WATER CURRENT

NEBRASKA WATER CENTER
PART OF THE DAUGHERTY WATER FOR FOOD GLOBAL INSTITUTE AT THE UNIVERSITY OF NEBRASKA

SPRING 2024

Core Research, Events, and News from the Nebraska Water Center

Pivot Irrigation, Nebraska

Inside

And More!

From the Director

Chittaranjan Ray, Ph.D., P.E.

Director, Nebraska Water Center (NWC)

Dear Reader,

Spring is unfolding across Nebraska, bringing mild weather and green fields once more. Spring at the Nebraska Water Center brings the opportunity to engage in field research and events once again, and our staff is staying busy preparing for the spring and summer.

We hope you will join us at the 2024 Water and Natural Resources Tour this summer. We have partnered with the Central Nebraska Public Power and Irrigation District once again to host the tour. On June 17 and 18, we will visit sites in southeast Nebraska to learn about the unique hydrology and water management in that part of the state. More details can be found on the following page, and registration is open until May 17.

In this newsletter, I am excited to share updates from the Water Sciences Laboratory (Pages 4 and 5), the Know Your Well program (Page 6), research in biochar and PFAS (Page 10), and ongoing educational and outreach programs we have been working on (Page 11).

Although it is still spring, we are making plans for our conference in the fall. On October 9 and 10, we will gather in Lincoln to discuss how collaboration and innovation is key to water management in Nebraska. You can look for more details about our conference in the coming months.

As the weather continues to warm, I look forward to engaging with many of you in the coming months through our research, outreach, and education.

Chittaranjan Ray

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2024 Water and Natural Resources Tour: Discovering southeast Nebraska

Join the Nebraska Water Center and Central Nebraska Public Power and Irrigation District on June 17 and 18 as we get up close and personal with water and natural resources in southeast Nebraska.

Registration is now open for the 2024 Water and Natural Resources Tour. Registration includes all meals, hotel, commercial transportation, on-board refreshments, and activities from Monday morning through Tuesday at 5 p.m. The tour will begin and end at UNL's Innovation Campus in Lincoln. Parking on Innovation Campus will be included in the registration.

Don't miss your chance to be part of this enriching tour! Reserve your spot today to experience southeast Nebraska's water and natural resources.

Experience the unique landscape and local charms of southeast Nebraska, where water and natural resources are the key to collaboration and innovation. This exclusive tour is your passport to:

Learn from local experts: Get the inside scoop on the Nemaha Natural Resources District's current projects and future plans.

Rediscover iconic destinations: Escape the crowds with a private tour of Kimmel Orchard.

Tour new projects: Experience current progress and learn about future plans for Lincoln's Water 2.0 project.

Make new connections: Forge new friendships with water professionals and enthusiasts alike as we experience what southeast Nebraska has to offer together.

This is more than just a tour; it's an opportunity to reconnect with nature, gain a deeper understanding of Nebraska, and experience what makes southeast Nebraska unique.

Registration Details

$330 per person, single occupancy room

$260 per person, double occupancy room

Registration will be open until **May 17**. Spaces are limited, so act fast to secure your seat!

To register online, visit **go.unl.edu/WaterReg.**

For more information, visit **go.unl.edu/watertour.**

New laboratory equipment expands capabilities in stable isotope testing and erosion control

By Ann Briggs, Public Relations and Engagement Coordinator

This spring, the Water Sciences Laboratory installed equipment to expand its research capabilities in stable isotope testing. The new instrument, known as a compound specific isotope analyzer (CSIA), will allow the Water Sciences Laboratory to create new methods in measuring isotope composition of organic compounds like fatty acids. While there are numerous applications for this type of method, the first method to be developed is intended to provide researchers and resources managers with the tools to track erosion on a watershed level to determine the effectiveness of existing management strategies.

Soil erosion is a constant challenge to watershed management throughout the Great Plains and CSIA can provide an "isotope fingerprint" unique to different soil types and land use. The Water Sciences Laboratory will use the Johnson Creek watershed as a case study in Nebraska to develop the method and determine its effectiveness in tracing sediment deposition and erosion sources in Nebraska. Researchers collected samples from a reservoir in Johnson Creek and a small reservoir near the Eastern Nebraska Research and Extension Center and will test isotope abundance to see how well this "fingerprinting" technique will work.

CSIA precisely measures the abundance of the stable isotopes of hydrogen, carbon, and nitrogen of organic compounds extracted from water, soils, and biological tissues. Fingerprinting eroded soil deposited in a reservoir is only one application of this technique. The lab will also be able to develop methods for isotope analysis of amino acids and other naturally occurring soil organic matter, and potentially use the equipment for fingerprinting pesticides and other organic contaminants. This technique is widely used for measuring metabolic and transformation processes that are occurring in soils, sediment, and water.

The Water Sciences Laboratory will be the only lab in the state with the capabilities to measure isotope abundance in organic compounds. Water Sciences Laboratory Director Daniel Snow spoke to the wide range of groups that may be interested in this type of testing.

"Researchers are the main clientele as we develop the method and see how well it works," Snow said. "In the future this type of testing could be used by Natural Resources Districts, the Department of Natural Resources, and others who are managing water resources in Nebraska. Compound specific isotope analysis of fatty acids can answer the question, if you're spending money to control erosion in a watershed, is that money going to the right locations? Compound specific isotope analysis of fatty acids will help see what areas are contributing eroded soil to a specific impoundment. Watershed management can then target specific areas for controlling erosion, thereby reducing costs of dredging and maintaining reservoirs subject to rapid sedimentation. Erosion is a huge problem everywhere, so if we can use this to control erosion then it's a great thing."

Isotope analysis of fatty acid methyl esters, also known as FAMES, in soils and sediments can also be used for other purposes such as measuring soil carbon turnover, soil health, and microbial activity. Other methods will be developed to identify isotope composition in

The compound specific isotope analyzer will be used for stable isotope testing.

Nathan Roddy, a research technologist at the Water Sciences Lab, prepares the equipment to run samples.

specific contaminants to track sources and understand degradation. The methods will also include understanding how organic nitrogen is converted into nitrate. Future applications could also include analyzing carbon sources and better understanding food web interactions and the sources of food in specific organisms.

Many of the research applications that the new compound specific isotope analyzer is used for will be novel test methods created by the Water Sciences Laboratory team. The Water Sciences Laboratory is in a unique position to continually develop new methods to address current water research concerns. Daniel Snow explained, “Nebraska supports this kind of lab. The university and the state see value in it and have continuously supported the Water Sciences Laboratory for the past 30 years.” The combination of external laboratory support and a highly skilled internal team allows the Water Sciences Laboratory to continue to develop unique testing methods for use in specialized research and natural resource management.

The Water Sciences Laboratory is able to focus on research and method development because of the support of the state and the priorities of their clients. Commercial labs are often unable to focus on method development because research is not their main priority, which in turn means the Water Sciences Laboratory isn’t competing with commercial labs for clients.

Funding for the CSIA system originated from several sources. The Nebraska Research Initiative contributed a majority of the funding. Additional support was provided by the Nebraska Water Center’s 104B program, the United States Department of Agriculture’s Agricultural Research Service (USDA ARS), the Daugherty Water for Food Global Institute, and the Institute of Agriculture and Natural Resources, the Agricultural Research Division, and the Office of Research and Economic Development at the University of Nebraska – Lincoln. The Water Sciences Laboratory and the Nebraska Water Center spent almost three years coordinating the funding sources for the new compound specific isotope analyzer.

To make room for the new equipment, the Water Sciences Laboratory team retired its oldest isotope analyzer and renovated one of their existing laboratory rooms. This renovation included acquiring a custom bench and optimizing the existing space so the new equipment can be effectively used. The renovated laboratory room also provides space for the previously existing equipment, which has been upgraded to function in tandem with the compound specific isotope analyzer.

Samples are already being run in the new laboratory setup. With each use, the equipment will continue to be fine-tuned and improved. “Like any isotope method,” Snow explained, “the more you use it the more you can figure out research applications that it works best for”.

The compound specific isotope analyzer complements existing equipment measuring isotopes in nitrate, phosphate, bulk hydrogen, carbon, nitrogen, and oxygen. The new technology will provide the Water Sciences Laboratory with capabilities to help solve another piece of the water quality puzzle, improving research and resource management opportunities in Nebraska and beyond.

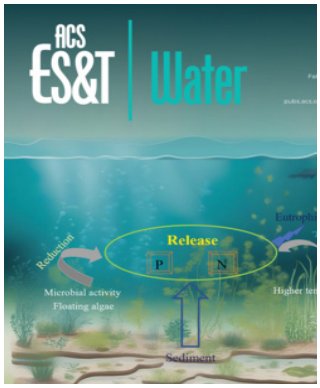
The compound specific isotope analyzer is comprised of four units that work in tandem to test water, soil, and biological tissue samples.

Water Sciences Laboratory

Part of the Nebraska Water Center, the Water Sciences Laboratory (WSL) core facility has over 30 years of experience advancing the University of Nebraska’s water and environmental research. With over $3 million in state-of-the-art equipment, the WSL supports 200+ custom and standard analytical methods that include rigorous performance evaluation monitoring. Thousands of samples are analyzed annually with quality controls demonstrating our commitment to provide high-quality data for our clients. The laboratory is located on the University of Nebraska-Lincoln East Campus.

Know Your Well brings citizen science to local communities

By Ann Briggs, Public Relations and Engagement Coordinator



A new publication in the American Chemical Society's Environmental Science and Technology Water journal highlights early achievements and observations made possible through the Know Your Well project. The paper reports how youth-led citizen science can improve monitoring coverage, provide data, and integrate local communities to better evaluate and respond to growing concerns over domestic well water quality.

Groundwater is crucial to living and livelihoods in Nebraska. Eighty-five percent of Nebraskans get their drinking water from groundwater sources, and it is estimated that more than 360,000 residents throughout the state use private wells that are exempt from regulated testing. Nebraska has more groundwater than any other state in the country, most of which comes from the Ogallala-High Plains and Dakota aquifers. More groundwater is pumped for irrigation than any other purpose in our state, yet there are other uses impacted by this use.

Building a better understanding of water quality throughout the state is beneficial to individuals and communities, but even more beneficial when the communities themselves are involved. Instead of business or government decision-makers at the forefront of water quality, involvement of the public in managing the quality of local drinking water represents a step toward developing effective water ethics management and water security.

Citizen science provides a pathway for communities to be trained in data collection and personally involved in understanding their local water quality and being empowered to do something with that knowledge. Citizen scientists can readily make observations, collect water quality data, effectively address gaps on site-specific water quality especially in rural areas, and likely provide an effective means for influencing local decision making to protect public health.

Citizen science programs have been implemented in multiple projects aimed at measuring surface water quantity and quality, but are much less common when measuring groundwater quality. Groundwater data can be more challenging for citizen scientists to collect because it isn't as easy to access. Know Your Well brings a unique collaboration between water scientists, well owners, high school teachers and students. This collaboration trains high school students to become citizen scientists and connects them with well owners in their community. By providing local access to groundwater samples and the tools to analyze results, Know Your Well builds citizen scientists who are engaged in their local groundwater quality.

Know Your Well is a youth-driven education and outreach program designed to train high school students to sample and test domestic well water quality and evaluate factors leading to ground water contamination.

Started in 2016 with a grant from the Nebraska Environmental Trust to the University of Nebraska-Lincoln (UNL), Know Your Well emphasizes proper domestic well water sampling and encourages students to compare results from classroom test kits to rigorous laboratory testing at the UNL Water Sciences Laboratory. In its first two years, the project involved students and teachers from 23 schools across Nebraska who sampled almost 250 wells.

The results show areas in the state with domestic well water quality impacted by nitrate, arsenic, manganese, and uranium exceeding maximum contaminant levels for safe drinking water. Now in its seventh year and led by Nebraska natural resources districts, the program intends to collect and test over 1,000 wells and collaborate with 50 more schools by the end of 2025. All results are shared with well owners, students and teachers who use them for building awareness about local water quality around their community.

The full journal article is available at **go.unl.edu/KYWstudy**

Christopher Olson (second from the left) was the first Know Your Well graduate student and is the lead author on the new study.

Year-round irrigation management

By Crystal Powers, NWC Extension Educator

Optimizing water use and minimizing nitrate loss requires thinking about irrigation decisions throughout the year, not just during the growing season. Crystal Powers, NWC's Water and Cropping Systems Extension Educator, helped author a series of publications detailing irrigation considerations throughout the year. While the focus was on crop production the principles can be applied in any irrigated setting.

One of the first decisions of a growing year is how much fertilizer to purchase for the crop. If using groundwater for irrigation water, remember to take credit for any nitrogen available! By taking a water sample for nitrate and using the average irrigation amount, a good estimate of in-season nitrogen application can be determined, allowing reduction in commercial nitrogen application. Full details on how to determine an irrigation nitrogen credit can be found in the article Don't Lose Out on Free Nitrogen from Irrigation Water here: **https://cropwatch.unl.edu/2023/dont-lose-out-free-nitrogen-irrigation-water**.

When to start the first irrigation is the next critical decision. With all of the pre-season nitrogen out in the soil, it is critical to minimize deep percolation of water. Most years, soils are at field capacity in the spring, however in a drought year it might be a little short. Soil moisture monitoring combined with root depth can give confidence to the first irrigation decision. For example, as a corn plant is growing throughout June the roots are quickly reaching deeper into the soil, accessing additional stored water. Corn research has also shown the critical water time for yield isn't until tasseling. This allows the field to

Know how much to irrigate by monitoring soil moisture at multiple depths.

out more about planning those first irrigations here: Early Season Irrigation During Drought at **https://cropwatch.unl.edu/2023/early-season-irrigation-during-drought**

The final irrigation decisions are also critical for reducing pumping costs and leaving room in the soil to store off-season precipitation. Soil moisture monitoring again is critical. For example, as corn reaches maturity, its water demand decreases, so the top four feet of soil can be allowed to dry down as well. To learn more, visit: Optimize Those Last Few Irrigations at **https://cropwatch.unl.edu/2023/optimize-those-last-few-irrigations**

Ogallala Aquifer Summit convenes leaders across eight states

By Crystal Powers, NWC Extension Educator

More than two hundred policy makers, researchers, farmers, and educators gathered to discuss challenges to the future water availability and safety of the region's water. The Ogallala Aquifer, also known as the High Plains Aquifer system, covers portions of eight states and is the main source of irrigation and drinking water for much of the region.

Regional experts were followed by interactive discussions on four main themes: science, education, supply chain, and youth focused on co-creating flexible and adaptable water management strategies.

Renata Rimšaitė (center) shared her expertise on water economics at the Ogallala Aquifer Summit.

The Nebraska Water Center was a sponsor. Crystal Powers, NWC Extension Educator, led the development of the Nebraska white paper and was a discussion facilitator. "Meeting passionate people from across the region provided inspiration and ideas for our work in Nebraska." Powers shared.

Renata Rimšaitė, a Senior Program Manager in the Daugherty Water for Food Global Institute's policy team, presented on a panel: Understanding Ogallala Region Cross-Cutting Risk: Water Climate and the Economy. Rimšaitė summarized, "Strategies need to adapt to local-context specific concerns and be collaborative. We need to find ways to better engage with more producers, youth, finance risk experts, and social scientists."

The Summit white papers are posted and a summary report will soon be available: **https://www.irrigationinnovation.org/2024-ogallala-summit**

This year's summit builds on work established through the Ogallala CAP (**https://ogallalawater.org/**), of which the Nebraska Water Center was a founding member.

NEBRASKA WATER FACTS

from the NEBRASKA WATER CENTER

Nebraska means "flat water" from the Omaha Sioux "ni braska" and Oto "ni brathge" describing the Platte River. The Platte River was named by early French explorers, also meaning "flat."

SURFACE WATER

- Nearly 80,000 miles of rivers and streams drain to the Missouri River in the East.
  - Along the Niobrara and Missouri Rivers, 197 miles are designated as National Wild and Scenic.
- Tallest waterfall is Smith Falls, spilling 63 feet into the Niobrara River.
- Largest storage reservoir: Lake McConaughy
  - When full is 1.74 million acre-feet of storage
  - Covers 30,500 acres
  - Created by the state's largest dam, Kingsley Dam
  - Supplies irrigation directly & indirectly for 530,000 ac
- More than 2,900 dams, >25 ft tall or 50 ac-ft storage

GROUNDWATER

Total groundwater state #1

- Mostly from the Ogallala Aquifer, part of the Great Plains Aquifer.
  - Largest in the U.S.
  - Poured over the surface of the state, the water would be 38 feet deep.
- Groundwater and surface water are connected.
- Nebraska has more than 192,000 registered groundwater wells.

WATER USE

#1 Irrigated acres: 9.1 million

- Annual average additional crop value of $1.5 billion statewide. Added property valuation of $13-24 billion.
- Agriculture irrigation is 91% of Nebraska's total consumptive water use.
- From 1990 to 2014, Nebraska now grows 1.7 times more corn and 1.8 times more soybeans per gallon of water.
- From 1960 to 2016, Nebraska raises 1.8 times the amount of beef per gallon of water and 5.1 times more milk.
- Other uses of Nebraska's water:
  - home 5%; industrial 1%; thermoelectric 1%; livestock 1%
- 85% of Nebraskans get their home water from groundwater.
- 594 public water supply systems serve 1.69 million residents. EPA requires testing for 90 contaminants.
- More than 360,000 residents use private wells. Exempt from testing.
- Each person uses an average of 122 gallons of water each day.
  - Home water use has dropped by 1/3 in the last 20 years.

Center pivot irrigating soybeans. Photo: UNL

13 inches precipitation
5,424 feet above sea level

2.5 times more precipitation

More than 4,500 feet drop in elevation

Changes West to East

33 inches precipitation
840 feet above sea level

Smith Falls. Photo: Nebraskaland Magazine.

RECREATION

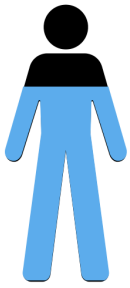
Lake McConaughy with >2 million visitors #1

- 7 out of top 10 Nebraska attractions involve water.
- Crane migration annual visitors' impact: $17.2 mill.

LAND USE

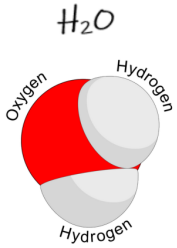
- Nebraska's farms and ranches utilize 44.8 million acres, 92% of the state's total land area.
- 22 million acres of rangeland and pastureland in Nebraska, half of which are in the Sandhills.
- 1/3 of Nebraska land is annual crops.
- Nebraska's cities and town cover about 1% of the land, less than wetlands and forest.

WATER SCIENCE



A person's body is 66% water

A corn plant is 80% water



Only substance found naturally as

liquid, solid, and gas

Author: Crystal A. Powers | Reviewers: Katie Pekarek, Gary Stone | Sources:

Nebraska Water Center
Daugherty Water for Food Global Institute

THE DAUGHERTY WATER for FOOD GLOBAL INSTITUTE
at the University of Nebraska

N EXTENSION

Biochar-biosolid project funded by the Energy Center

By Britt Fossum, Graduate student

A research team from the University of Nebraska - Lincoln is investigating the use of biosolids and biochar for agriculture. Biosolids are generated from municipal wastewater treatment plants and can provide essential nutrients and organic matter to agricultural production systems. Biochar is made by burning plant materials and can substantially increase soil organic carbon.

A 16-acre field experiment was initiated in Spring 2023 to investigate the impacts of biochar and biosolid application on agronomic productivity and environmental quality, and it has been approved for continued funding into 2024. The project, led by Michael Kaiser, Arindam Malakar, and Katja Koehler-Cole, was funded by the Nebraska Center for Energy Sciences Research with additional support from the Nebraska Forest Service, USDA-NRCS, Paige Wireless and with biochar sourced from Oregon Biochar Solutions and biosolids sourced from the City of Lincoln.

The initial application process was itself an experiment – while biosolids are a well-established form of organic amendment, methods for applying biochar to large land areas and using commonly available equipment are still being developed.

After successful application, the first year's harvest in October 2023 indicated that no yield losses were observed between plots managed with conventional mineral fertilizer and no additives and those

Biochar and biosolids were applied to a field in the Lincoln area as part of this experiment.

treated with biochar or used biosolid as the only source of fertilizer. Additionally, treatment with biochar, biosolid, or a combination of both may have helped retain additional moisture in the topsoil relative to soils that did not receive any amendment, which can both improve growing conditions for plants and reduce leaching of plant-available nutrients. Soil samples were collected from the site in October 2023 to a depth of one meter and will be investigated for changes in nutrient content, carbon storage, and changes in biochar particles over time.

Building on this project, an additional study supported by USGS began with samples collected during the growing season to investigate how the addition of biochar and biosolids influences redox processes in the soil that can affect rates of nitrate leaching, mobilization of redox-sensitive species like arsenic, and biochar functionalization.

PFAS research provides opportunities for student growth

By Emma Dostal, Communications Intern

Sarah Tucker

UNMC Doctoral student and DWFI student fellow Sarah Tucker leads PFAS research in rural Nebraska.

Tucker, a Daugherty Water for Food Global Institute supported student, began research with the Water Sciences Laboratory after connecting with Kristina Kintzinger and Dan Snow.

After learning about current PFAS research in Nebraska, Tucker chose to complete her doctoral research on PFAS contamination of drinking water in rural Nebraska, specifically focusing on communities near military sites and landfills.

Military sites have known water and PFAS contamination in Nebraska. The Water Sciences Laboratory previously conducted drinking water quality research in rural Nebraska, but has not completed extensive testing near landfills and other sites suspected of PFAS contamination.

Tucker will collect 200 samples from seven access points: three military training spaces and four landfills. These samples will be used "to identify households with PFAS contaminated drinking water and characterize the risk of PFAS exposure to human health to reduce it through residential drinking water," Tucker said.

There has not been a large-scale study of rural PFAS contamination in Nebraska. This will be the first. Tucker said that the Water Sciences Laboratory is necessary for her work. Without the special method and equipment to test for PFAS, she would not be able to collect or process these samples.

Tucker hopes that this research will improve environmental toxicology water research and lead to PFAS contaminate regulations in the state. Nebraska does not have state-level regulations for PFAS contaminants. By using her findings, Tucker said she hopes to protect rural communities by increasing awareness of current PFAS containment levels.

There is no federal regulation for PFAS contamination level in drinking water, but there is a national inquiry where researchers can add their findings of public and private well PFAS levels. Tucker intends to add her findings to this national inquiry of PFAS conducted by the USGS. Learn more about the inquiry here through this interactive map: **https://geonarrative.usgs.gov/pfasustapwater/**

Tucker is mentored by Erin Yeutter, Kristina Kintzinger, and Dan Snow. She presented her preliminary findings at the DWFI annual research forum student poster presentation on April 17 at Nebraska Innovation Campus.

NWC and DWFI support Nebraska water governance conference

By Crystal Powers, NWC Extension Educator

Each January, Nebraska's Natural Resources Districts (NRDs) host a Legislative Conference. The primary goal for the NRD representatives is to review state legislation and establish policy positions on relevant bills. Nebraska Water Center (NWC) and the Daugherty Water for Food Global Institute (DWFI) helped sponsor this conference and participated in many other conference activities. "It's a great opportunity to see local governance in action," shared Crystal Powers, NWC Extension Educator.

Kicking off the first day, DWFI Executive Director Peter McCornick and Powers shared highlights of University of Nebraska water research and extension at the NRD Manager's Meeting. DWFI/NWC also organized two of the educational sessions. Mike Boehm, Vice Chancellor of the Institute of Agriculture and Natural Resources at the University of Nebraska presented about the work of the Water Resources Advisory Panel (WRAP). The panel brings together state leadership across academic, governmental, and private sectors to address nitrate challenges. Crystal Powers shared tools to help advance conservation innovation. This was a session with highlights from NWC's newly awarded workshop, Beyond the Data. Designed from a synthesis of social science research, participants learned how to influence conservation change.

To wrap up the conference, NWC Director Chittaranjan Ray hosted Dr. Sorab Panday to teach an in-depth workshop on groundwater modeling. Dr. Panday is a research professor in Biological Systems Engineering at UNL and a member of the National Academy of Engineering. Throughout the conference, NWC and DWFI directors and staff hosted other university administrators and faculty to grow their relationships with Nebraska water managers. Connecting with NRD elected officials and staff, other state and local agencies, and supporting private companies is a hallmark of this event.

Established in 1972, Nebraska's Natural Resources Districts are local government units involved in a variety of projects and programs to conserve and protect the state's natural resources. Today, Nebraska's unique system of locally-controlled, tax-funded, watershed-based conservation are unique in the United States and globally.

University of Nebraska-Lincoln explores partnership with University in Kazakhstan

By Ann Briggs, Public Relations and Engagement Coordinator

On February 26, the University of Nebraska–Lincoln (UNL), through the Office of Global Partnerships and Initiatives and DWFI, hosted a delegation from the Kazakh National Agrarian Research University (KazNARU). The two entities signed a letter of intent, creating a formal partnership which follows a decade of informal collaborations in the Central Asia region.

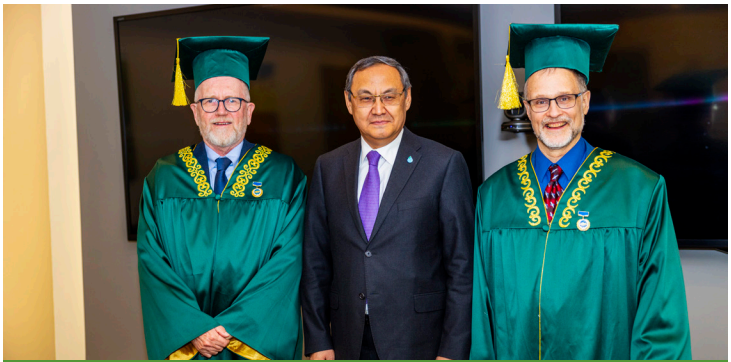
KazNARU is the longest standing university in Kazakhstan and has a rich history of international collaborations with universities and institutions around the world. It selected UNL to be its primary connection in the United States because of the university's focus on water and food security in a global agricultural context.

KazNARU and UNL aim to increase opportunities for student training and global collaborations, especially since Kazakhstan and Nebraska have similar climates and face similar challenges in water quality.

The Kazakh Academy of Sciences President, A. K. Kurishbaev, and the KazNARU Vice Rector, Rafis Abazov, traveled to Lincoln, Neb. to meet with departments on campus and sign the letter of intent in-person. As a part of the visit, DWFI Executive Director Peter McCornick and Water Sciences Laboratory Director Dan Snow also received titles of honorary KazNARU professors.

To learn more about UNL's collaborations in Central Asia, visit **centralasiawater.unl.edu.**

The Kazakh Academy of Sciences President, A. K. Kurishbaev and DWFI Executive Director, Peter McCornick sign the letter of intent to create a dual degree prgram.



Peter McCornick, DWFI Executive Director and Daniel Snow, Director of the Water Sciences Laboratory, honored as KazNARU professors by university President, A. K. Kurishbaev.

University of Nebraska

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Join us at our upcoming events

Water and Natural Resources Tour

Discovering Southeast Nebraska

June 17 and 18, 2024
Tecumseh, Nebraska City, Ashland, and Lincoln

Nebraska Water Conference

October 9 and 10, 2024
Nebraska Innovation Campus Conference Center
Lincoln, Nebraska

For more details and to register to attend, go to **watercenter.unl.edu**