

PHASE II & III NEWSLETTER



How Much Rain Did You Keep?

By Paul Jasa, Retired Extension Engineer
Used with permission of the Nebraska Soil Health Coalition

When you ask a producer, “How much rain did you get?” the answer usually comes with a catch:
“We got an inch—but it came too fast and most of it ran off,” or “Only half an inch—but we sure could use more.”

But the real question isn’t how much rain fell—it’s how much your soil held onto. That’s the water that actually feeds your crops.

A Lesson from the Past

I grew up farming in northeast Nebraska in the 1960s. Like most producers back then, my dad relied heavily on tillage. After plowing, the bare soil was vulnerable—rain ran off, and erosion was common. In the 1970s, he moved to a reduced tillage system that helped hold onto more of that precious rainfall.

With this background in farming, I studied agricultural engineering at the University of Nebraska and started focusing on soil and water conservation. Over the years, I’ve learned that how we treat our soil—by using crop residue, no-till farming, and cover crops—can make all the difference in how much water the soil keeps.

This became the focus of my Extension programs and why I’m working with the Nebraska Soil Health Coalition to help producers adopt practices to improve soil health.

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Groundwater Quality Sampling Schedule

The Upper Big Blue NRD is divided into 12 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 309 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.

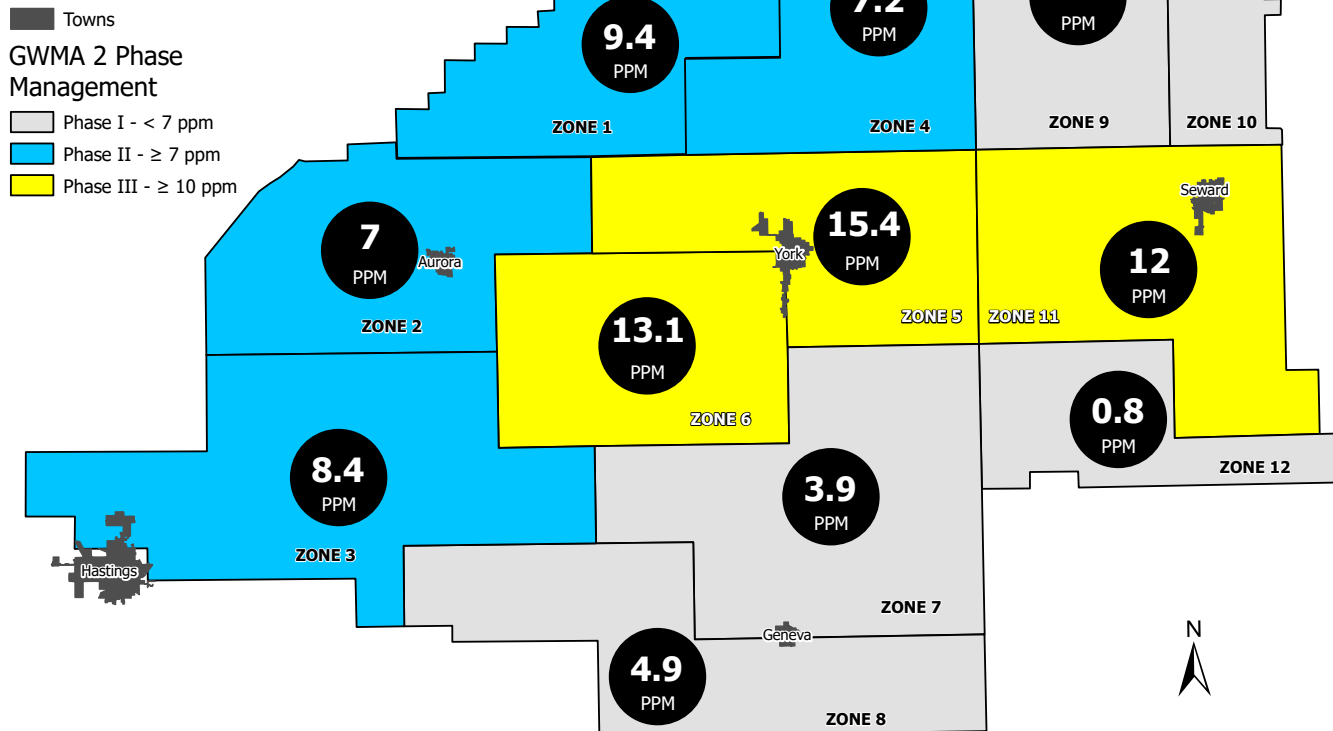
In 2025, District staff sampled wells in Zones Zones 1, 2, 3, 4, 5, 6, 9, 10, 11, 12.

In 2026, District staff will sample wells in Zones 1, 2, 3, 4, 5, 6, 7, 8, and 11.

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.



Upper Big Blue NRD Groundwater Quality Management Zones & Median Nitrate-Nitrogen Value 2025





corn seedlings without residue (tilled)

soybean seedlings with residue (no till)

How Much Rain Did You Keep? (continued from page 1)

Why Soil Health Matters

Healthy soil isn't just dirt—it's a living system. Plants and their residues play a crucial role in protecting that system. Raindrops hitting bare soil can cause particles to detach and runoff, but plant residue acts like armor, absorbing the impact and keeping the soil in place.

Residue also shades the ground from sun and wind, reducing evaporation and keeping the soil cooler during hot spells. Living roots—like those from cover crops—send sugars into the soil, feeding the microbes that keep soil healthy and structure intact.

Saving Water Pays Off

Practices like no-till farming do more than save on fuel and labor—they help your fields retain water. That's especially valuable when rainfall is scarce or irrigation costs are high.

Take this example: University of Nebraska research at North Platte showed that corn grown in residue-covered, no-till plots outperformed bare-soil plots by 17–25 bushels per acre. Soybeans were 8–10 bushels higher. That's a big boost—and a result of saving 2.5 to 5 inches of water per season.

Kansas State University studies echoed this. In Garden City in southwest Kansas, fields without residue lost up to 30% of their water to evaporation during irrigation season. But with crop residue, evaporation dropped to 15%. That's a savings of 2.5 to 4 inches of water.

Better Infiltration, Less Runoff

Tilling the soil breaks down its structure, causing it to seal up and shed water. UNL research in Sidney used a rainfall simulator to show the difference:

no-till plots absorbed nearly 4 inches of rain before runoff began—plowed plots started running off after just 1 inch.

Long-term trials across Nebraska have shown similar results. At the UNL Rogers Memorial Farm near Lincoln, no-till fields absorbed over 4 inches of water per hour—compared to just 0.4 inches on tilled ground. That means when heavy storms hit, no-till fields soak up the rain instead of washing it away. Similar results were measured at the UNL South Central Ag Lab near Clay Center after 30 years of continuous tillage system evaluation.

Zach Mader, a producer near Dannebrog demonstrated this nicely in a video taken after a 7-inch downpour in June. Just six hours later, he was walking across his field—the ground was firm and he left no foot tracks. “This is a prime example of how soil health pays,” Mader says.

Building Resilient Farms

When producers adopt no-till, manage crop residues, and plant cover crops, they're not just growing crops—they're growing resilience. These practices protect against drought, reduce runoff and erosion, and help retain both water and nutrients in the root zone.

Healthier soil means stronger yields, lower costs, and a more sustainable future. ♦♦♦



Increased Nitrogen Efficiency Brings New Questions

By Terry Julesgard, Water Department Manager, UBBNRD

It all started with two questions—

“What does the NRD do with the information we gather from producers on the Phase II and III and Water Use Reports?” The answer - in the beginning the data was compiled and archived to give the district a snapshot of the year the data was collected. Now, using the data provided over the past eight years, located in our Beehive platform, we can provide meaningful trends in yield, water use, nitrogen applied, residual soil nitrates and nitrogen use efficiency. The first report provided back to the producer was water use by pooled fields to help the producer plan water use by field if the district needs to move into a time of allocation. The second report provided back to the producers was the nitrogen use efficiency by field to show the producer what their nitrogen use efficiency is by field or if changes in nitrogen application could improve their bottom line. The data collected also helps the district track trends in crop rotation and timing of nitrogen application to help the district develop education programming around best management practices.

“Is what the district doing helping lower the nitrate levels in the groundwater?” This question is a little more complex to answer and one with many answers and maybe just as many questions. The short answer is “yes,” with the help of our partners like UNL Extension, the Nature Conservancy and the Natural Resource Conservation Service, producers are provided a constant stream of practice improvement and learning opportunities to improve their soils and their nitrogen use efficiency. With this education the district is seeing trend lines of nitrates in the groundwater begin to flatten out in some management zones and even decrease in one zone. The data collected over the last eight years shows what we would consider “normal increases”. The district has seen:

- Average yields increases of 11%, to 227 bushels per acre in Phase II and III areas.
- Applied nitrogen increases of 15% to 200 pounds per

acre (lbs/A) average for corn-on-corn fields and 4% to 184 lbs/A average for corn/bean rotations.

- Average nitrogen use efficiency rate of 0.9 pounds of nitrogen per bushel of corn grown.

The numbers that stand out are the residual nitrate nitrogen in the soil:

- Corn-on-corn field increases from 33 lbs/A average to 86 lbs/A, an increase of 202%.
- Corn/bean rotation field increases from 32 lbs/A average to 86 lbs/A, a 212% increase.

Why is the data showing these dramatic increases in residual nitrate nitrogen in the soil? Is there an elephant in the room? Is there something being overlooked or not taken fully into consideration? And if so, what is it?

While trying to answer those questions, I came across the article below, published by Purdue University in July of 2019. The article points out what I believe most producers already know but maybe have not taken the time to fully investigate themselves.

Simultaneous gains in grain yield and nitrogen efficiency over 70 years of maize genetic improvement

By Sarah M. Mueller, Carlos D. Messina & Tony J. Vyn

WEST LAFAYETTE, Ind. – During the past 70 years, hybrid corn varieties have increased both yield and nitrogen use efficiency at nearly the same pace, largely by preserving leaf function during grain filling. The Purdue University study’s findings offer strategies for corn breeders who want to continue to improve yields and nutrient efficiencies.

Decades of genetic improvements in corn have led to a fourfold increase in grain yield since the 1930s,



before hybrids were widely used. But those yields also required increases in nitrogen application, and loss of excess nitrogen can damage water and air quality as well as wildlife.

Tony Vyn, the Corteva Agriscience Henry A. Wallace Chair in Crop Sciences and a professor in Purdue's Department of Agronomy, wanted to know how corn plants have historically utilized nitrogen – especially in reproductive growth – so that breeders can make informed decisions with future hybrids. He and his former doctoral student, Sarah Mueller, obtained seed and grew seven commercially important Pioneer hybrids, approximately one from each decade between 1946 and 2015. They were grown side by side under a range of nitrogen managements and analyzed at several stages of growth through maturity to understand



An early corn hybrid from 1958 (right) versus a more modern hybrid from 2015 (left). The modern crops retain leaf nitrogen longer, keeping leaves green for continued photosynthesis that allows plants to increase kernel number and size

nitrogen uptake and distribution throughout plant tissues.

“There’s been a progressive improvement in nitrogen use efficiency in corn hybrids. That’s coming about as yields have increased while modern hybrids were able to capture more and more of the fertilizer nitrogen applied,” said Vyn, whose findings were published in the journal *Scientific Reports*. Over the last 70 years, genetic improvements have led to an 89 percent increase in grain yields and a 73 percent increase in nitrogen use efficiency from early hybrids to today, the study finds.

“There’s been a plateau in nitrogen fertilizer rates applied to corn in the U.S. since the 1980s,” Vyn said. “But we’re capturing more of the fertilizer we apply so that less is lost while more of the nitrogen captured by the plant is creating grain. In our case, we’ve documented progression from creating 42 pounds of grain per pound of nitrogen taken up in the plant to 65 pounds of grain. “That essentially means that we’ve not necessarily sacrificed the environment in realizing much

higher yields now than we did 50 or 70 years ago.”

Vyn’s team found that more modern hybrid corn kernels get much of their nitrogen from corn stems. That’s key, he said, because it’s important to keep as much nitrogen as possible in leaves so that plants can meet the assimilate requirements inherent in the increased corn kernel numbers and kernel size that are foundational in achieving higher grain yields.

“Kernels are going to pull nitrogen from somewhere in the plant. Stems contribute almost nothing to photosynthesis, but keeping nitrogen concentrations in the leaves higher for more of the growing season allows for more photosynthesis and improved yields,” Vyn said. He added that the findings offer breeders suggestions for how to continue to make improvements in yield and nitrogen use efficiency, focusing on the timing and movement of nitrogen through stems and into kernels.

Corteva Agriscience, of which Pioneer Hybrid International is a part, donated seeds for the research, blindly analyzed tissue samples and provided funding to hire undergraduate student workers and for field and laboratory supply and equipment rental expenses. Sarah Mueller’s doctoral studies at Purdue were supported by a scholarship from the Indiana Corn Marketing Council. Vyn was funded through a U.S. Department of Agriculture Hatch grant. Writer: Brian Wallheimer, 765-532-0233, bwallhei@purdue.edu Source: Tony Vyn, 765-496-3757, tvyn@purdue.edu

Though this article has a different focus, it highlights a very important fact—corn hybrids are becoming more efficient in nitrogen use efficiency (NUE) with each new hybrid developed. So, what do we know about NUE?

According to David Meyer, who grew up near Dodge NE, and has a Ph.D. in plant breeding and genetics for UNL along with a 40-year career with Corteva AgriSciences in plant breeding, provided the follow in site into NUE. “NUE is a complex genetic trait with many interdependencies that make it difficult to select for per se in a breeding program. What makes NUE tricky is there are two distinct paths.

(continued page 6)



New Questions (continued)

One being, how well can the plant extract nitrogen from the soil. The second being how well can the plant move it into the kernel which determines yield. Thus, by historically selecting for the highest yielding variety across a wide range of environments in breeding programs, both aspects of NUE was inherently improved". Dr. Meyer adds, "Modern Varieties that are much improved on their ability to both absorb Nitrogen from the soil and convert it into yield once it's in the plant. Producers and their advisors need to take this into account when deciding how much N to apply." So, with the new hybrids and their ability to uptake and use nitrogen efficiently, a serious look needs to be taken at how much nitrogen does a corn plant actually need?

Looking at this from a 30,000-foot view it begs the question, do we—hybrid developers, producers, educators, natural resources managers, regulators—truly understand how efficient the new hybrids are at using nitrogen? Is over application taking place because we do not allow these new hybrids to reach their full potential of nitrogen use efficiency? I fully agree with the statement I hear from all producers, "we cannot afford to over apply nitrogen", but if one doesn't know the actual efficiency of the seed they are planting, and use the same old way to determine nitrogen application rate, how

does one know if an over application has occurred? There are technologies currently being developed and used to feed the plant only what it needs, when it needs it and are achieving nitrogen use efficiencies (NUEs)

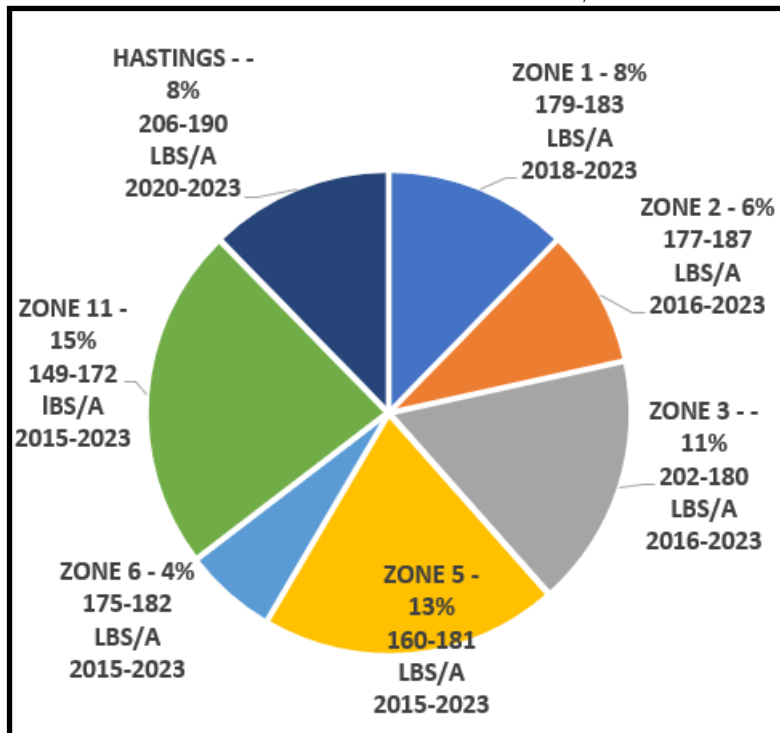
of 0.6 lbs of nitrogen per bushel raised and in some cases even lower NUEs. These technologies are proving to be very good at reaching nearer to the maximum efficiency of a corn plant, and not decreasing yields, but have they found it? Or is there more we need to know?

So, in attempting to answer, "Is what the district's doing helping lower the nitrate levels?", more questions have risen. It becomes more of a we question. We need to ask ourselves some questions: As a hybrid developer, am I making known the potential NUE of my product? As a producer, am I asking what the NUE potential is for the hybrid being planted and applying nitrogen accordingly or just doing what has worked in the past? As an educator, am I empowering us to move forward and ask the right questions? As a natural resources manager, am I providing all the data needed to support long-term sustainability and improvement of the resources? As a regulator, am I developing a path that promotes improvement and sustainability?

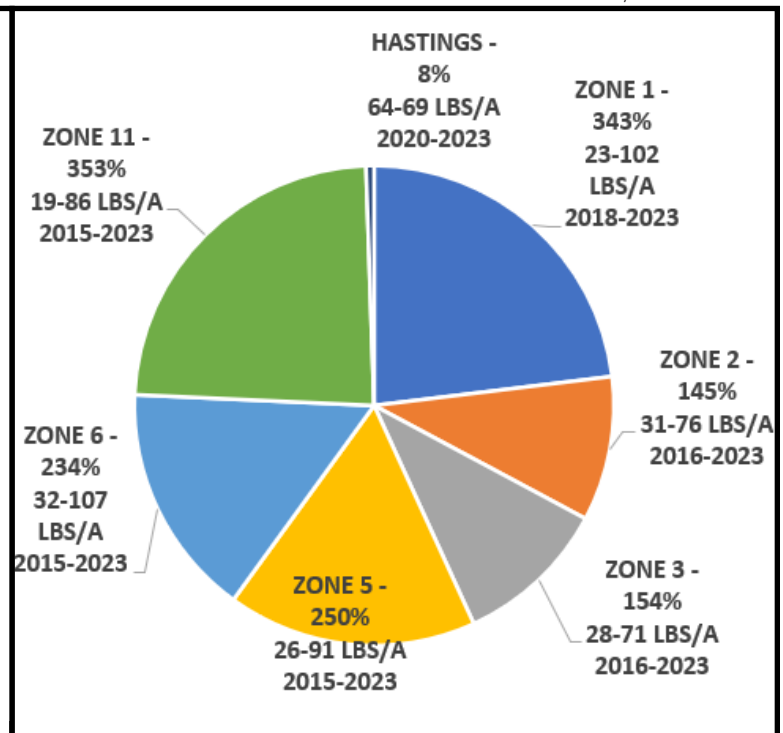
Maybe the starting question is "What can I, or we, do to help lower the nitrate levels?" A wise person once told me "An individual can make a small change, but it takes a community to make a real change." Let us be that community.



PERCENT INCREASE APPLIED N CORN/BEAN



PERCENT INCREASE RESIDUAL N CORN/BEAN





Irrigation Water Nitrate Analysis – Zone 5

Operators within a management zone that has been designated a Phase III Management Zone must have their irrigation water tested for nitrates at least once every three years. Zone 5 moved to a Phase III Management Area in January 2012, and operators within this zone are now required to submit water samples. Zone 5 includes the following townships:

Zone 5

York County: Bradshaw (11N-4W), Lockridge (11N-03W), New York (11N-02W), Waco (11N-01W), Leroy (10N-02W), Beaver (10N-01W)

Irrigation wells in Zone 5 must be sampled by **April 1, 2026**.

Water samples for Zone 6 and 11 were due April 1, 2025. If you have not yet submitted a sample, please do so as soon as possible, as they are in violation of District rules and regulations. Zone 6 and 11 include the following townships:

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)

Important things to remember:

- All active irrigation wells in Zones 5, 6, and 11 must be sampled once every three years.
- Comingled wells need to be sampled individually.
- Follow sampling instructions, especially the timeframe for delivery.
- If there are multiple wells per quarter, be specific when labeling – sub-quarter or physical location description is helpful to assign results and therefore, comply with rules and regulations.

The Upper Big Blue NRD is now utilizing a new database software that will allow staff to better track reporting information, such as, phase reports, sensor reports, and water samples. Wells in Zone 5 that have not been sampled by April 1, 2026, will be found in violation of District rules and regulations.



Nitrogen Reduction Incentive Program

Great news!

The Nitrogen Reduction Incentive Act (NiRIA) Reimbursement Program will continue in 2026. This program, introduced after LB1368, the Nitrogen Reduction Incentive Act (NiRIA), allows the Upper Big Blue NRD to provide incentive payments to producers that verify a reduction in nitrogen fertilizer application rates as the lesser of 40 pounds/acre or 15% of their baseline application rate. Incentive payment rates are based on field location within three District Priority Areas (A - Certified Irrigated Acres in Phase II/III Areas, B - Wellhead Protection Areas, Certified Irrigated Acres in Phase I Areas, and C- Dryland Acres).

Applications are being accepted now through November 15, 2025 for the 2026 season.

Questions?

Contact Drew ten Bensel at (402) 362-6601 or via email at dtenbensel@upperbigblue.org or visit upperbigblue.org/NiRIA for additional information about the program and the application when it becomes available.



How Cover Crops Can Help You Manage Moisture Better

By Kate Smith

Used with permission of Green Cover

Moisture management is a hot topic no matter where you're growing crops. Some people struggle with too much of it, some people never get enough. Just like Goldilocks, we all want the "just right" amount, though that "just right" amount almost never seems to happen.

Luckily, there's a way to achieve that "just right" amount of moisture more consistently. Healthy soil acts as a buffer for plants against environmental conditions. While it's true that cover crops do require water to grow, they also utilize that water to produce valuable carbon root exudates or sugars that feed the underground system. The addition of diverse root exudates and the microbial activity that follows lead to huge soil health benefits like improved soil aggregation and increased soil organic matter that in turn increase water holding capacity exponentially. When it becomes a regular practice, cover crops help farmers hit that "just right" amount of water more consistently. It's a paradox that thousands of regenerative farmers have seen in action.

"I don't have to wait for my fields to dry up to get out and plant in the spring."

"The soil feels like a sponge when you walk on it."

"I was able to raise a crop with no irrigation in the middle of a drought when all my neighbors watched theirs burn up."

Have you experienced something similar through the use of cover crops?

Cover Crops in "Not Enough" Water

The key to success with covers in drier climates is proper management. Over time, the use of cover crops will improve soil organic matter, infiltration rates and water holding capacity, allowing you to capture what little moisture there is in arid environments. A fall planted cover crop will help capture snow over the winter as well. While any growing plant will use available soil moisture, it's important to note that plants use about 50% in their vegetative stage and the other 50% to develop a seed. Timing and management is vital to not letting your cover crop steal moisture from the cash crop. Be sure to terminate your cover crop before it starts developing a seed to ensure it

will not use any more moisture than you want it to. Farmers can also use cover crops that will winter kill, so the cover crop still captures winter snow, but won't utilize any spring moisture.

Cover Crops in "Too Much" Water

On the opposite end of the spectrum, many people experience wet springs with fields that are sloppy and too wet to plant. Cover crops can help utilize that excess moisture in the spring. A fall planted cover crop that will overwinter can help utilize that early spring water and improve the infiltration rate of the spring moisture. In general, environments with higher rainfall can utilize a higher seeding rate of cover crop.

The Power of Mixes

The power of a mix lies in the power of a diverse biological system. Different families of microbes interacting with different families of plants creates an underground economy of nutrients and moisture. It's been shown time and time again, that a diverse mix performs exponentially better compared to a monocrop. Planting a fall cover with rye, winter peas, flax, and rapeseed automatically brings in four different plant families that will house different microbes. That mix will utilize water and nutrients more efficiently than a rye cover crop by itself, due to the amount of work going on underground to help the plants access the nutrients they need.

Other things to consider.

Historically, the plant species in a region are adapted to the amount of rainfall in that environment. The eastern US vegetation looks much different compared to the Western Great Plains. As farmers it's important to match the crop to the environment.

The Goldilocks Option

So whether you're dealing with too little or too much water, cover crops and soil health help you achieve what Goldilocks would say is "just right". Every year is different across the country, and we help farmers from all over utilize covers to fit their needs.



Reminders...

Water Use Summary Reports

Earlier this year, the district mailed out water use summary reports to water users – presenting them with a visual of how much water they’ve used over the past several years (2013-2023), in hopes that our users can be more water conscious for the future. The report displayed the usage in acre inches (calculated based on flowmeter beginning and ending readings) and inches per acre (acre inches ÷ total number of certified acres). Although our board has not issued any allocation restrictions for upcoming seasons, this report provides a basis should such an event occur.

Reminder, water use reports are due December 1.

Visit <https://www.upperbigblue.org/reporting> to access the reporting portal. There you will also find answers to FAQs as well as video tutorials. Questions? Contact wateruse@upperbigblue.org or call (402) 362-6601.

Phase II & III Reports

The time for submitting Phase II and III reports is approaching! Each year, we see some forms completed incorrectly or submitted with data missing. Remember, our data is only as good as what **you** provide. If you do not complete your forms thoroughly, you may be contacted by our staff to provide additional information.

A few things to keep in mind as you complete your forms this year:

- Be sure to include the full legal description.
- Fill out all the columns/fields when growing corn, corn silage, popcorn, or milo.
- Subtract residual soil nitrogen per acre from the UNL total N needed.
- Include the soil nitrate ppm amount from your soil test.
- Don't forget to take credit for previous crops, (i.e. soybeans).
- PLEASE, let us know when ownership or operator changes happen.

If you need assistance in completing your forms, we are happy to help. Call the NRD at (402) 362-6601 and

ask for Valerie. These forms can be submitted online through our reporting portal, or you can complete the hardcopy versions that will be mailed to you and then return them to the NRD. Learn more about our online reporting portal and frequently asked questions here: <https://www.upperbigblue.org/reporting>.

Irrigation Scheduling Equipment

Irrigation scheduling is a critical part of good irrigation water management. Over-irrigation increases production cost, can reduce crop yields, and leaches nitrates out of the crop root zone which pollutes the groundwater. Simple management tools are available, which can help the irrigator decide when it is appropriate to irrigate and when he or she can wait.

The district sells several of these tools at a 50 percent discount to irrigators in the district. The equipment is also for sale to others at regular prices. The irrigation scheduling equipment available includes:

- Irrrometer – Moisture Sensors, Handheld Meters and Data loggers
- Etagage Company – Atmometers
- Clement, Standard, and BackSaver Soil Probes

To maintain the life of the equipment, the best practices include:

- Remove sensors at the end of the irrigation season. This will ensure that equipment doesn't get damaged when harvesting.
- Assistant devices (such as the Watermark sensor puller) are helpful to hold onto the sensor when removing them at the end of the season.
- After removal, clean the sensors of any soil. You may need to soak them.
- Let the equipment dry and keep it in climate-controlled area such as a basement. Remember where you put them so you can use them again next year.
- If using a datalogger, make sure to download the season's data. If you need help with this, NRD staff can extract the data for you.
- ET Gages:
 - Remove them before the first hard freeze to avoid breaking the ceramic top.
 - Drain any remaining water and store until the spring.
 - Replacing the wafer and canvas annually for best results. These are available at the NRD.





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 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.

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 Groundwater 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, 4, 5, 6, and 11 are subject to the requirements of Phase II. Refer to the map on page 2 for management 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.

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 are:

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

2. 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 is required.

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

3. University of Nebraska Lincoln (UNL) Recommended Nitrogen Fertilizer Application Rate

Prior to applying nitrogen fertilizers, the operator must calculate the recommended application rate based on UNL’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.

4. Reporting Requirement

Every year, a report is required for all dryland and irrigated fields by April 1. The report steps you through UNL’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 must follow all Phase I and II requirements, as well as 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 is required.

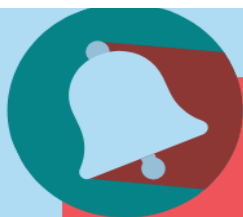
2. Irrigation Water Sampling

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 March 1 must be applied with a district approved nitrification inhibitor. Active ingredients include: Nitrotyrin, Pronitridine, and Dicyandiamide. A receipt as proof of purchase **must** accompany your annual report. ♦♦♦

These requirements are according to Rule 5 of the District Ground Water Management Rules and Regulations Chapters 18 - 22



Reminder

You are required to report ownership changes to the District within 60 days. Please send any updates to ownership, parcel size, agreements or any other information required in Rule 5, Chapter 14, as soon as possible.

Policy Update

Due to a recent Nebraska Supreme Court Decision (S-24-327), the Upper Big Blue NRD is now required to send Past Due Notices, Complaint Violations, and Intent to File Order of Cease and Desist to any party with financial interest in the tract. This new policy is effective immediately.

For any questions regarding the policy update, please contact Terry Julesgard, Water Dept. Manager, at (402) 362-6601 or via email at tjulesgard@upperbigblue.org.



Vadose Zone Study Update

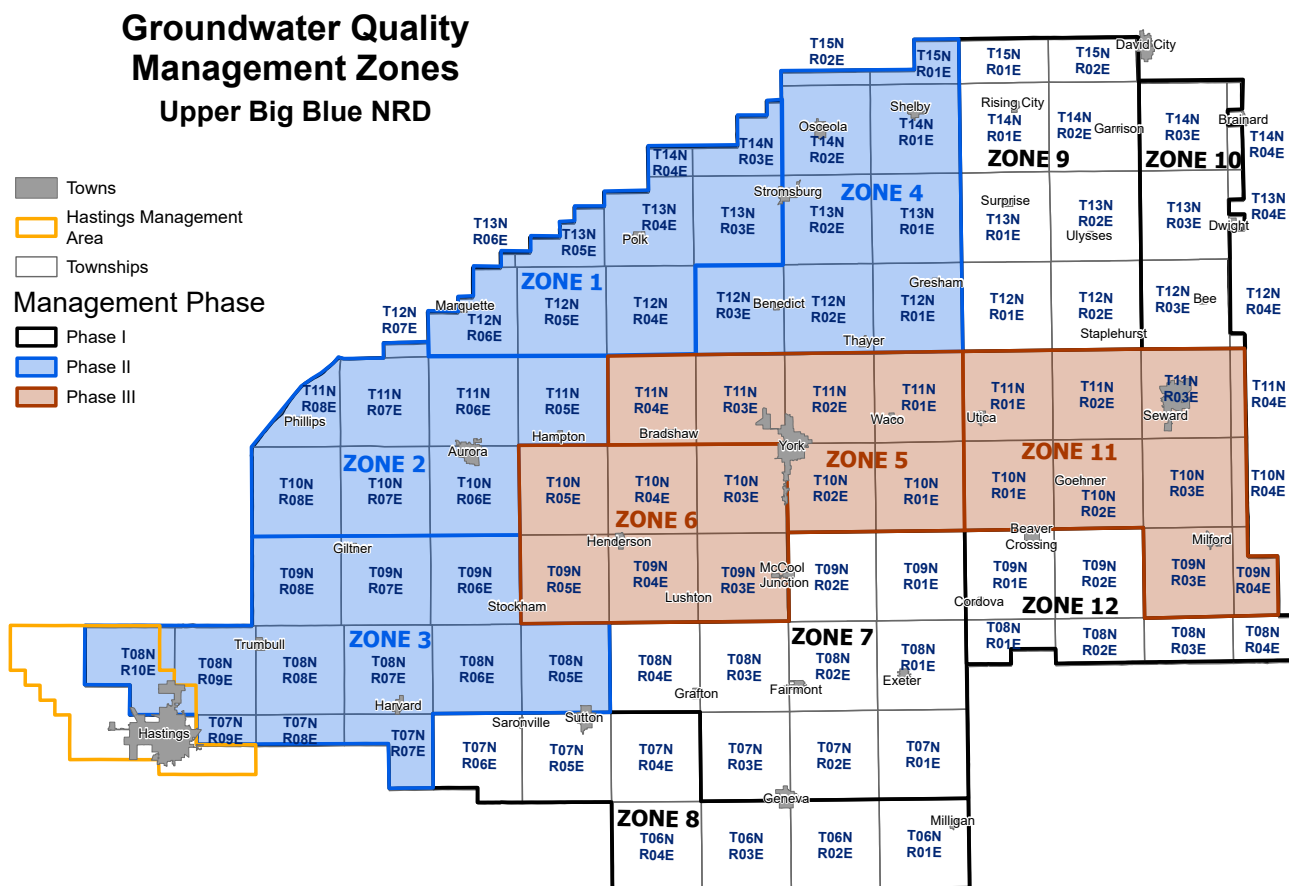
we have seen decreases in some areas of the district, we have had an overall increase of 54%.

The Upper Big Blue NRD has partnered with the University of Nebraska-Lincoln to take part in a research study focusing on investigating the vadose zone. The vadose zone is the area beneath the root zone and above the groundwater table. It is also referred to as the unsaturated zone. The focus of the study will be to look at groundwater nitrate and agrichemical contaminant occurrence in the vadose zone. To do this, we will be looking at both historic and spatial changes in groundwater nitrate throughout the district and in the 12 water quality management zones to compare the changes in nitrate levels. Nitrate levels will be determined by drilling test holes for chemical analysis, along with characterizing the soil type and physical characteristics.

For the past few decades, we have seen a steady increase in nitrogen concentration in some parts of the district. To see the zone you are in, please refer to the map below. After that, look at the map on page three to see what the median nitrate-nitrogen levels are for your area. While

We will be continuing to take samples in the fall of 2025, and we are looking for volunteers who will be willing to take part in the study. Volunteers, if selected, will be asked to fill out a survey to look at current and historical management practices on the fields to be used in the study.

In the Fall of 2025, we will be sampling in zones 9, 10, 11, and 12. This will be the final year of collecting samples for this study. If you have any questions, or are interested in participating in the study, feel free to contact NRD Water Resources Technician Aiden Bishop (abishop@upperbigblue.org).



Nebraska Buffer Strip Program

The Upper Big Blue NRD offers a cost-share program aimed to establish vegetative buffer strips along shorelines of streams and lakes.

The program provides funding (\$20 to \$250 per acre) for placing buffer strips on cropland adjacent to perennial and intermittent streams and permanent bodies of water to reduce the levels of sediment and other pollutants reaching the surface water. Additional incentives are available to those located in the Beaver Creek watershed.

Interested? Here are the general terms:

1. Five-year minimum contract.
2. Limited haying and grazing is allowed.
3. Grass, forb, tree and shrub species must conform to NRCS requirements.
4. Minimum width is 20 feet for filter strips and 55 feet for riparian forest buffers (20 feet of riparian forest buffer must be grassed filter strip) unless NRCS requirements are greater.
5. Maximum width is 100 feet unless the NRCS requirements are greater.
6. Minimum size per application is one acre.
7. Failure to maintain the buffer strip according to contracted requirements may result in forfeiture of future and past payments.
8. Failure to maintain the buffer strip according to contracted requirements may result in forfeiture of future and past payments.
9. Buffer strips will be subject to compliance checks by the NRD, NRCS and/or the Nebraska Department of Agriculture.

Funding for the program comes from a fee assessed on all pesticides registered for use in Nebraska.

For additional information, visit upperbigblue.org/landtreatment, or contact Jack Wergin, Projects Department Manager, with inquiries about the program at (402) 362-6601 or via email at jwergin@upperbigblue.org.



Beaver Creek Cover Crop Incentive Program



As part of their Water Quality Management Plan, the Upper Big Blue NRD offers incentives to landowners or operators in the Beaver Creek Watershed and qualifying Municipal Wellhead Protection Areas willing to plant

cover crop seed on their row crop acres.

Cover crops are proven to:

- Reduce erosion from wind and water
- Increase soil organic matter content
- Capture and recycle or redistribute nutrients in the soil profile
- Promote biological nitrogen fixation and reduce energy use
- Increase biodiversity
- Suppress weeds
- Manage soil moisture
- Minimize and reduce soil compaction
- Improve yields by enhancing soil health
- Reduce use of herbicides and pesticides
- Create grazing opportunities

Although applications in 2025 have exhausted available funding, this program is expected to continue, and possibly expand, in 2026.

The cost-share rate will be up to \$75.00/acre for all costs (seed, planting, terminating) up to a maximum of \$7,500 per landowner per year. The contract is a one-year term.

Wondering if you qualify or interested in applying?

Visit upperbigblue.org/wqmp, or contact Jack Wergin, Projects Department Manager, with inquiries about the program at (402) 362-6601 or via email at jwergin@upperbigblue.org.





Nitrogen Management Certification Training

- Dec. 2 | Harvest Hall Conference Room (Seward) | 1:30 p.m. | Ward Labs, Importance of Soil Testing
- Dec. 17 | Harvard Community Room (Harvard) | 1:30 p.m. | Dean Kroll, Advancements in Nitrogen Management
- Jan. 6 | Upper Big Blue NRD Office (York) | 9:30 a.m., 2:00 p.m., and 6:00 p.m. | Saleh Taghvaeian, Irrigation Scheduling Technology

Home Reverse Osmosis Funding Available

Concerned about your drinking water? The Upper Big Blue NRD has a program to address drinking water quality concerns in the district. The program will provide up to \$500 per home for a point-of-use reverse osmosis (RO) system on properties where the drinking water quality exceeds 10 PPM of nitrate. Private well users in Nebraska are responsible for maintaining the integrity of their own water supply and should have it tested annually for contaminants—a process that residents of the NRD can do for free.

A new program from the State of Nebraska also provides a tax credit for eligible citizens for the installation of a reverse osmosis system. You can find information about this program as well as the NRD program on our website.



UBBNRD Welcomes New Staff

Natalie Luben serves as the new water resources technician, where she will work with producers to ensure water quality throughout the district. Daughter of an avid fisherman, Luben grew up around Nebraska's lakes and spent summers at the Elkhorn River near Emmet, Nebraska. She brings a rich background with a bachelor's degree from UNL in environmental studies and experience working with water quality monitoring, aquatic education and UNL's "Know Your Well" project. Luben has worked with Nebraska's GPC, DWEE and the Middle Niobrara NRD and is making a great asset to the water team.



Sierra Luhn is the new public relations manager. In this role, she is responsible for promoting the District's policies, programs, projects and activities.

She also serves as the information & education (I&E) contact for our district. Luhn comes to the Upper Big Blue NRD (UBBNRD) with 8 years of experience working in the public sector and bachelor's degrees in psychology and sociology from Doane University. Her background includes public involvement, public policies and communication. She is eager to serve the District and looks forward to educating the public about conservation and what our natural resource district has to offer.



If you are a producer or land owner in the UBBNRD area and are interested in educational outreach or have questions or concerns about your water quality, reach out to either of them at (402) 362-6601 or via email at sluhn@upperbigblue.org and nluben@upperbigblue.org.

