year. The Nebraska Extension "cornsoywater.unl.edu" app or crop water app can also be useful with determining the last irrigation.

Free Statistical Yield Results

When harvest yield results are compiled this fall, cropping decisions for next year will soon be completed. Before making your final management decisions, evaluate your confidence level using the UNL FarmStat App. This 'no-cost' decision tool provides quick, accurate and straightforward yield data analysis <https://on-farm-research.unl.edu/resources>.

Statistical analysis are to be used to interpret data and increase confidence. For "statistical confidence," the CV (%) (coefficient of variability) can be used. Producers can be very confident in using yield results when the CV (%) are less than 10. Whereas, when the CV value is 10 to 15%; then the yield differences may be reliable, but the confidence level is lower. Then, when CV values are above 15%, researchers question just how reliable the measured yield results are; and can be trusted to repeat.

An alternate statistical comparison is using LSD (least significant differences) such as LSD (0.05) being confident 95% of the time that your measured differences will continue. For example, if two varieties have a LSD of 14, this means that unless two varieties within the study plot differ by more than the 14 bushels per acre; there is little confidence that (if repeated), one variety will definitely yield more than the other. Conversely, if a variety out yields another variety by 14 bushels or more, then you likely are confident (95% of the time) that this variety will be the better choice in repeated studies.

NAWMN 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 x Kc

Crop Coefficients (Kc)			
Corn		Soybeans	
Stage	Kc	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 22 – Aug 28 was 0.22"-0.33".

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 22 – Aug 28 was 0.23"-0.33".

Aug 22-Aug 28 (14 of 14 NAWMN sites reporting): Average weekly rainfall was 0.18 (range 0.05 to 0.70). Average weekly ET for corn was 1.75 and for soybeans was 1.85.

CROP ET INFORMATION

NAWMN: <https://nawmn.unl.edu/ETdata/DataMap>

TBNRD: <https://www.tribasinrd.org/tbawmn>

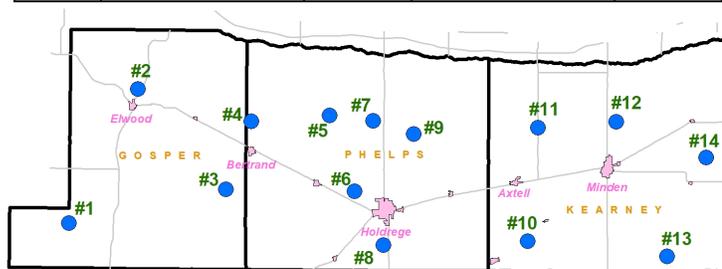
CNPPID: <https://www.cnppid.com/weather-et-data/>

CropWatch: <https://cropwatch.unl.edu/gdd-etdata>

Texting: TBNRD: 308-995-6688 or UNL: 308-995-4222

Email: CNPPID: 308-995-3555

Site	Aug 15– Aug 21		Aug 22 – Aug 28	
	Evaporation	Rain	Evaporation	Rain
1	1.60	0.08	2.40	0.24
2	1.00	0.28	1.90	0.05
3	1.00	0.13	1.80	0.11
4	1.00	0.00	1.70	0.05
5	0.90	0.28	1.55	0.05
6	1.20	0.05	1.70	0.13
7	1.20	0.09	1.70	0.15
8	1.10	0.18	1.80	0.07
9	1.00	0.00	1.70	0.11
10	0.90	0.16	1.40	0.20
11	1.30	0.19	1.70	0.13
12	1.00	0.32	1.60	0.12
13	1.00	0.26	1.60	0.70
14	1.10	0.18	2.10	0.38



2022 Map of NAWMN Sites across the Tri-Basin NRD.

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	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	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. 1, 2022, 8:00 AM	1 Year Ago
Capacity of Lake McConaughy	38.1%	NA
Inflows to Lake McConaughy	218 cfs	527 cfs
Flows on the North Platte at North Platte	959 cfs	296 cfs
Flows on the South Platte at North Platte	74 cfs	138 cfs
Flows on the Platte at Overton	142 cfs	201 cfs

Have a Safe and Happy Labor Day Weekend!



WEBSITES OF INTEREST

NRCS Nebraska www.ne.nrcs.usda.gov
 Farm Service Agency www.fsa.usda.gov
 TBNRD Home Page www.tribasinrnr.org/
 Central Irrigation District www.cnppid.com/cropwatch.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 18 – Aug 31	May 1 – Aug 31
Elwood 0.26 mi. S:	0.00	10.19
Bertrand 6.1 mi. SE:	0.13	10.16
Holdrege 0.99 mi. E:	0.00	11.43
Minden 7.2 mi. W:	0.00	10.13
Minden 5.8 mi. E:	0.60	8.48

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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 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



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308-785-2390

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Attachment for Newsletter Article

A Hot, Dry Year; the Best to Learn From!



Above photo: Notice how the swing arm robs moisture from the main pivot. Need a system set up that can provide enough water for both the main pivot and the swing arm.



Above photo: Issue with endgun or nozzles near the endgun.



Above Photo: Two crops, one shows uniformity issues, the other crop doesn't. One crop shorted and other not???

Attachment for Newsletter Article
A Hot, Dry Year; the Best to Learn From!



Above photo: Feedlot manure plugging nozzles???

