

PHASE II & III NEWSLETTER



Nitrogen Levels in Groundwater Lead to Increased Management

On September 16, 2021, the Upper Big Blue NRD Board of Directors voted to move Zones 6 and 11 to a Phase III Management Area, beginning January 2022. This was based on the monitoring well results from the summer of 2021, which showed a median nitrate level of 10 ppm for both zones. The following townships will now be subject to Phase III requirements:

Zone 6

York County: Hays (09N-03W), Henderson (09N-04W), Baker (10N-03W), Brown (10N-04W)

Hamilton County: Farmers Valley (09N-05W), Beaver (10N-05W)

Zone 11

Seward County: Map E (11N-01E), Map F (11N-02E), Map G (11N-03E), Map H (11N-04E), Map L (10N-01E), Map K (10N-02E), Map J (10N-03E), Map I (10N-04E), Map O (09N-03E), Map P (09N-04E)

All operators of land within a Phase III Management Area are subject to the following requirements:

- Shallow and deep sampling per every 40 acres
- Anhydrous ammonia applied in fall must include a district approved nitrification inhibitor. Approved active ingredients: Nitropyrin, Pronitridine, and Dicyandiamide.
- A copy of the inhibitor receipt as proof of purchase must be turned in with the annual report (Phase II/III report).
- All active irrigation wells must be sampled once every three years.
 - Zones 6 and 11 deadline: April 1, 2025
 - Zone 5 deadline: April 1, 2023



INSIDE THIS ISSUE

N Levels Lead to Increased Management.....1

Zone Map, Median Charts....2-4

Cost Share Funds Available.....4

Groundwater Sampling5

Soil Carbon Project.....5

Management Area Reqs.....6-7

SDI Systems & Chemigation...7

Online Reporting.....8

On-Farm Research9

Producer Survey.....9

N Management Certification Training.....9

Cereal Rye.....10

New Incentive Program Announced.....11

Project GROW.....12

See all requirements for Phases I, II, & III on pages 6 and 7. ➡

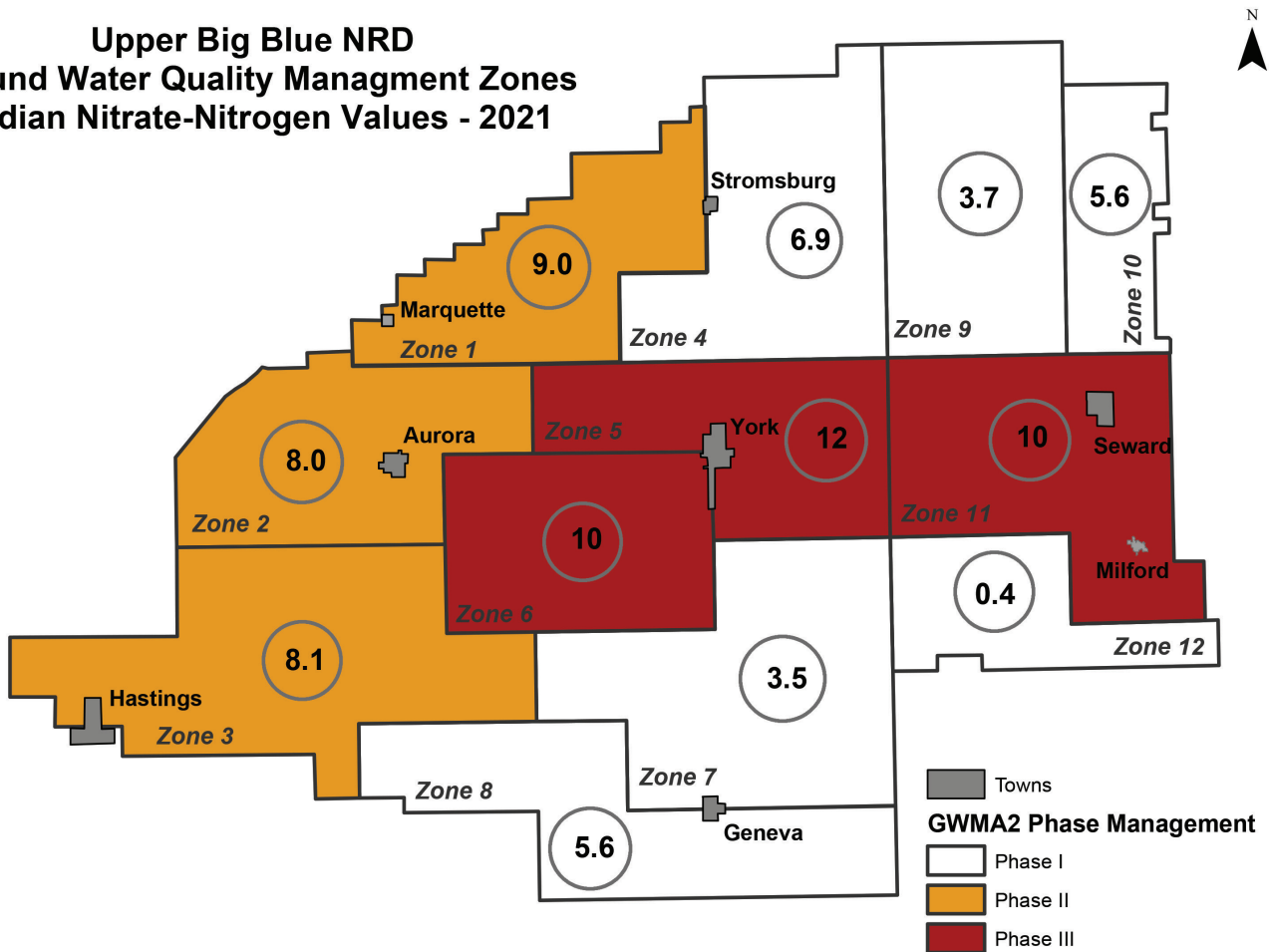


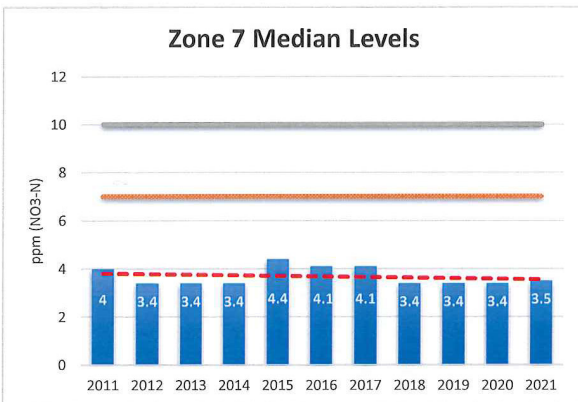
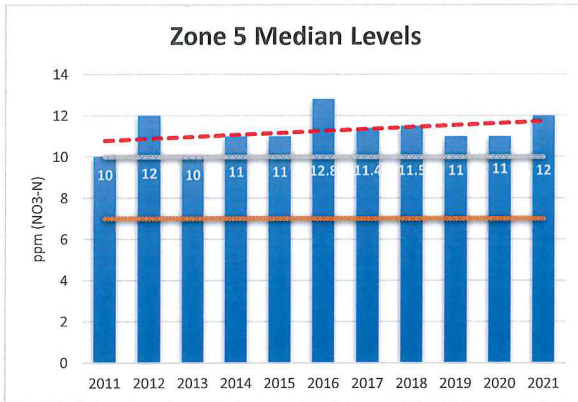
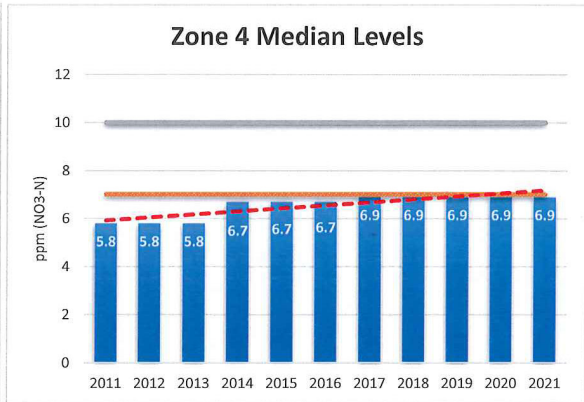
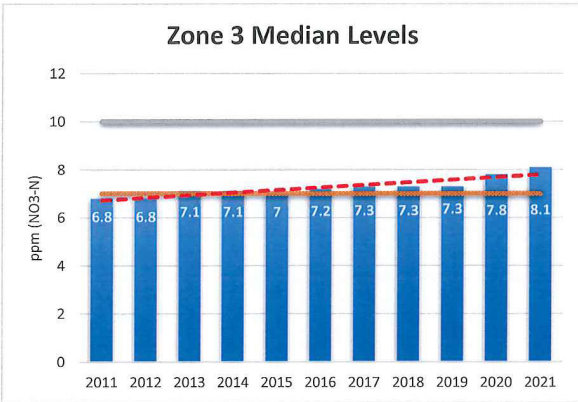
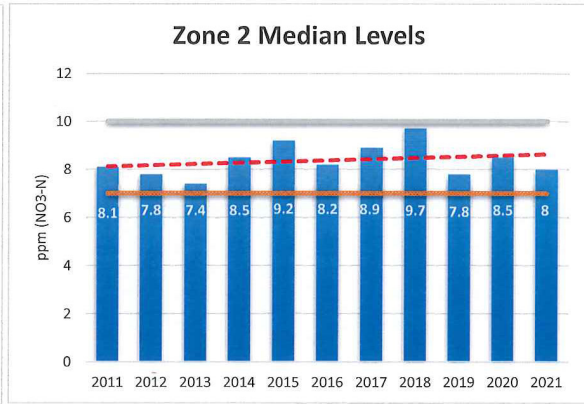
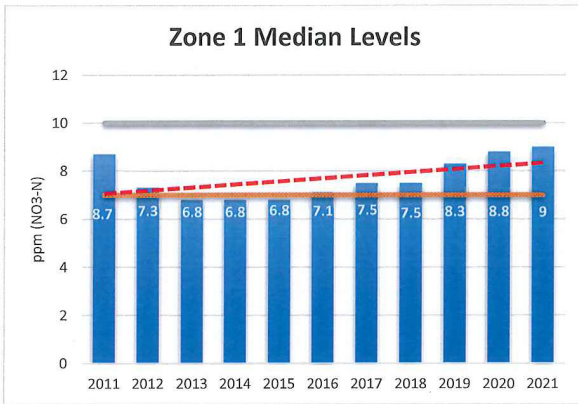
Nitrates in Groundwater Management Zones Trend Upward (Map & Graphs)

Groundwater nitrates are a growing concern across the U.S., especially in Nebraska where over 80 percent of the water consumed by its population is groundwater. The Upper Big Blue NRD has been monitoring groundwater quality since 1997 through a network of irrigation, municipal, dedicated monitoring, and domestic wells the district refers to as GWMA#2 (Groundwater Management Area #2). The GWMA#2 is comprised of twelve management zones delineated based on aquifer properties, land use, and geologic formation (see map on page 2). The graphs on the next few pages show the median nitrate level and trend of each management zone over the last 10 years. The orange line represents the Phase II trigger of 7 ppm and the gray line is the Phase III trigger of 10 ppm. The red line shows the trend over the past 11 years. ♦♦♦

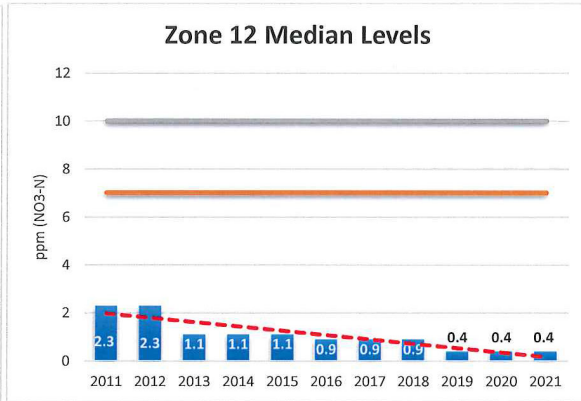
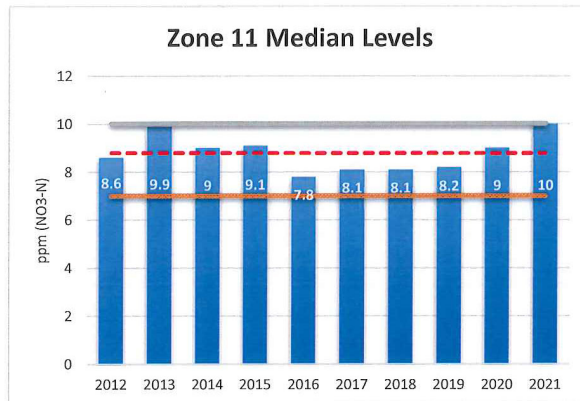
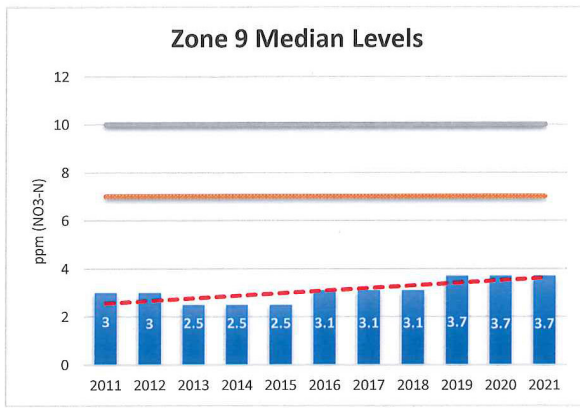


**Upper Big Blue NRD
Ground Water Quality Management Zones
Median Nitrate-Nitrogen Values - 2021**





Graphs continued on next page.



Cost Share Funds Available: Flow Meter Repair and VRI Upgrades

The NRD offers producers assistance with flow meter repairs and qualifying upgrades of irrigation systems. Take advantage of these funds to maximize your irrigation investment. For details on either of these cost share opportunities, please visit www.upperbigblue.org or call the office at (402) 362-6601.

Flow Meter Repair: Cost share funding is offered at a maximum of 50 percent not to exceed \$300. To access these funds, irrigators should complete forms on the NRD website or call the office to ensure that they qualify prior to completing the repairs. The maximum cost-share per landowner for flow meter repair is \$1,000 per fiscal year.

VRI: The Variable Rate Irrigation Pilot Program provides landowner assistance for the design, installation, and technical support of VRI equipment to improve precision application of irrigation water from linear and center pivot systems. For approved VRI applications, the maximum cost-



share rate is 50 percent of the current Nebraska NRCS EQIP rate (minus other cost share funds), or 50 percent of the actual costs (minus other cost share funds), whichever is less, up to \$7,500. ♦♦♦



Groundwater Quality Sampling Schedule

■ The Upper Big Blue NRD is divided into twelve groundwater quality Management Zones. The median nitrate value for that zone determines the phase of management and therefore, rules and regulations.

Taking a step back, the median nitrate value for a zone is the product of water samples collected from a specific network of wells. These wells are selected based on construction and geology. A well that provides accurate results is screened in one portion of the aquifer only, and does not have multiple screens. The screen also does not transect geological confining units such as clay layers, which could mix shallow and deep water.

Currently, there are 287 wells in the water quality network. Most of the wells are irrigation, with some monitoring, domestic and public wells. To annually collect a water sample at each of these wells would be incredibly difficult given the sheer size of the District - over 1.2 million irrigated acres! Therefore, a rotation of zones below the Phase II trigger of 7.0 ppm was created. This means that if the median

nitrate value of a Zone is below 7.0 ppm, it will be sampled once every three years. If the median nitrate value is above 7.0 ppm, that Zone will be sampled annually.

In 2021, district staff sampled wells in Zones 1, 2, 3, 5, 6, 7, 8, and 11. In 2022, District staff will sample wells in Zones 1, 2, 3, 5, 6, 9, 10, 11, and 12. (See Zone map on page 2.)

Thank you to all irrigation, domestic, and monitoring well owners for your continued cooperation. Protecting groundwater quality is an important task and your support is valuable. ◆◆◆



You want to improve your soil's health. We want to help you do it.

New funds are available for cover crops, no-till, and diverse crop rotation, up to \$45/acre, through the Nebraska Soil Carbon Project. Rolling enrollment deadlines means you can start today!

upperbigblue.org/SoilCarbonProject

Management Area Rules and Regulations

Phase I Requirements –

All operators within the district are subject to the requirements of Phase I.

- 1. *Fall Applied Anhydrous Ammonia***
Application of fall anhydrous ammonia before November 1 is prohibited.
- 2. *Pre-Plant Liquid or Dry Nitrogen Formulations***
Pre-plant nitrogen applications in liquid or dry forms are prohibited before March 1.
- 3. *Exemptions to Items 1 & 2***
The application of nitrogen fertilizer for any purpose other than fertilizing spring planted crops.
 - The application of nitrogen fertilizer for spring planted small grains such as barley, oats and rye.
 - The application of fertilizer that is not considered a “nitrogen fertilizer” as defined in Rule 5 of the District Ground Water Management Rules and Regulations.
 - The spreading of manure, sewage and other by-products conducted in compliance with state laws and regulations.

Phase II Requirements –

All operators of land within district Management Zones 1, 2, 3, 5, 6, and 11 are subject to the requirements of Phase II. Refer to the map on page 2 for Phase II areas. Phase II operators are required to follow all Phase I requirements in addition to the following:

- 1. *Nitrogen Certification Training***
Farm operators must attend a nitrogen certification training once every 4 years.

- 2. *Irrigation Scheduling***

Irrigation scheduling equipment is required in at least one field in a Phase II area. The equipment should be installed in the largest field you operate. Examples of irrigation scheduling equipment are:

- Capacitance Probes
- Resistance Blocks
- Other methods approved by the District

- 3. *Soil Sampling Requirements***

Soil samples are required in years when corn or sorghum will be grown following a non-legume crop and/or when livestock, municipal or industrial waste has been applied within the last 12 months.

A minimum of:

- 1 composite 0-8” sample per field analyzed for organic matter and residual nitrogen, and
- 1 composite 8-24” sample per field analyzed for residual nitrogen are required.

For soil sampling purposes, a field is defined as one where the crop and irrigation practices are the same.

- 4. *University of Nebraska Recommended Nitrogen Fertilizer Application Rate***

Prior to applying nitrogen fertilizers, the operator must calculate the recommended application rate based on the University of Nebraska’s nitrogen fertilizer recommendation equation. The UNL nitrogen recommendation equation takes into account the residual soil nitrogen from your soil analysis and other nitrogen credits.

- 5. *Reporting Requirement***

An annual report is required for all dryland and irrigated fields by April 1. The report steps you through the University’s Nitrogen Recommendation Equation. A copy of your soil analysis must accompany the report.



Phase III Requirements –

All operators of land within district Management Zone 5, 6, and 11 are subject to the requirements of Phase III. Phase III operators are required to follow all Phase I and II requirements in addition to the following.

1. Soil Sampling Requirements

Soil samples are required in years when corn or sorghum will be grown following a non-legume crop and/or when livestock, municipal or industrial waste have been applied within the last 12 months. A minimum of:

- 1 composite 0-8" sample per 40 acres or any portion thereof, analyzed for organic matter and residual nitrogen
- 1 composite 8-24" sample per 40 acres or any portion thereof, analyzed for residual nitrogen are required.

2. Irrigation Water Sampling

All irrigation wells must be sampled and tested for nitrate once every 3 years. You are free to use any lab you wish, but the NRD offers nitrate testing free of charge.

3. Fall and Winter Application of Anhydrous Ammonia

All anhydrous ammonia applied between the dates of November 1 and February 29 must be applied with a district approved nitrification inhibitor. Active ingredients include: Nitropyrin, Pronitridine, and Dicyandiamide. A receipt as proof of purchase must accompany your annual report. ◆◆◆

SDI Systems & Chemigation

Chemigation is an efficient and easy way to put your chemical onto the field. Many producers in the district use this application method to put fertilizer on as the crop needs it and do so by injecting chemical into their pivot systems to get a uniform distribution of the correct concentration of fertilizer. This can be done in a variety of irrigation systems, including subsurface drip irrigation (SDI). However, there can be some confusion when it comes to the regulations involved with applying chemical using an SDI system. All SDI systems must have underground injection control (UIC) authorization, whether you plan to chemigate or not. If you want to put in an SDI system, you can find more information on UIC and the applications for SDI on the Nebraska Department of Environment and Energy website (<http://www.deq.state.ne.us/>).

Once your application is accepted, your authorization for that well is good for ten years. If you are planning to chemigate with this SDI system, then you will need to also get a chemigation permit from the NRD.



Like other chemigation permits, the SDI system will need the required safety equipment and initial inspection before injecting chemical. While the UIC allows you to use the SDI system, the chemigation permit will authorize you to be able to inject chemical through that system. Remember, the only time you do not need a chemigation permit with SDI systems is if you are just irrigating with it and are injecting chlorine to clean the system once each calendar year. If you would like to know more about chemigation, or would like to apply for a permit, feel free to contact Jacob Maslonka with any questions you have. ◆◆◆

Online Reporting for Water Use and Phase II & III Management Area Reports Dashboard Improvements



Miranda Coffey
Water Data Specialist
mcoffey@upperbigblue.org

The Upper Big Blue NRD has updated the online reporting portal. We listened to users' feedback and have been able to incorporate many of your suggestions into this latest version. Some of the new functionality includes:

Being able to use one account to report for all your entities. You will now be able to see water use reporting and Phase II/III Management Area reports in one login. We added a layer of account management so that producers can group their users under one email address. Staff did their best to build this functionality. If you log in and something does not look right, call the office and we will be happy to assist you.

The site is mobile friendly. Producers can access the online portal site on tablets and phones allowing for a mobile user experience. Enter meter readings, snap pictures of flowmeter registers, scan and attach soil samples quickly and easily within the portal. (Cellular provider data usage and rates will apply.)

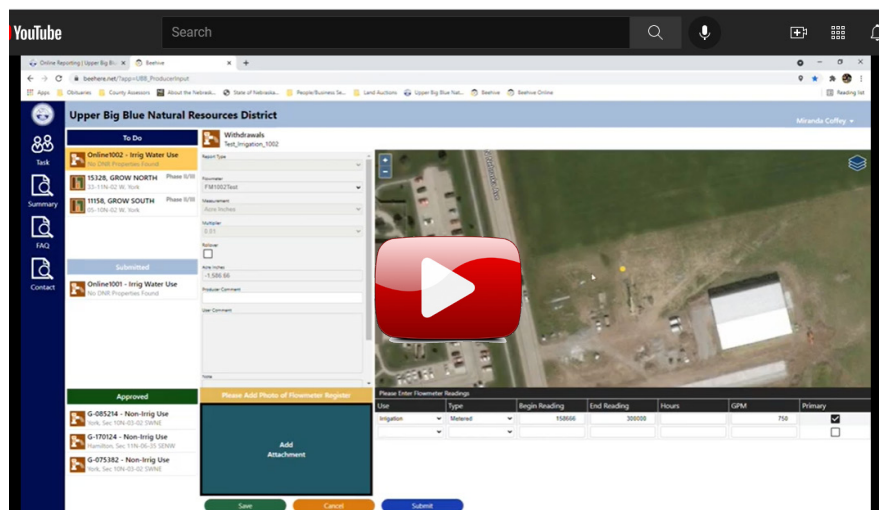
For water use reporting, everything you need is now on one screen. No more toggling between screens to enter your flowmeter readings and calculate total water pumped.

Smoother login experience. The way you connect with the online portal has been updated.

- If you have logged in previously, you can use your existing username (email address) and password.
- If we have your email address on file, simply enter your email address and click "Don't Remember Your Password."
An email will be sent to your email address to set up a password. Once your password is set, you can use it year after year.
- If we do not have your email on file, simply call our office. Our technical support staff will collect your email address and any other entities you want associated with that email address and your account will be ready to log in.

If you have any difficulty with logging in, questions, or corrections to your report, please give us a call! We have technical support ready to assist you during normal business hours (Monday to Friday, 8 A.M. to 5 P.M., closed from 12-1 P.M.) at 402-362-6601. You can also contact us at info@upperbigblue.org. ♦♦♦

Check out our video tutorial to see the new dashboard: <https://www.upperbigblue.org/programs/online-reporting>



On-Farm Research Program Seeks New Projects & Producers



Producers who wish to find scientific answers to agronomic questions can work with University Extension to design trials and collect data throughout the growing season.

The Upper Big Blue NRD will continue to partner with local producers and University of Nebraska Extension in the university's On-Farm Research Program in 2022. Last year, the partnership provided five groundwater quality centered research projects that helped volunteer producers answer questions in their operations. Projects included examined use of nitrification inhibitors, anhydrous timing versus rate comparison, and fall versus spring applied anhydrous with and without nitrification inhibitors.

The Upper Big Blue NRD will provide technical resources along with financial assistance for volunteer producers to offset the cost of soil, water, and plant tissue analysis. Project results are published for other interested producers to review. Past years' results are available online at <https://cropwatch.unl.edu/farmresearch/resultshome>. If you are interested in participating in the On-Farm Research Program, speak to your local University of Nebraska Extension Agent or visit our website <https://www.upperbigblue.org/programs/groundwater-quality>. Projects must be approved by the NRD before planting to ensure funding. ♦♦♦

Kendall Siebert of Henderson (above) is one of the NRD Directors who has participated in the on-farm research program. The Board of Directors would like to see more producers in the Upper Big Blue Natural Resources District conduct studies that look at application timing and nitrogen leaching.



Upper Big Blue NRD Trainings

- Dec. 7 | Holthus Convention Center | Project GROW Winter Workshop | Morning and afternoon sessions beginning at 8:15 and 12:45
- Dec. 17 | Harvest Hall | Seward | 9 a.m. - 11:00 a.m.
- Jan. 13 | Holthus Convention Center | York | 9:00-11:00 a.m.
- Feb. 16 | Leadership Center | Aurora | 9:00-11:00 a.m.
- Mar. 15 | Holthus Convention Center | York | 6:30-8:30 p.m.

Little Blue NRD Trainings

(9 a.m.-12 p.m.)

- Dec. 10 | Hastings (TBA)
- Online training also available at <https://littlebluenrd.org>



Operators of wells within our Groundwater Monitoring Well Network should have received a land practice survey along with their nitrate results this year. The purpose of this survey is to help us understand what is going on at the land surface as it directly relates to the quality of the groundwater. The survey focuses on nitrogen application, as well as irrigation usage. Operators should expect to receive this survey annually for the next few years. This survey will not be used to single anyone out over their land practices. Paper copies of the survey can be sent back to our office, or they can be filled out online at www.upperbigblue.org/gwma-2-producer-survey. To unlock the survey, you will need to know your well registration number (found on your results letter). ♦♦♦

Cereal Rye

Cold Hardy Cover Crop, Ideal After Corn & Soybeans



Dan Leininger, Water Conservationist,
Upper Big Blue NRD

The hardiest of cereals, rye can be seeded later in the fall than other cover crops and still provide benefits such as significant reduction of nitrate leaching and exceptional weed suppression. Rye is the best cool-season option for absorbing unused soil nitrogen. It has a quick-growing fibrous root system that can take up and hold as much as 100 pounds of residual nitrogen until spring. Rye is also one of the best cool-season cover crops for outcompeting weeds, especially small-seeded annuals such as lamb's quarters, pigweed, velvetleaf and foxtail.



While rye is susceptible to the same insects that attack other cereals, serious infestations are rare. Rye reduces insect pest problems in crop rotations and attracts significant number of beneficial insects. Rye can establish in very cool weather. It will germinate at temperatures as low as 34 degrees Fahrenheit. Vegetative growth requires 38 degrees Fahrenheit or higher.

A big concern in planting rye late in the growing season, say following corn, is the lack of a large amount of above ground biomass. A misconception is that if there is no large above ground growth that there is no benefit to the soil and the planting of rye would be a waste of time and money. However, research has shown that even with limited above ground growth there is a substantial below ground root system.

The next picture, taken of a field just outside the city of York, shows a small above ground biomass growth of 3-4 inches, but a root system extending down to 14 inches. Also note the earthworm activity that is present indicating a healthy soil that is recycling nutrients.

The picture to the right is a field that was aerially seeded with rye and radishes in a soybean field when the leaves were turning yellow and just starting to fall off. ➡

The Upper Big Blue NRD has multiple programs to assist producers with the planting of cover crops, including cost share for qualifying producers. Call the office at 402-362-6601 for more information. ◆◆◆





New Incentive Program Announced Additional Payments For Producers in Water Quality Target Areas

The Upper Big Blue Natural Resources District is offering a new incentive program for producers in portions of the Recharge Lake Watershed, the Beaver Creek Watershed, and some municipal Wellhead Protection Areas. Practices included in this program are cover crops, buffer/filter strips, and land treatment practices. Qualifying producers are eligible for an incentive payment to install these practices starting in fall 2021.

The purpose of the program is to increase incentives for producers who are interested in installing these important conservation practices. Cover crops and buffer strips are simple ways to improve water quality, as they keep sediments and agrochemicals on the fields instead of washing into waterways.

“Our hope is that this program will allow more producers to plant cover crops and filter strips to improve the quality of the water in our district in key areas where we know we can make a significant impact,” said Marie Krausnick, water department

manager at the Upper Big Blue NRD. “We want to make it as simple as possible for producers who have been thinking about installing these practices to go ahead and take action now and get started.”



These two practices were among those identified by a district stakeholders group as those that are likely to be adopted by the district’s agricultural community, if the right incentives and supports were in place. The stakeholder group that made recommendations to the board of directors of the NRD included landowners, operators, agribusiness owners, recreationists, municipal representatives, and livestock producers in the Beaver Creek watershed. They met from January to March of 2021 to discuss water quality issues in the district and hosted an open house event to present ideas to the public. Materials from these meetings are available at www.upperbigblue.org/WQMP.

As with much of the state of Nebraska, water quality concerns in the area targeted by this program include nitrates, which are known to cause adverse health outcomes for humans. The program will also help with concentrations of atrazine and phosphorus, which harm wildlife that depend on streams, lakes, and rivers in the district. If widely adopted, this new incentive program could improve the quality of drinking water in the district, as well as improve the recreational opportunities at Bruce L. Anderson Recreation Area in York, where the fishery has been dramatically decreased due to poor water quality.

Producers who are interested in applying for the incentive program can call John Bush at the NRD office at (402) 362-6601 or complete a short form on the NRD website. The application process is quick and easy to allow for installation of conservation practices in fall 2021. This program is funded directly by the Upper Big Blue Natural Resources District and is not affiliated with any federal conservation programs. However, the program does include collaboration with local NRCS soil specialists to ensure best results. Full program details at www.upperbigblue.org/WQMPIncentiveProgram. ♦♦♦

JOIN US FOR
PROJECT
GROW
WINTER
WORKSHOP
2021

FREE EDUCATIONAL EVENT
COUNTS TOWARD N CERTIFICATION
***CCA CREDITS PENDING**

DECEMBER 7
HOLTHUS CONVENTION CENTER
NEW FORMAT
MORNING AND
AFTERNOON OPTIONS
WITH BREAKOUT SESSIONS

TOPICS

Nutrient management, cover crops, reducing risk in marketing commodities, soil & water management, healthy & productive soils for nutrient-dense foods, benefits of using wheat in a crop rotation, the nitrogen cycle, programs and funding, tools for nitrogen management...and more!

SPEAKERS

Tim Mundorf (CVA), Jack Fenske (York Commodities), Jocelyn Lavalley (EDF), Jakin Berns and Davis Behle (Green Cover Seed), Laila Puntel (UNL), Dr. Jill Clapperton (Rhizoterra Inc), Harvey Cool (Bayer Crop Science), Al Dutcher (UNL), Ron Jakubowski (Aurora Coop), Jacob Fritton (The Nature Conservancy), Jeremy Milander (Nebraska Extension), and Crystal Powers (Nebraska Water Center)

LEARN MORE AND REGISTER AT
WWW.UPPERBIGBLUE.ORG/WINTERWORKSHOP

