

Tri-Basin Irrigator

Volume 23, Issue 1

May 11, 2023

PROGRAM INFORMATION

EQIP: FUNDS FOR 2023 ARE CURRENTLY BEING WRITTEN AND OBLIGATED INTO CONTRACTS. AFTER MAY 27TH, INITIAL UNUSED FUNDS WILL BE REDISTRIBUTED. **SIGN-UP NOW FOR 2024 FUNDS TO ENSURE NOT MISSING THE CUTOFF DATE.**

CSP: 2023 APPLICATIONS ARE BEING PRE-APPROVED AND PRE-APPROVED APPLICANTS ARE BEING NOTIFIED TO START THE CONTRACT WRITING PROCESS. **SIGN-UP NOW FOR 2024 FUNDS.**

NSWCP: NSWCP FUNDS ARE APPROVED MONTHLY FOR FLOW METER ONLY AND SOIL MOISTURE SENSOR APPLICATIONS. ALL OTHER IRRIGATION APPLICATIONS FOR UNDERGROUND PIPE, SURGE VALVES, ETC. ARE REVIEWED FOR FUNDING 4 TIMES A YEAR, SEPTEMBER, DECEMBER, FEBRUARY, AND MAY (FOR SLIPPAGE). **NEW FUNDS COME JULY 1ST SO GET YOUR IRRIGATION APPLICATIONS IN BY AUGUST 31ST IN ORDER TO HAVE FIRST CHANCE AT THE NEW FUNDS IN SEPTEMBER. APPLICATIONS MUST BE SIGNED BY THE OWNER. INSTALLATION WORK CANNOT BE STARTED UNTIL APPROVED. - AS A SIDE NOTE, ALL NON-IRRIGATION APPLICATIONS ARE APPROVED MONTHLY.**

ENERGY EFFICIENCY GRANT: SIGN-UP DEADLINES CHANGED TO QUARTERLY FROM THE SEMI-ANNUAL DATES. **NEXT SIGN-UP DEADLINE IS JUNE 30TH** FOR IMPROVEMENTS TO IRRIGATION SYSTEMS SUCH AS CONVERTING GRAVITY SYSTEMS TO PIVOTS OR SDI, AND NATURAL GAS/PROPANE/DIESEL ENGINES TO ELECTRIC MOTORS, WELL REBOWLS, ETC. FOR MORE INFORMATION CONTACT JOLENE AT RURAL DEVELOPMENT AT THE KEARNEY USDA SERVICE CENTER AT 308-455-9840, EXT. 4 OR AT JOLENE.JONES@USDA.GOV.

CALENDAR OF EVENTS

- MAY 29:** MEMORIAL DAY – GOV'T OFFICES CLOSED
- JUNE 5:** CNPPID BOARD OF DIRECTORS MEETING
- JUNE 5:** CNPPID 12 WEEK IRRIGATION RUN SCHEDULE STARTS
- JUNE 13:** TBNRD BOARD MEETING
- JUNE 14:** NO-TILL ON THE PLAINS WHIRLWIND EVENT AND JODY SAATHOFF MEMORIAL FIELD DAY NEAR FRANKLIN. GOTO [HTTPS://WWW.NOTILL.ORG](https://www.notill.org) TO REGISTER BY JUNE 6.
- JUNE 14:** UNL TAPS SUMMER FIELD DAY AT NORTH PLATTE. GOTO [HTTPS://TAPS.UNL.EDU/TAPS-2023-FIELD-DAY](https://taps.unl.edu/taps-2023-field-day) TO REGISTER BY JUNE 7.

REMINDER: Soil Moisture Sensors!

Get your soil moisture sensors installed especially if they are required for an EQIP or CSP contract.

Tri-Basin Irrigator via EMAIL

SEE ATTACHMENT

If you would like to receive this newsletter via email, please provide me with your email address. Call me at 308-995-6121, Ext. 3, call your local NRCS office (see contact info. on page 4), or you can email me at curtis.scheele@usda.gov.

CURTIS'S COLUMN

 United States Department of Agriculture
Natural Resources Conservation Service

19th Season of the Tri-Basin Irrigator is Underway!!!

Another crop season is upon us. That means another season of the Tri-Basin Irrigator is upon us as well.

Hello. My name is Curtis Scheele. I am the Water Management Specialist with the NRCS covering Gosper, Phelps, and Kearney counties. My office is located in Holdrege. See page 4 for my contact information.



I would like to welcome those who will be receiving the Irrigator for the first time as well as those returning subscribers. This newsletter is sent bi-weekly during the crop season.

My goal this year, as in the past, is to provide you with irrigation information across the Tri-Basin NRD that is short and to the point. However, I want to add nitrogen information this year as well. Others surrounding this NRD and across the state receive this newsletter, so hopefully this information can benefit you all. Together, we need to protect and preserve our most valuable natural resource that the fine folks across the Tri-Basin NRD and this great state of Nebraska rely on so much in our daily lives. That being our precious water.

If you don't now, but would like to receive this newsletter via email, simply provide me with your email address. You can call your local NRCS office (see page 4) or you can email me at curtis.scheele@usda.gov. A couple of benefits via the email version are direct links to websites and you will receive, via separate email, weekly Crop ET information.

Archived copies from 2016 to present are available on the Tri-Basin NRD's website at <https://www.tribasinprd.org/information-outreachnews/tribasin-irrigator-newsletter>.

Crop ET Information!!!

I will email weekly Crop ET information from NAWMN sites each week. See map on page 3 for locations. These sites are additional Crop ET locations to the High Plains Regional Climate Center locations. **Anybody can be added to this email list. Contact Curtis Scheele at 308-995-6121, Ext. 3 to provide him your email address.** The info will still be on page 3 of this newsletter, but you can receive it more timely by receiving the weekly email. - See page 2 for additional ET options.

FREE Nitrogen from Irrigation Water

Why spend money on more nitrogen when you can get some free nitrogen from your irrigation water. The attachment is an article I copied from UNL's CropWatch newsletter dated 4-28-23. It tells how much nitrogen is in your irrigation water and how to calculate how much to credit your nitrogen program. The print is a bit small. For larger print, you can go to the article online at <https://cropwatch.unl.edu/2023/dont-lose-out-free-nitrogen-irrigation-water>. Since already irrigating, you can start crediting your nitrogen application for the year.

If you have questions, call me at 308-995-6121, Ext. 3, or email me at curtis.scheele@usda.gov.

Scheduled Irrigation and Position Changes

The 84-day scheduled irrigation season begins June 5th and runs through August 27th for the 2023 season. This irrigation water is delivered to Central's irrigation customers on a one week or two-week scheduled delivery depending on how the customer has set up their desired irrigation schedule.

2023 has brought a few position changes in the Irrigation Department at CNPPID. Steve Osterbuhr took over as the new Irrigation Superintendent (previously Van Fastenau). Tom Minnis was hired in the Holdrege office as an Irrigation Service Specialist (ISS) to operate patrol 26, which is located NE of Holdrege to North of Axtell (previously operated by Niles Buettner). Gage Gregg was hired in the Bertrand office as an ISS to operate patrols 15 & 25, which are located East of Bertrand to the pumpstation located on the Phelps Canal (previously operated by Kevin Jauken). Anthony Warta was hired in the Bertrand office as an ISS to operate patrols 18 & 19 which are located on E67 and laterals NW of Bertrand (previously operated by Ross Winheim). Ross Winheim will now operate patrol 13 which is located between Bertrand and Loomis (previously operated by Chris Davison). These position changes are from recent retirements.

Central is currently working on the cleanup of their canals, pipeline fixes, pump site installs/fixes, etc. to ensure timely and efficient delivery of surface water to Central's irrigation customers.

Visit www.cnppid.com or follow @CNPPID on Facebook, Instagram and Twitter for updates throughout the year.

TRI-BASIN NRD NEWS**Chemigation Deadline – June 1st**

Chemigation can be an effective and efficient means of applying fertilizers, herbicides, and insecticides to your field. State law requires anyone applying fertilizer or ag chemicals through their irrigation system to have an annual chemigation permit for each injection site.

Tri-Basin Chemigation renewal forms were sent to producers in January and must be signed and returned with payment to the Tri-Basin NRD office by June 1, 2023. Renewal permits are \$15 each and new permits are \$50 each. Landowners and operators should contact Tri-Basin NRD at 308-995-6688 regarding new chemigation permits. All newly permitted chemigation systems must be inspected before use.

A person must have a chemigation applicator license to apply ag products (fertilizer or chemicals) in irrigation water. If a chemigation system crosses an open waterway, such as an irrigation canal, an additional form must be completed before the permit can be approved.

Chemigation systems require routine inspections every three years. If your system is due for an inspection, you will be contacted this summer. NRD staff conduct these inspections from June to August. Routine inspections must be completed for permits to be eligible for renewal the following year.

A more detailed explanation of the chemigation permitting process is available on our website at www.tribasinrrd.org, under Water Quality.

**Free Irrigation ET Texting Service**

The "free daily texting" corn & soybean crop irrigation ET (evaporation/transpiration) water usage service is being provided again through financial underwriting support. Automated daily weather data updates through the High Plains Regional Climate Center can be texted directly to your desired cell phone.

Again, in 2023, this free-of-charge service is a joint effort among CNPPID (Central Nebraska Public Power Irrigation District); Tri-Basin NRD (Natural Resource District); and Nebraska Extension. This daily text provides crop growth and water use calculations for both corn and soybean. **Corn** growth staging water usage is based on a **May 10th** emergence date; whereas, **soybean** growth staging water usage is based on a **May 15th** emergence date. The ET texting service will be June 1st – Aug. 31st.

Referenced automated weather data (texting stations) include: "Holdrege 5N;" "Axtell 5NE;" and "Smithfield 2E."

If you are a returning participant, you do not need to re-register. To enroll, text "start" to 855-743-2457; & use the Tri-Basin NRD website. OR, to be added; removed; change your cell phone number; or other text questions: contact Sasha Hahn @ Tri-Basin NRD (308-995-6688).

No-Till Whirlwind Tour – Franklin (June 14)

The No-Till on the Plains Nebraska Whirlwind Tour at Franklin is scheduled for Wednesday, June 14th beginning at 11:00 a.m. @ the Franklin County Fairgrounds, 201 G Road, Franklin, NE with a lunch and special presentation by Jay Fuhrer, Menokan Farms No-Tiller from Bismarck, North Dakota. Cover Crops; Livestock Grazing; and Nutrient Management will be topics during bus tour stops along with featured speakers: Ray Ward of Ward Labs and Paul Jasa, UNL Extension Engineer. Details are at: <https://www.notill.org/events/no-till-on-the-plains-franklin-nebraska-whirlwind-event-june-14-2023>

Free Bean Cam App

Jim Specht, UNL Soybean Specialist Emeritus, highly recommends the new free **Bean Cam App** developed by the University of Wisconsin for soybean emergence stand counts. Dr. Shawn Conley developed this App for "repair-plant/fill-in/overseed" soybean decisions for just sections of fields. <https://ipcm.wisc.edu/apps/beancam/>

App users can hold their smart phone camera above a 5' wide x 4' long area of ground containing two 30" rows, or four 15" rows, or 7.5" rows; then align the plant rows with the camera yellow lines, before snapping a photo. Then, manually count (just this one time) the number of plants captured in the Bean App to enable it to provide emergence estimates elsewhere in that field (without any more manual counting).

Be aware that the replant yes/no recommendations provided in the Bean Cam are specific for Dr. Conley's Wisconsin soybean fields, so refer to UNL CropWatch articles for Nebraska Extension soy recommendations.

UNL Weed Mgt Field Day – Clay Center (June 28)

The UNL South Central "Weed Management Field Day" is scheduled for Wednesday, June 28th from 9:00 am – 1:00 pm. On-site demonstrations will feature new technologies and herbicides for weed control in corn, soybeans, and sorghum.

Free to attend but pre-registration is required for the free lunch. South Central Ag Lab is located 12.4 miles east of Hastings on Hwy 6. <https://agronomy.unl.edu/fieldday>.

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

Site	April 24 – April 30		May 1 – May 7	
	Evaporation	Rain	Evaporation	Rain
1	NA	NA	NA	NA
2	NA	NA	NA	NA
3	NA	NA	NA	NA
4	NA	NA	NA	NA
5	NA	NA	NA	NA
6	NA	NA	NA	NA
7	NA	NA	NA	NA
8	NA	NA	NA	NA
9	NA	NA	NA	NA
10	NA	NA	NA	NA
11	NA	NA	NA	NA
12	NA	NA	NA	NA
13	NA	NA	NA	NA
14	NA	NA	NA	NA

CROP STAGE INFORMATION

Corn (Not Planted to Planted stage): Nothing at this time.

Avg. daily water use from May 1 – May 7 was 0.00"-0.00".

Soybeans (Not Planted to Planted stage): Nothing at this time.

Avg. daily water use from May 1 – May 7 was 0.00"-0.00".

May 1-May 7 (0 of 14 NAWMN sites reporting): Average weekly rainfall was NA (range NA to NA). Average weekly ET for corn was NA and for soybeans was NA.

CROP ET INFORMATION

NAWMN Sites:

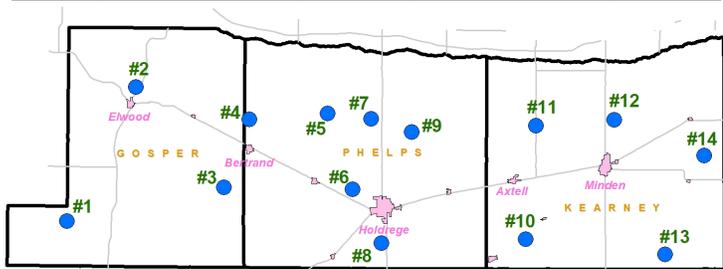
<https://nawmn.unl.edu/ETdata/DataMap>

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

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

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

Email: CNPPID: 308-995-3555



2023 Map of NAWMN Sites across the Tri-Basin NRD.

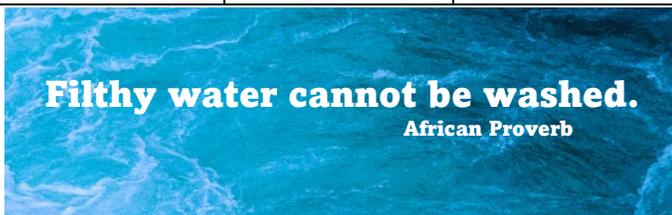
CORN STAGE		DESCRIPTION
V2	2 Leaves	Leaf stage is defined by number of leaves with visible collars. The collar is a discolored line where the leaf meets the stalk. This line circles the stalk. TIP: Mark the 6th leaf or a higher leaf by cutting a notch in it or some other way so as to know that leaf number. Reason is the lower leaves will be lost as the plant develops. Flag or somehow mark the plant in the field as a reference plant when determining later leaf (vegetative) stages.
V4	4 Leaves	
V6	6 Leaves	

SOYBEAN STAGE		DESCRIPTION
VC	Cotyledon	Shortly after emergence. Cotyledons and unifoliate leaves are unfolded. (1 node)
V1	First Node	One trifoliate leaf has 3 leaflets. V1 is the first trifoliate leaf with unrolled or unfolded leaflets. Leaflet edges are no longer touching. (2 nodes = 1 unifoliate + 1 trifoliate)
V2	Second Node	V2 has 2 nodes on main stem, each with a trifoliate leaf with unfolded leaflets. Plant as 3 nodes total: 1 unifoliate + 2 trifoliate

LAKE AND RIVER LEVELS

CNPPID Reservoir Elevation and Capacity as well as 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>.

	May 11, 2023, 8:00 AM	1 Year Ago
EI. & Cap. – Lake McConaughy	3232.4 ft - 53%	3244.1 ft - NA%
Inflows to Lake McConaughy	658 cfs	646 cfs
Flows on the North Platte at North Platte	380 cfs	323 cfs
Flows on the South Platte at North Platte	161 cfs	241 cfs
Flows on the Platte at Overton	235 cfs	524 cfs



Filthy water cannot be washed.
African Proverb

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:	May 1 – May 10	May 1 – May 10
Elwood 1.81 mi. NW:	0.85	0.85
Loomis 0.2 mi. SW:	1.08	1.08
Holdrege 1.7 mi. W:	0.90	0.90
Minden 7.2 mi. W:	0.58	0.58
Minden 5.8 mi. E:	0.84	0.84

Average Rain for May in Holdrege = 4.06 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. ***

USDA - Natural Resources Conservation Service

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PO Box 798
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
Holdrege, NE 68949
308-955-6688



Nebraska Extension



1308 2nd Street
Holdrege, NE 68949

PO Box 146
Elwood, NE 68937

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

308-995-4222

308-785-2390

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Don't Lose Out on Free Nitrogen from Irrigation Water

APRIL 20, 2023

Crystal Powers - Research and Extension Communication Specialist, Nebraska Water Center | Steve Melvin - Extension Educator Irrigated Cropping Systems | Saleh Taghvaeian - Biological Systems Engineering Associate Professor

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Key Takeaways

- In many locations, irrigation water can provide significant, valuable in-season fertilizer.
- The amount of nitrogen depends on the concentration of nitrate and amount irrigated.

Nitrogen continues to be one of the highest cropping system input expenses with irrigated corn. In many parts of Nebraska, there is a significant amount of nitrogen available in groundwater as nitrate. When applied through irrigation, this nitrate is readily available to crops and is a free source of fertilizer.

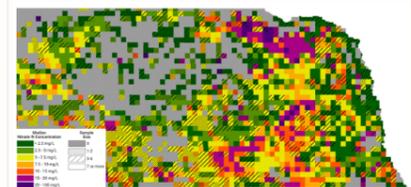


Figure 1. Groundwater nitrate-N, median township concentration, NDEE 2022. [View the report.](#)

How Much Nitrogen is in My Irrigation Water?

The amount of nitrate in water is measured as parts per million (ppm) or milligrams per liter (mg/L), these are the same measure for nitrate. Each ppm will add 0.227 pounds of nitrogen per acre with each inch of irrigation water applied. Table 1 below shows the **total pounds per acre of applied nitrogen**:

Table 1. Total pounds per acre of applied nitrogen.

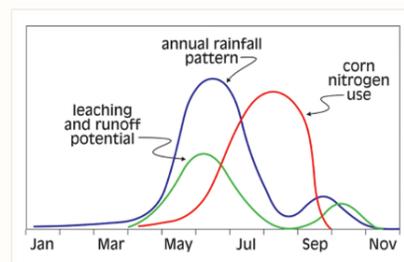
Nitrate-Nitrogen (ppm or mg/L)	Irrigation applied (in)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
5	1	2	3	5	6	7	8	9	10	11	12	14	15	16	17
10	2	5	7	9	11	14	16	18	20	23	25	27	29	32	34
15	3	7	10	14	17	20	24	27	31	34	37	41	44	48	51
20	5	9	14	18	23	27	32	36	41	45	50	54	59	63	68
25	6	11	17	23	28	34	40	45	51	57	62	68	74	79	85
30	7	14	20	27	34	41	48	54	61	68	75	82	88	95	102
35	8	16	24	32	40	48	56	63	71	79	87	95	103	111	119
40	9	18	27	36	45	54	63	73	82	91	100	109	118	127	136
45	10	20	31	41	51	61	71	82	92	102	112	122	133	143	153
50	11	23	34	45	57	68	79	91	102	113	125	136	147	159	170

To find out how much nitrate-nitrogen is in your irrigation water, we recommend that you test each well every few years. Also check with your local NRD for testing requirements in water quality phase areas. Nitrate levels can vary significantly from well-to-well and nitrate levels are changing over time across much of the state. (Note: some water test results are reported as nitrate (NO_3^-), others are reported as nitrate-nitrogen (NO_3^-N). The calculations in this article are based on nitrate-nitrogen. Nitrate-nitrogen = $0.226 \times$ nitrate).

When Will Fertilizer from Irrigation Water Be Available?

The timing of irrigation application in relation to the period of rapid nitrogen uptake by the crop affects the value of the nitrogen in the water to that year's crop. The most rapid N uptake extends from about V6 to after pollination, but N is taken up all season. Nitrogen in irrigation water applied during the rapid uptake period is just as useful to the crop as the same amount of nitrogen fertilizer. Nitrogen in water applied late in the growing season — after the crop has already taken up most of its nitrogen needs — is of limited value for this year's crop.

Care must be taken to reduce drainage below the root zone since nitrogen will leach with water from rain or irrigation. So, since rain is unpredictable, irrigation scheduling should leave as much rain storage room in the soil as is practical while optimizing yields.



Calculating Your Field's Irrigation Water Nitrogen Credit

Due to the uncertainty of precipitation during the growing season, we suggest that the nitrogen contained in 80% of the five-year average irrigation depth be used when calculating the N contribution by irrigation water. If your field site is within an NRD with an annual water allocation, use the annual allocation in place of the five-year average. The example shows how to calculate the nitrogen provided by irrigation water.

Example

Irrigation water contains 15 ppm nitrate-nitrogen (NO₃-N). The five-year average irrigation water application depth is 10 inches per year. Using 80% of the five-year average, how much crop available N is in the irrigation water?

$$80\% \times (\text{NO}_3\text{-N ppm}) \times (0.2267) \times (\text{in. of irrigation}) = \text{pounds of nitrogen/acre}$$

$$0.8 \times 15 \text{ ppm} \times 0.227 \times 10 \text{ in.} = 34 \text{ lb of nitrogen/acre added through irrigation}$$

Adjusting In-season

Predicting how much nitrogen and irrigation water will be needed for a given field this coming summer in January or February is difficult. However, good in-season techniques are now available to help determine the optimal rates of irrigation and nitrogen to produce optimum yields. Center pivot and SDI irrigation systems provide an easy method to make in-season application. We recommend applying a lower rate of nitrogen in the spring, followed by monitoring the crop to see if additional nitrogen is needed.

This article was copied out of the UNL CropWatch Newsletter dated 4-28-2023. Authors are listed at the beginning of this article.

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