

# Tri-Basin Irrigator

Volume 24, Issue 4

July 3, 2024

## PROGRAM INFORMATION

**EQIP: SIGN-UP NOW FOR 2025 FUNDS.**

**CSP: SIGN-UP NOW FOR 2025 FUNDS.**

**NSWCP: FOR IRRIGATION PRACTICES, HAVE YOUR APPLICATION COMPLETED BY AUGUST 30<sup>TH</sup> FOR FIRST CHANCE AT 2024 FUNDS.**

**APPLICATIONS MUST BE SIGNED BY THE OWNER.**

**ENERGY EFFICIENCY GRANT: NEXT SIGN-UP**

**DEADLINE IS JUNE 30<sup>TH</sup>. FOR MORE INFORMATION, CONTACT**

**JOLENE AT RURAL DEVELOPMENT AT THE KEARNEY USDA**

**SERVICE CENTER AT 308-455-9840 OR AT**

**[JOLENE.JONES@USDA.GOV](mailto:JOLENE.JONES@USDA.GOV).**

## CALENDAR OF EVENTS

**JULY 4: INDEPENDENCE DAY – GOV'T OFFICES CLOSED**

**JULY 9: TBNRD BOARD MEETING**

**JULY 19-22: KEARNEY COUNTY FAIR**

**JULY 21-25: PHELPS COUNTY FAIR**

**JULY 23-27: GOSPER COUNTY FAIR**

**AUG 5: CNPPID BOARD OF DIRECTORS MEETING**

## Nitrogen & Pivot Bio Demo – More!!!

In the last issue of this newsletter was an article providing the results of David and Matt Grimes UNL On-Farm Research project east of Minden in 2023. In this issue I am providing you with more UNL On-Farm Research data from 2023. Enclosed are three pages summarizing individual on-farm research projects. The first two pages are like the Grimes project. That is comparing different nitrogen application rates along with the nitrogen-fixing bacterial product Pivot Bio PROVEN 40. The third page is only comparing different nitrogen application rates.

These pages are summaries of the final results. If you wish to read more about the tillage, chemical applications, fertilizer applications, and other information from these individual projects, I have included the page numbers from the 2023 On-Farm Research Results publication EC3073. You can view this publication by clicking on this website link: <https://on-farm-research.unl.edu/result-publications>. From this link, you can select prior year on-farm research results as well.

Last year in the 8<sup>th</sup> issue of the Tri-Basin Irrigator dated August 17, 2023, I had an article showing the nitrogen and Pivot Bio results from 2021 and 2022. More on that is in the 2022 publication which you can also find on the above website.

The two enclosed summary projects are just a handful of all the projects taking place across Nebraska. Other types of projects you can view results on are crop production type projects, there are many other fertilizer projects, some non-traditional type projects which include the Pivot Bio as well as other products, cover crops, crop protection, and equipment.

Fertilizer management is getting bigger especially with high nitrates in the groundwater. Lots of products and technologies are trying to address it. Some legit and probably some to make a quick dollar. UNL's On-Farm Research is a great way for you to try things to see what works. Or you can review the results from others. Don't get caught up in all the sales pitches. Check it out before spending your money.

## CURTIS'S COLUMN



United States Department of Agriculture

Natural Resources Conservation Service

### EQIP Dryland, No-till, & Grass Field Checks!!!

The NRCS will be starting their annual field checks for dryland, no-till, and grass contract obligations for EQIP contract holders. These checks will take place over the next month or so. **Failure to comply with your EQIP contract could result in termination, repayment of funds, and/or penalties.**

### Rain and Soil Moisture Sensors

Rains the last couple of months have been pretty decent. They may have gotten us back to full profile, mostly on the irrigated land. This will be dependent upon your irrigation management, the amount of rain you received, and how you received the rain (slow, fast, too little, or too much).

Soil moisture sensors are a great way to know how much rain replenished the profile. Some rain came fast, and some came at saturated situations. So, knowing what is going on in the soil, soil moisture sensors are a great tool for knowing this.

Not only will soil moisture sensors tell you how much rain replenished the profile, they are a very good tool in determining when to start irrigating again after the rains. This can save water and potential leaching of nutrients into the groundwater. When you don't know how much moisture is in the soil and at what depths, how can one make educated decisions in their irrigation management. The sensors are to the soil like the fuel gauge is to your vehicle.

Looking at NeRAIN from May 1<sup>st</sup> through July 2<sup>nd</sup>, Holdrege and points west are roughly a couple of inches above the May-June average for Holdrege. East of Holdrege is not so blessed as they are roughly an inch below this average.

Rains this year have been a huge blessing. However, there are places that have paid a price for the rain. Some I believe would rather pay for irrigating the rest of this year.

### Answer to Contest in the Last Issue

In the last issue of this newsletter, Issue #3 for 2024, the title to an article was **"Summer Inteeerrrrnnss!!!"**

**They're Everywhere! They're Everywhere!"**

I had a contest for the first person who could tell me what inspired this title.

**"Welllll. There was only one response and one winner. Do people read the newsletter? Did all others simply not know the answer? Did folks just not care about the free rain gauge prize? Be listening tomorrow for another exciting episode in the life of the most fantastic crime fighter the world has ever known.**

**'Buck Buck Buck Buuuuck! Chicken-maaaann! He's everywhere! He's Everywhere!!' "**

That's right. The above is how each episode ended, "Wellll.....He's everywhere." Chickenman was an American radio series created in 1966 by Dick Orkin. I listened to Chickenman each night in the 1970's on WOW AM radio. The catchphrase "He's everywhere! He's everywhere!" stuck. Each episode lasts about 2 minutes. For your entertainment pleasure here is a link to the first of many episodes:

<https://www.youtube.com/watch?v=e07AZosaVPk>

## Aquatic Weeds

Aquatic weeds, such as filamentous algae, moss, and sago pondweed can make delivering surface water through a canal system difficult without mechanically removing or making treatments throughout the irrigation season to control the aquatic weed growth.

Filamentous algae and moss start as hairlike strands that grow toward the water's surface, eventually forming floating mats. Sago pondweed is a bottom rooted aquatic weed that grows up towards the water's surface and grows very thick, which can eventually slow or stop the movement of water. Excess nutrients from fertilizers, stormwater runoff from fields, and wastewater along with abundant sunlight, and warmer temperatures are key factors in providing the essential needs to fuel and feed these aquatic weeds causing them to grow and eventually break off which can plug the screening and the flow of water to the irrigation system. Central's irrigation division is constantly on the lookout to control these aquatic weeds before they grow and hinder the delivery of surface water for irrigation.



Floating Mats-Moss



Sago Pondweed

Visit [www.cnppid.com](http://www.cnppid.com) or follow @CNPPID on Facebook, Instagram and Twitter for updates throughout the year.

# TRI-BASIN NRD NEWS



## Assistance to Treat Infestation

Phragmites australis (common reed) is an invasive perennial found in wet areas along rivers, ponds, creeks, CRP acres, sub-irrigated ravines, and road ditches. It spreads by both seed and rhizomes, so it can spread tenfold in a single season. It has no forage value for livestock or wildlife.

Landowners must control phragmites on their property as it is on Nebraska's Noxious Weed list. The Twin Valley Weed Management Area (TVWMA) and Platte Valley Weed Management Area (PVWMA) have worked diligently over the past several years to combat phragmites along river channels. The TVWMA and PVWMA, with grant funding from the Nebraska Environmental Trust, can aid landowners in treating phragmites.

If you have phragmites on your property, contact your County Weed Superintendent to see if you are eligible to have it sprayed free of charge.



**Gosper:**  
Marty Craig-  
308-324-3771,  
**Phelps:**  
Bobby Hamilton-  
308-991-0139,  
**Kearney:**  
Joe Anderson-  
308-832-2854

## 2024 UNL Light Trap Update

The first western bean cutworm (WBC) moths have been caught in the black light trap at Clay Center, Nebraska. WBC flights have not yet been reported from North Platte. However, now is the time to schedule scouting for this important pest.

WBC moths prefer to lay their eggs on corn plants when they are approaching tassel emergence, since the tassel is the preferred food source for newly hatched WBC larvae. A match between the flight of the moths and late whorl to early tassel corn stage development can result in high infestation.



For free insect pest black-light trapping data visit: <https://entomology.unl.edu/fldcrops/lighttrap>.

Current UNL black light insect trap monitoring data locations include West Central Research & Extension Center – North Platte and South Central Ag Laboratory – Clay Center. Insects will be trapped now through September with light trap data posted five days a week (Monday-Friday).

The North Platte UV Light Trap will monitor Western Bean Cutworm (WBC); European Corn Borer (ECB); Corn Earworms; Army Cutworms and Wheathead Armyworms. For questions contact Julie Peterson, UNL Extension Entomology Specialist, at [julie.peterson@unl.edu](mailto:julie.peterson@unl.edu) or 308-696-6704.

## Why Might Field Border Yields Be Lower?

Many factors can cause corn yields to be lower along field borders or edges including: insect populations moving in from fence rows or borders, herbicide drift and field compaction on end rows. However, the most notable reason for lower field border yields is weather impacts such as high winds and hail. Further, short height adjacent crops like soybeans versus another corn field can allow worse wind exposure.

Then, higher winds increase crop heat stress along field edges. Mainly, the air is driest when it hits the leading edge of a field and picks up moisture as it moves across the field canopy. As the heat stress increases, the corn plants close their leaves stomata to preserve water. This then results in lower rates at which the plants absorb carbon dioxide leading to reduced photosynthesis and yields. Evaporation rates are also higher on field borders with increased risk for sunscald.

Bottomline: Field borders usually have lower yields compared to the remainder of the field. So, move into fields beyond borders to conduct comparative yield comparisons.

## Mosquito Protection

All mosquitoes require water for their development, so the first line of defense is **not** overirrigating fields. Based on insect growth cycles; ditches that hold water for more than 4 days can be a source of mosquitoes. On the other hand, efficient irrigation usually breaks most mosquito life cycles; since crops thrive when water does not stand on fields more than 12 hours.

For mosquito personal protection: wear light-colored, loose-fitting clothing, and long sleeves & pants. If possible, time field entry during periods other than peak mosquito flight times such as dawn and dusk.

Apply insect repellents to skin, but not skin under clothing. If using sunscreen, apply sunscreen first, and then repellent. Creams and liquids can provide better application coverage.

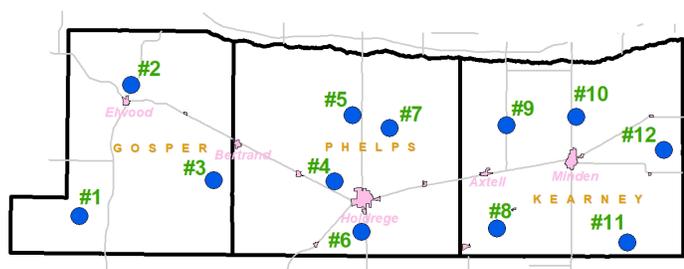
Permethrin sprays can remain effective through multiple wears and 4-6 washings. Check labels since some factory pretreated clothing with permethrin can remain effective for repelling both ticks and mosquitoes for up to 70 washings.

## 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) =**  
**Reference ET x Kc**

Site	June 17 – June 23		June 24 – June 30	
	Reference ET	Rain	Reference ET	Rain
1	1.90	0.00	1.90	1.12
2	1.50	0.04	1.70	3.10
3	1.90	0.00	2.00	1.00
4	1.90	0.00	2.00	0.87
5	1.70	0.05	1.70	1.53
6	1.80	0.30	1.90	0.75
7	1.80	0.04	1.90	0.96
8	1.90	0.34	1.90	0.56
9	1.70	0.06	2.00	0.80
10	1.70	0.28	1.80	0.72
11	1.60	0.90	2.00	0.40
12	1.80	0.27	1.90	0.41



2024 Map of TBAWMN Sites across the Tri-Basin NRD.

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 (V10-10 Leaf stage to V18-18 Leaf stage):** At V14-15, this is most critical period for seed yield determination. The number of ovules that develop silks and thus the number of kernels, is being determined.

Avg. daily water use from June 24 – June 30 was 0.05"-0.29".

**Soybeans (V4-4<sup>th</sup> Node to R1-Beginning Bloom stage):** At R1, vertical roots are growing rapidly and will continue to R4-R5, as are secondary roots and root hairs nearer the soil surface.

Avg. daily water use from June 23 – June 30 was 0.10"-0.21".

June 23-June 30 (12 of 12 TBAWMN sites reporting): Avg weekly rainfall was 1.02 (range 0.40 to 3.10). Avg weekly ET for corn was 1.75 and for soybeans was 1.41.

### CROP ET INFORMATION

TBAWMN Sites: <https://www.tribasinrrd.org/tbawmn>

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

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

CORN STAGE		DESCRIPTION
V16	16 Leaves	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.
R1	Silking	Begins when any silks are visible outside the husks.
R2	Blister	The kernels are white on the outside and resemble a blister in shape. The cob should be close to, if not, at full size by R2. The silks are beginning to dryout and darken in color.
SOYBEAN STAGE		DESCRIPTION
V(N)	Nth Node	V(N) has N nodes on main stem, each with a trifoliate leaf with unfolded leaflets. Plant as (N+1) nodes total: 1 unifoliate + (N) trifoliate
R1	Beginning Bloom	At least one open flower is present at any main stem node.
R2	Full Bloom	At least one open flower is present at any one of the two uppermost main stem nodes that have fully developed leaves.

## 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>.

	July 3, 2024, 8:00 AM	1 Year Ago
<b>El. &amp; Cap. – Lake McConaughy</b>	<b>3237.6 ft - 59.3%</b>	<b>3234.8 ft - NA%</b>
<b>Inflows to Lake McConaughy</b>	<b>737 cfs</b>	<b>1610 cfs</b>
<b>Flows on the North Platte at North Platte</b>	<b>672 cfs</b>	<b>313 cfs</b>
<b>Flows on the South Platte at North Platte</b>	<b>191 cfs</b>	<b>4010 cfs</b>
<b>Flows on the Platte at Kearney</b>	<b>2890 cfs</b>	<b>6550 cfs</b>



**Happy Birthday America!**

## WEBSITES OF INTEREST

NRCS Nebraska [www.ne.nrcs.usda.gov](http://www.ne.nrcs.usda.gov)  
 Farm Service Agency [www.fsa.usda.gov](http://www.fsa.usda.gov)  
 TBNRD Home Page [www.tribasinrrd.org/](http://www.tribasinrrd.org/)  
 Central Irrigation District [www.cnppid.com/cropwatch.unl.edu](http://www.cnppid.com/cropwatch.unl.edu)  
 UNL Cropwatch [cropwatch.unl.edu](http://cropwatch.unl.edu)  
 UNL Extension [extensionpubs.unl.edu/](http://extensionpubs.unl.edu/)  
 K-State SDI Website [www.ksre.ksu.edu/sdi](http://www.ksre.ksu.edu/sdi)  
 No-till On The Plains [www.notill.org](http://www.notill.org)  
 Soil Health: [www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/](http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/)  
 NE State Irrig Assoc [www.nebraskastateirrigationassociation.org/](http://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:	June 20 – July 2	May 1 – July 2
Elwood 1.81 mi. NW:	3.59	10.31
Loomis 0.2 mi. SW:	3.38	10.05
Holdrege 1.7 mi. W:	2.62	9.37
Minden 7.2 mi. W:	1.19	6.86
Minden 5.8 mi. E:	1.24	7.25

**Average Rain for May-June in Holdrege = 8.04 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](mailto:curtis.scheele@usda.gov). \*\*\*



### USDA - Natural Resources Conservation Service

1609 Burlington Street  
 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 2<sup>nd</sup> 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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## 2023 UNL On-Farm Research Results

### Impact of Pivot Bio PROVEN 40 at a Reduced Nitrogen Rate on Corn

**2023 UNL On-Farm Research Results - EC3073 - (Page #'s)**

Study Number	Total Nitrogen Applied (lbs/ac)	Pivot Bio Applied	Yield (bu/ac)	Irrigation	Previous Crop	County	Notes	
1248185202301	153	---	254	Pivot	Soybean	York	No Difference	116-117
	153	YES	253					
0085141202301	255	---	251	Pivot	Corn	Platte	Needed 215 & 195 lb rates w/o Pivot Bio for true comparison. DKC 64-64.	118-119
	215	YES	248					
	235	---	254					
	195	YES	250					
	255	---	232	Pivot	Corn	Platte	Looks like Pivot Bio was a benefit with this hybrid, DKC 115-3.3	
	215	YES	234					
	235	---	219					
	195	YES	215					
0276185202302	205	---	261	Pivot	Corn	York	No Difference. Shows too much N applied at 205 lbs.	120-121
	205	YES	262					
	165	---	258					
	165	YES	261					
1226067202301	200	---	246	Pivot	Corn	Gage	Close yields in top 3 N rates. No Pivot Bio benefit.	126-127
	170	YES	243					
	140	---	239					
	110	YES	220					

**2023 UNL On-Farm Research Results**

***Impact of Pivot Bio PROVEN 40 at a Reduced Nitrogen Rate on Corn***

**2023 UNL On-Farm Research Results - EC3073 - (Page #'s)**

Study Number	Total Nitrogen Applied (lbs/ac)	Pivot Bio Applied	Yield (bu/ac)	Irrigation	Previous Crop	County	Notes	
1519147202301	74	---	210	Dryland	Soybean	Richardson	Roughly a 15 bushel drop from 224 lbs of N to 134 lbs of N. Larger yield drops below the 134 lb N rate. Yields stay consistent with and without Pivot Bio at each N rate except for maybe the 74 lb N rate.	122-123
	74	YES	217					
	104	---	235					
	104	YES	236					
	134	---	245					
	134	YES	249					
	164	---	249					
	164	YES	251					
	194	---	254					
	194	YES	257					
	224	---	259					
224	YES	261						
0709047202304	110 (113.5 Actual)	---	203.8	Gravity	Corn	Dawson	Not a huge drop in yield from the 285 lb targeted N rate to the 180 lb targeted rate. Yields drop more below the 180 target. Yield stays consistent with and without Pivot Bio at each N targeted rate.	124-125
	110 (126.2 Actual)	YES	198.6					
	145 (153.0 Actual)	---	208.1					
	145 (159.8 Actual)	YES	206.5					
	180 (179.5 Actual)	---	220.9					
	180 (184.4 Actual)	YES	222.2					
	215 (214.3 Actual)	---	225.4					
	215 (211.0 Actual)	YES	222.9					
	250 (249.2 Actual)	---	220.8					
	250 (243.6 Actual)	YES	216.4					
	285 (282.6 Actual)	---	224.0					
285 (268.0 Actual)	YES	227.0						

## 2023 UNL On-Farm Research Results

### Determining Economically Optimum Nitrogen Rate on Corn

**2023 UNL On-Farm Research Results - EC3073 - (Page #'s)**

Study Number	Total Nitrogen Applied (lbs/ac)		Yield (bu/ac)	Irrigation	Previous Crop	County	Notes	
1527019202301	105		276	Pivot	Corn	Buffalo	No statistical difference in yield across all N applied rates.	36-38
	135		274					
	165		275					
	193		271					
	223		273					
1255019202302	78		258	Pivot	Corn	Buffalo	Water contains 21 ppm nitrates or 30-40 lbs of N depending upon amount irrigated.	39-41
	91		265					
	112		263					
	141		263					
	160		263					
	164		269					
	177		266					
	196		271					
1252025202301	105		220	Dryland	Soybean	Cass	24 bu. gain from 105 lbs N to 122 lbs (17 lb diff.). Basically the same yield gain from 122 lbs to 254 lbs (132 lb diff.).	42-43
	122		244					
	154		253					
	191		260					
	220		266					
	254		270					