# **Tri-Basin Irrigator**

### Volume 18, Issue 5

# **PROGRAM INFORMATION**

#### EQIP AND FARM PROGRAM BENEFITS:

**EQIP - 2018 FUNDS HAVE BEEN OBLIGATED. SHOULD SLIPPAGE** FUNDS BECOME AVAILABLE, WE WILL CONTINUE DOWN THE APPLICATION LIST.

**CSTWP –** WE ARE NEARING THE FINISH OF WRITING OUR **2018** CONTRACTS.

# **CALENDAR OF EVENTS**

JULY 22-26: BOTH THE KEARNEY AND PHELPS COUNTY FAIRS JULY 26-28: GOSPER COUNTY FAIR

Aug 6: CNPPID BOARD OF DIRECTOR'S MEETING – 9 AM Aug 14: TBNRD TOUR AND BOARD MEETING – 1:30 PM

AUG 14: SOIL HEALTH FIELD DAY @ MINDEN, NE - SEE ATTACHMENT AND THE WEB FOR MORE INFO:

HTTP://WWW.NOTILL.ORG/EVENTS/GETTING-STARTED-WITH-SOIL-HEALTH-FIELD-DAY

AUG 23: WEST CENTRAL RESEARCH FIELD DAY @ N. PLATTE, NE

- FOR MORE INFO, GOTO: <u>HTTPS://GO.UNL.EDU/WATER-CROPS-</u> FIELD-DAY

# Charts from Article on Right Side of Page

# Brown Pivot



# Green Pivot



# CURTIS'S COLUMN

#### <u>How to Save an Irrigation or Two or Three without</u> <u>Sacrificing Yield (Part 2 of 2):</u>

For Part 2 of this article, I want to show you field demo information that reiterates Steve Melvin's research from the last issue. This field demo is a 3-year average of corn in the years of 2012, 2014, and 2016 on Holdrege Silt Loam soil.

A little background on the demo is that there are two pivots side-by-side. One pivot titled Brown and the other Green. Both are farmed the same all the way through. The only difference between the two, is how they are managed for irrigation.

See Table 1 for the results of the field demo. Basically, the Green pivot out-performed the Brown pivot with less pumping, more bushels, and more soil moisture utilized to a 4-foot depth.

Table 1	Brown	Green	Green Benefit
Water Applied (Inches)	13.1	11.2	1.9 in. water less pumped
Rainfall (Inches)	11.4	11.7	0.3 in. more rain
Yield (Bushels)	254	255	1 extra bushel
Year End Moisture	79% (- 2.0 ln)	66% (- 3.2 ln)	1.2 in. more soil moisture utilized

From the results shown in Table 1, how did this get accomplished? On the left side of this page are two charts, one for the Brown pivot and the other for the Green pivot. On the charts, the black line is the average to a 4-foot depth. These numbers are based on a 4-foot depth. Sorry for the small charts, but I will try to summarize them.

#### Brown Pivot:

- Soil moisture utilized done to 73% moisture (-2.5") until 1 week prior to silking.
- From 1 week prior to silking, increased soil moisture levels to an average of 95% moisture (-0.5") until <sup>3</sup>/<sub>4</sub> milk line.
- Started to utilize soil moisture at seasons end at <sup>3</sup>/<sub>4</sub> milk line, average date of September 5th.
- Started increasing moisture levels 2 weeks prior to the Green pivot.
- 8 weeks of 95% moisture levels.
- 2 weeks of dry down at seasons end.

#### **Green Pivot:**

- Soil moisture utilized done to 65% moisture (-3.2") until 1 week <u>after</u> silking.
- From 1 week <u>after</u> silking, increased soil moisture levels to an average of 85% moisture (-1.4") until ¼ milk line.
- Started to utilize soil moisture at seasons end at ¼ milk line, average date of August 22<sup>nd</sup>.
- Started increasing moisture levels 2 weeks after the Brown pivot.
- 4 weeks of 85% moisture levels.
- 4 weeks of dry down at seasons end.

# **CNPPID NOTES**



#### Value of the Central Project;

The Central Project retimes and stores snow runoff or precipitation from Wyoming, Colorado and western Nebraska, i.e., fresh water, for use in Nebraska for irrigation, power generation, municipal use, aquifer recharge, recreation and wildlife habitat. Otherwise, this same water would run through the state unused, to mix with sea water in the Gulf of Mexico. It is an added water resource in Nebraska, critical to total water supply and of immense and lasting value.

There is a direct value to farm production and cities, towns and villages as the water cools the generators at the Gerald Gentleman Station, the largest electric generation plant in Nebraska. It adds hydropower to the grid from five plants (Central-four, NPPD-one) to run electric irrigation pumps and help meet the residential need.

There is value in the added volume of water provided for irrigated crops; for Central customers and other districts. This reduces the annual draw on the aquifer in the Platte Valley for irrigation.

There is value in the recharge it provides as water seeps below the canal beds to the aquifer. There is evidence of this in the local area where the Tri-Basin NRD is concerned about areas of groundwater table declines to the east and south of our recharge zone. Within the recharge zone the groundwater mound reduces power needed at the wells to lift an abundant water source to the surface.

From Lake McConaughy to Johnson Lake, the system provides family-oriented entertainment, from camping and fishing opportunities to water sports. The Sanitary Improvement District, a community septic system at Johnson Lake, has helped cabin owners upgrade their spaces into permanent homes.

New projects include a potential diversion to the Republican Basin, recharge at five waterfowl production areas and recharge to the Cottonwood Ranch wetland area for the Platte River Program.

# TRI-BASIN NRD NEWS



#### Irrigation Season Reminders:

**Chemigation:** Our staff has been busy with chemigation inspections on newly permitted systems, as well as routine inspections of renewal permits. If your systems are due for a routine inspection, you'll receive a call from our office to schedule those.

**Water Samples:** Staff and our summer interns have also started taking samples from irrigation wells for our Water Quality testing program. If you have crop reports due each year, don't forget to take water samples from your irrigation wells for those reports.

**Irrigation Meters:** You should periodically check your irrigation flowmeters to make sure they are working correctly. If you don't think your meter is working correctly, our staff or Curtis Scheele at the NRCS office can check flow rates using an ultrasonic flowmeter. If you have a meter repaired during the irrigation season, note the meter reading before operating that irrigation equipment. Doing so will make it easier to reconcile any movement of the propeller while the meter was being repaired. If you have questions about reinstalling your flowmeter or about your meter readings, contact our office at 1-877-995-6688.

# NEBRASKA EXTENSION EXTRAS

#### Mid-Season Weeds Management:

Whether crops are stunted by unwanted herbicide movement or weather stresses such as hail injury; severely damaged crop canopies may allow late weed emergence in canopy gaps. If left unmanaged, these later weeds can become very competitive; resulting in yield loss, harvest issues and increased field weed seed bank for over two years following the open canopy problem. Since pre-emergent herbicides generally lose their effectiveness about mid-season, producers rely on dense crop canopy to prevent or suppress weed growth.

So, how do weed controls change with open canopies? Chris Proctor, Nebraska Extension Weeds educator, says that there are four primary herbicide considerations for mid-season weed herbicide options. First, crop growth stages must be evaluated; since many herbicide applications are limited by crop growth stage at the time of application. Nebraska Extension crop stage decision resources include: "Nebraska Soybean & Corn Pocket Field Guide"; "Determining Corn Growth Stage" publication EC126; and "Determining Soybean Growth Stage" publication EC128.

Replant options and rotation herbicide restrictions are listed on labels relating to previously applied fields herbicides. The "Nebraska Extension Guide for Weed, Disease, and Insect Management in Nebraska" publication EC130 (pages 176-189) provides comparison restriction details for determining replant options. For example, if Fierce® (flumioxazin + pyroasulfone) was previously applied to the now-hailed soybean field, soybeans could not be replanted at any time. However, the herbicide label does not allow the soybean field to be replanted (rotated) to grain sorghum within the same growing season due to the 18-month rotation for grain sorghum following Fierce® application.

For severely hail-impacted fields, producers might consider planting forage and/or cover crops this summer or fall. Although these alternative crops may emerge through previous soilapplied herbicide barriers, herbicide grazing label restrictions may limit livestock producers forage options on these fields. The Nebraska Extension forage reference "Forage and Cover Crops Considerations after Hailed Corn and Soybeans" may guide grazing decision options. The UNL EC 130 guide outlines grazing label restrictions on pages 190-193. See attachment.

#### In-Season Soybean Plants Nutrient Analysis:

Increased soybean plants yellowing (or chlorosis) this year have many soybean producers questioning if their soils & plants need more nutrients. Since crop yields are directly linked to the first limiting nutrient, keeping 14 nutrients balanced may be important (if one or more nutrients are limited).

For soybeans, primary required nutrients (needed in highest amounts) include: water (H2O), nitrogen (N), phosphorus (P), and potassium (K). However, sulfur (S), iron (Fe), zinc (Zn), magnesium (Mg), manganese (Mn), and calcium (Ca) might be considered if plants are showing yellowing or pale green.

During the soybean podding stages (R1-R4) plant tissue samples can be taken and analyzed for potential nutrient deficiencies. When sampling, clip the upper, fully developed trifoliate leaves, less the petiole, at random from the field anytime between flowering and initial pod set. The top fully developed leaves are generally the dark green leaves visible at the top of the canopy, which are attached at the second and third node down from the top of the stem. Comparison samples from yellow and green plants can also be tested separately.

# 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 2 – July 8		July 9 – July 15	
Site	<b>Evaporation</b>	Rain	<b>Evaporation</b>	Rain
1	2.00	0.00	2.20	0.00
2	2.00	0.38	2.00	0.21
3	1.40	0.54	1.40	0.15
4	1.90	0.93	2.00	0.02
5	1.50	2.32	1.70	0.25
6	1.40	1.90	1.20	0.30
7	1.80	2.35	1.90	1.07
8	1.55	1.75	1.90	0.40
9	1.70	2.68	1.80	0.25
10	1.70	1.90	1.90	0.30
11	1.70	1.72	2.20	0.33
12	1.90	0.40	1.80	0.07
13	1.70	0.00	1.70	0.14
14	1.20	1.53	1.20	0.11
15	1.90	0.35	2.20	0.13
16	1.80	0.57	1.80	0.24



2018 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	
1/4 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 (V16-16 Leaf to R2-Blister stage):** We are at the peak water use stages of corn. Nitrogen and Phosphorus uptake is rapid. Environmental stress at this time can greatly reduce yield.

#### Avg. daily water use from July 9 - July 15 was 0.19"-0.35".

**Soybeans (R2-Full Bloom to R3-Beginning Pod stage):** We are at or nearing the peak water use period for soybeans. Environmental stress from R3 through R6 (Full Seed) will reduce yield more than any other time. R4 (Full Pod) is the most crucial period.

Avg. daily water use from July 9 – July 15 was 0.19"-0.35".

July 9-July 15 (16 of 16 NAWMN sites reporting): Average weekly rainfall was 0.25 (range 0.00 to 1.07). Average weekly ET for corn was 2.01 and for soybeans was 1.90.

# ET INFORMATION SITES

#### **NAWMN Sites:**

<u>https://www.cnppid.com/weatheret-data/nebraska-agricultural-water-management-network/</u> <u>https://nawmn.unl.edu/ETdata/DataMap</u> CropWatch: <u>https://cropwatch.unl.edu/gdd-etdata</u> CNPPID: <u>https://www.cnppid.com/weatheret-data/</u> Water Use Hotline: 1-800-993-2507

Corn Stage		DESCRIPTION	
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 begin to dry out and darken in color.	
R3	Milk	The kernels display a yellow color on the outside. Inner fluid is milky white. Silks are brown and dry or becoming dry.	
R4	Dough	Most kernels contain a semi-solid, pasty material.	
Soy	bean Stage	DESCRIPTION	
R3	Beginning Pod	At least one pod of 3/16" length is present at any one of the four upper most main stem nodes that have a fully developed leaf. It is not uncommon to see pods of greater length at the lower nodes.	

# 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://cnppid.com/wp-</u>

content/uploads/2016/06/lakeRiverData.html.

	July 19, 2018, 8:00 AM	1 Year Ago
Capacity of Lake McConaughy	84.2%	NA
Inflows to Lake McConaughy	1730 cfs	455 cfs
Flows on the North Platte at North Platte	940 cfs	1003 cfs
Flows on the South Platte at North Platte	340 cfs	135 cfs
Flows on the Platte at Overton	1033 cfs	1574 cfs



"If you want total security, go to prison. There you're fed, clothed, given medical care and so on. The only thing lacking... is freedom." Dwight D. Eisenhower

# WEBSITES OF INTEREST

#### Soil Health:

www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/			
Climate	agclimatenebraska.weebly.com		
NRCS Nebraska	www.ne.nrcs.usda.gov		
Central Irrigation District	www.cnppid.com/		
TBNRD Home Page	www.tribasinnrd.org/		
Farm Service Agency	<u>www.fsa.usda.gov</u>		
UNL Cropwatch	cropwatch.unl.edu		
UNL Extension	extensionpubs.unl.edu/		
K-State SDI Website	<u>www.ksre.ksu.edu/sdi</u>		
No-till On The Plains	www.notill.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:	<u>July 5 – July 18</u>	<u> May 1 – July 18</u>
Arapahoe 9.8 NNE:	1.80	10.98
Bertrand 6.1 mi. SE:	3.53	13.62
Funk 4.1 mi. NNE:	1.85	10.65
Minden 0.855 mi. W:	0.87	9.74
Minden 8.8 mi. ESE:	1.31	8.09

Average Rain for May–July in Holdrege = 11.32 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 <u>curtis.scheele@ne.usda.gov</u>. \*\*\*

#### 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

#### 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

308-995-4222

PO Box 146 Elwood, NE 68937

308-785-2390

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

"The U.S. Department of Agriculture (USDA) prohibits discrimination in all of its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, political beliefs, genetic information, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination write to USDA, Assistant Secretary for Civil Rights, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, S.W., Stop 9410, Washington, D.C. 20250-9410 or call toll free at (866) 632-9992 (English) or (800) 877-8339 (TDD) or (866) 377-8642 (English Federal-relay). USDA is an equal opportunity provider and employer."



#### United States Department of Agriculture Natural Resources Conservation Service

CENTRAL

vation Service 1005 South F

1005 South Brown Street Minden, NE 68959-2601

308-832-1895, Ext. 3

# **Forage-Livestock Perspective for Cover Crop Use Following Hail-damaged Corn and Soybean** Daren Redfearn and Mary Drewnoski

What resources do you have available to help growers decide if they want to plant a hay or grazing forage crop on their irrigated or dryland acres following a hail event?

With the annual forage cover crops, there is a short window for forage growth. Many species can be added into the mixes, but each should have a defined contribution. If the stated goal is forage production, either for grazing or hay, then the mixes need to be predominately grass. Occasionally, mixes will have lower proportions of grass in an attempt to promote growth in other species. Again, if forage is the stated goal, then this can be a mistake. However, this does not mean that other species cannot be added, but it is important that the grass component not be reduced. Generally, no less than 75% of the mixture should be a grass (the higher the better) for summer planting.

There are many opinions regarding diverse cover crop mixes (more than 10 species), but not much data to support their widespread use. What we have seen in diverse mixtures is that legumes do not provide the yield for the seed cost. From a forage production standpoint, the grasses are the biomass producers. For the legumes to provide additional N, soil N should be low, otherwise legumes will use soil N and not fix their own. Actually, legumes are excellent at removing excess soil N.

The following table outlines planting guidelines and includes planting dates, seeding rates, seeding depth, and grazing value <u>https://beef.unl.edu/planting-annual-forages</u>. For mixtures, target the percent of full seeding rate of the species to add to 100 to 150%. Again, it is important to not reduce the grass. \*For July planting, "Late Spring Planting (July-September Grazing)" is the category to use, essentially we want to plant warm season species.

# Logical forage options

What are the options? The first is sorghum x sudangrass for haying, stockpiling and windrow grazing during winter, or waiting until after frost and grazing. It will have the greatest yield for a one time harvest. Sorghum x sudangrass does not regrow as well after grazing. This is especially evident when grazed such that much of the stem is removed. We often see this regrowth consisting of small, thin tillers that consist of tiny shoots and spindly leaves.

For grazing only, sudangrass is better option. However, it is better managed if grazed 45 days or so after planting, allowed to regrow, and then grazed again as it will regrow better. However, given the timing of planting this is a bit of a push because after the first grazing you are at the time when weather starts cooling down and regrowth will be slow. Although some years this may be pretty good and others not so much.

The bigger decision would be based on when the grazing is needed. If summer grazing is an possibility, then sudangrass would be the first option. If grazing will occur during the fall, sorghum x sudangrass might be a better option. That said, pearl millet could also be used. It

will produce less forage than sudangrass or sorghum x sudangrass, but it can be grazed during frost with reduced risk from prussic acid poisoning. If grazing is needed in late September and other grazing options do not exist, pearl millet has an advantage over the sorghum speces.

Forage sorghum is not a good option, except for silage.

Some of the information, especially the grazing management, in NebGuide G2183 entitled *"Summer Annual Forage Grasses"* may be useful <u>http://extensionpublications.unl.edu/assets/html/g2183/build/g2183.htm</u>.

# Agronomic considerations

There is always interest in planting a diverse mixture of cool-season species with warm-season species. The idea is that these can planted together, graze the warm-seasons, and the cool-seasons will then begin growth. However, there is no data to support this practice, but there is also no data that rejects this practice as well. It is likely that the seeding rate for the warm-season species would need to be reduced in order for the cool-season species to establish and be productive.

With a July planting, the warm-season species stand the best chance of success for producing adequate forage yield. Including cool-season species may provide additional growth later in the season or they may be outcompeted by the warm-season species. Based on this, our current recommendation does not lower the warm-season seeding rate as a means to increase cool-season growth later in the season. If it is necessary to plant a mixture to meet program compliance, including an inexpensive species, such as a brassica (rapeseed) would be the least costly trade-off.

The two primary agronomic issues that are important when considering forage cover crops following hail-damaged corn (or soybean) are planting date and high residual soil N, along with possible nitrate issues.

Warm-season species should be planted prior to August 1. After August 1, cool-season species such as oats and rapeseed will be a better option. See NebGuide G2262 entitled *"Annual Cool-Season Forages for Late-Fall or Early-Spring Double-Crop"* on cool-season cover crops <a href="http://extensionpublications.unl.edu/assets/html/g2262/build/g2262.htm">http://extensionpublications.unl.edu/assets/html/g2262/build/g2262.htm</a>.

# **Reducing Nitrate Concerns**

If grazing, high nitrate is less of a concern; haying is a bit more of a concern. However, all annual grasses and brassicas accumulate nitrate and it seems that the grasses are not really different in this respect so it does not change my recommendations. The brassicas accumulate more nitrates than grasses, but they are also higher energy. This may help offset some of the toxicity concerns. We have grazed some very high nitrate fields with no issues.

Haying is a different story. Currently recommended levels of risk are based on hay feeding. Levels above 2100 ppm of N03-N considered high risk, which is appropriate. Potential for nitrate toxicity is lower in grazed forages than in hay with the same level of nitrate due to the following factors:

• Grazing animals eat more gradually than those receiving hay.

• When cattle are grazing, they tend to be selective and do not graze the entire field close to the ground (where nitrate is highest). This means that if allowed access to the field (not strip grazed), they will likely consume the plant parts with lower nitrate concentration first, which would reduce the amount of nitrates consumed during the grazing period.

• Fresh (high moisture) forages release nitrates into the rumen at a slower rate than dry forages such as hay.

• Cattle consuming high energy diets can handle more nitrates than those on low energy diets. Many of the cover crops grazed are very high energy, including the brassicas and immature grasses.

It should be noted that allowing a warm-season summer annual reach maturity and stockpiling it for winter grazing will reduce nitrate toxicity susceptibility. Although toxicity concerns will be less than hay, since the animal can be selective and intake will be slower, the buffer of high moisture or high energy is reduced.

For example, during the past few years we have grazed calves on fall cover crops. When analyzed for nitrates, these would be considered extremely high risk (see the table below). However, no signs of toxicity were noted and calves gained between 1.3 and 2.2 lb./d (low rate of gain was in 2015 with extended cold/wet weather). In all instances, calves were allowed to be selective (access to the whole field at once; 60 d of grazing). Forage quality was very high (above 65% TDN).

Forage	N03-N, ppm	Animal	Year
oat, turnip, radish	6146	steers	2014
oat, turnip, radish	4655	steers	2015
oat, turnip, radish	2158	heifers	2015
oats (south paddock)	912	steers	2015
oats(north paddock)	4414	steers	2015
oats (north paddock)	3921	steers	2016
oats (south paddock)	8026	steers	2016

To summarize, nitrate toxicity will always be a concern and will be with planting cover crops for forage in hail-damaged crop fields. Grazing cover crops that contain elevated nitrate concentrations is not without risk. The amount of risk can be reduced using certain management methods.

# Management strategies to mitigate nitrate toxicity

**Make sure cattle are full** before putting them on fields. Regardless of the nitrate level, a good management practice is to fill cattle up with hay before turn-out.

**Use lower risk cattle, if possible**. The group with the greatest risk of negative consequences due to feeding of high nitrates forages is pregnant cows, as abortion can result. Open cows are the best option followed by growing calves (stockers or developing replacement heifers before breeding).

**Gradual adaptation** can be used as a strategy to minimize risk. Animal adaptation is a key management strategy for using high nitrate forages. Losses from nitrate toxicity will be much greater in cattle not adapted to nitrate. The bacteria in the rumen capable of degrading nitrite to ammonia for bacterial protein synthesis will increase in numbers when nitrate is available to them. Adapted animals can safely be fed higher levels. To adapt the cattle, start by grazing the lowest-nitrate fields and then work up to the highest.

**Graze higher N fields lightly** to allow animals to selectively graze plant parts that are lower in nitrate concentration. Nitrate level varies with location in the plant. Nitrate tends to accumulate in the lower stem, so overgrazing so that cattle have to eat the lower stem can cause increased intake of nitrate.

**Consider grain supplementation while adapting cattle** to high nitrate lower quality forages such as mature sorghum x sudangrass hybrids or pearl millet. This will supply energy for rumen microbes to convert nitrate into bacterial protein and minimizes the intermediate nitrite production. Brassicas, such as turnips and radishes are very highly digestible and as such may be providing enough energy to allow for increased microbial protein synthesis. Thus, grain feeding may be of limited benefit for high quality cover crops.

Ultimately, the decision to graze high nitrate fields is a judgement call and a question of how much risk a producer is willing to take.



# **Getting Started With Soil Health Field Day**

8:30 AM - Registration at Kearney County Fairgrounds 238 East 21st cul-de- sac, Minden, NE 68959 (North edge of Minden on Highway 10)

9:00 AM - Classroom Sessions:

Rainfall and wind erosion simulators - Candy Thomas, NRCS Understanding soil tests: Why chemistry is still important, Soil health tests explained, A look at Solvida tests - Dr. Ray Ward Equipment and rotations in a soil health system - Paul Jasa

Lunch - BBQ meal provided on site

1:30 PM - Afternoon Feild Tours:
Paul Jasa, UNL Extension - Don't go back to tillage, how soil health practices keep weeds in check
Soil Pit with Ray Ward - How applied conservation pactices improve soil health and profitability
Soils Demonstration - Infiltration and slake tests, why limited water in helathy soil out yeilds unlimited water in unhealthy soil
Field sites will include cover crops and double crop wheat and corn

Please thank these sponsors for their ongoing support!







