

NDSU

AGRICULTURE

For the Land and Its People



Winter 2026

In this winter issue of *For the Land and Its People*, we take a look at the work happening across North Dakota to care for our land, animals and people. You'll read about Extension professionals helping producers manage tough animal health challenges, researchers studying wildlife to guide long-term management decisions, and industry partnerships that give students real chances to learn and contribute. Each of these stories reflects how our work continues to be shaped by the people and places we serve.

Enjoy.

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NDSU NORTH DAKOTA
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NDSU Extension continues to provide support to combat the spread of HPAI

Highly pathogenic avian influenza continues to affect poultry and dairy operations across the region, keeping North Dakota poultry and livestock producers on high alert. NDSU Extension remains a frontline resource for producers and communities working to prevent the virus from spreading.

HPAI is an extremely contagious disease of poultry that has led to high mortality. Wild birds, the main carriers of HPAI, spread the disease to new areas during migration, creating an ongoing risk for North Dakota poultry owners.

North Dakota State University Extension's role in alleviating the spread of HPAI includes outreach, biosecurity education and response coordination.

"We've seen a consistent pattern of a wave, then a lull, over the last few years' migratory seasons," says Dr. Jake Galbreath, NDSU Extension veterinarian.

This year brought an unusual late-season wave with four cases in December and one in January. While migratory birds' winter travel may have moved out of the state, residential wildlife still carry HPAI in areas with year-round open water.

Dr. Galbreath has been busy with in-person education and outreach about preventing HPAI from disrupting backyard flocks and commercial operations. NDSU Extension has held these free sessions across the state, stretching from Williston to Lamoure.

Attendees learn more about measures such as wearing personal protective equipment, and Dr. Galbreath provides more in-depth information about the virus.

Hunters and members of FFA and 4-H who exhibit at poultry events show up to hear how to enjoy their hobbies while being cautious. Dr. Galbreath relays information about the threat HPAI can pose to domestic pets as well.

The outreach project is in collaboration with North Dakota Health and Human Services and the Center for Immunization Research and Education, so the education emphasizes HPAI's impact on human health. HPAI is not currently being treated as a serious threat to humans, and there has been no human-to-human transmission, but biosecurity is still paramount to staying safe.

Miranda Meehan, NDSU Extension livestock environmental stewardship specialist, coordinates with local Extension agents to help surveil the area and make sure community members are aware of a positive case near them. Meehan also serves as the NDSU Extension disaster education coordinator.

"The biggest thing we've learned through this whole experience is the importance of really strong relationships and lines of communication with our state partners, specifically the Department of Agriculture, the state vet's office and our emergency managers," says Meehan.

"Extension provides information to the North Dakotan, and we're the ones who ask, 'Where do you need us right now? What questions do you have?'" says Galbreath.

Four years into dealing with HPAI, Meehan says the disaster response team has built upon its response procedure, but the risk has persisted:

"We still need to have good biosecurity measures in place to protect our domestic flocks and other animals that can contract HPAI.

"The Extension agents are critical to that public education and building relationships, especially in commercial cases or cases that require flocks to be depopulated," says Meehan.

After an infected flock is depopulated, an important step in ridding a property of the virus is disposing of any infected material.

Mary Keena, NDSU Extension livestock environmental management specialist, helps with the disposal of infected carcasses in commercial flocks.

"My job is making sure everyone knows and follows the protocol, and then we monitor to make sure the virus is eliminated on the operation," says Keena.

The process includes gathering infected material into a very hot compost pile.

Keena says the producers' task of eliminating and disposing of a high animal count can take an emotional toll.

"In North Dakota, these people raise these birds from when they're babies all the way until market. They are intimately involved in the operation," says Keena.

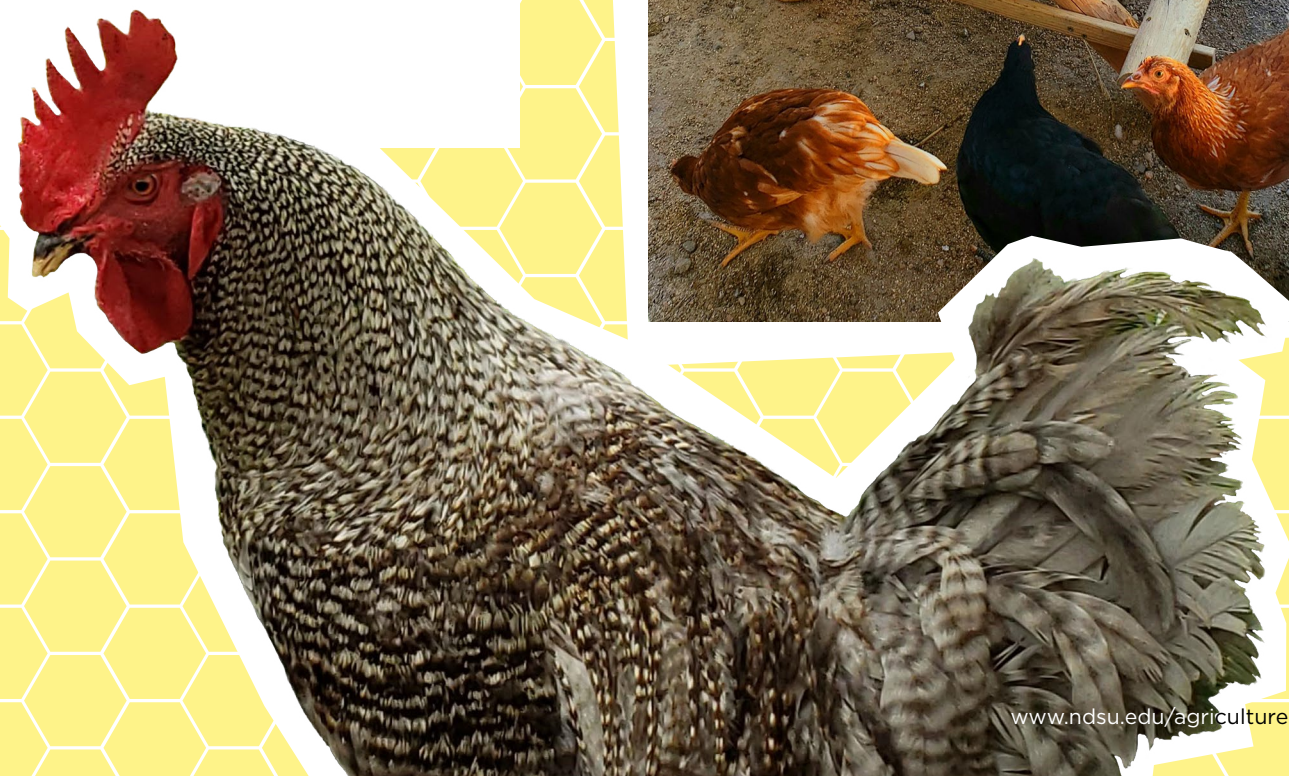
Keena has witnessed North Dakota producers' diligence firsthand, affirming that this deadly virus is not something they take lightly.

"The space and ability we have to raise animals in a biosecure environment is so, so good," says Keena. "Their biosecurity has been looked at. Their (safety) processes have been honed. The effort is there.

"And yet," says Keena, "we are not immune to geese flying over."

FOR MORE INFORMATION:

www.ndsu.edu/agriculture/ag-hub/highly-pathogenic-avian-influenza





Genetic Research Supports Long-Term Stewardship of North Dakota's Elk

Elk have long been a part of the North Dakota landscape and continue to play an important role in the state today. They are part of the state's \$1.5 billion hunting economy and help maintain healthy ecosystems across the regions where they live, supporting seed dispersal, vegetation structure and soil fertilization.

Ensuring that elk remain a sustainable part of North Dakota's environment requires careful, science-based management. Research led by Travis Seaborn, North Dakota State University assistant professor of applied ecology, is providing new insights into the health and connectivity of elk herds, information that can help guide wildlife management decisions for decades to come.

The goal of Seaborn's project is to understand more fully how elk herds in North Dakota are connected to those in southern Manitoba and northwestern Minnesota. His team collaborated with the North Dakota Game and Fish, the Minnesota Department of Natural Resources, and researchers from the University of Manitoba and Memorial University of Newfoundland to monitor the elk herds and their migration. Data from the study will inform wildlife management by identifying genetic structure, migration patterns and herd relatedness.

Small, isolated elk populations, such as those in the Pembina Hills and Turtle Mountains, face risks including inbreeding, loss of genetic diversity and local extinction. Elk are especially vulnerable because of their polygynous breeding system, which limits the number of males contributing to the population's genetic diversity. Population connectivity — the ability of individuals to disperse and breed outside their natal patch — can reduce these risks, but habitat fragmentation often restricts movement.

The management agencies collected samples and recorded GPS locations for each elk. Using methods similar to those used by Ancestry.com or 23andMe, Seaborn and his team evaluated genomic data from the samples to identify parents and their offspring or siblings among the herds.

NDSU graduate Zachary Whaley contributed to the study through NDSU's National Science Foundation Research and Mentoring for Postbaccalaureates program.

"Based on our preliminary findings, it seems that the elk population in North Dakota is connected to populations in Minnesota and Manitoba," says Whaley. "The North Dakota elk population also has genetic diversity comparable to other North American cervids, which is a good sign for the genetic health of the population."

Seaborn explains that genetic health is important because when genetic diversity is low, problems emerge for the species.

"We found high levels of relatedness across the sampled individuals, including recent inbreeding within herds," says Seaborn. "We also found first-order relationships between herds, such as parent-offspring. Broadly, there appeared to be three genetic groups and moderate genetic diversity. Because we found connectivity between herds, management actions involving one herd may impact the demographics and health of other herds."

Together, the findings offer wildlife management agencies clearer insight into how elk herds interact across regions, highlighting the importance of coordinated management across state and international borders.

By combining expertise across university researchers and state and international wildlife agencies, the project helps ensure North Dakota's elk populations remain healthy, resilient and economically significant. Ongoing monitoring and collaboration will support elk herds that contribute to both the state's ecosystems and its outdoor heritage for years to come.

"Elk are a really fascinating species that are iconic and hold a tangible cultural relevance," adds Seaborn. "I don't think anyone wants them not to be on the landscape anymore."

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NDSU Hackathon provides hands-on, data-driven problem-solving opportunities

Since 2024, North Dakota State University has partnered with Bayer Crop Science and the National Science Foundation AgTech Engine to host the AgTech Hackathon, a multiday competition that challenges participants to apply analytical, computational and creative thinking skills to real-world agricultural and biological data problems.

The hackathon brings together graduate students, postdoctoral researchers and research staff from diverse disciplines to work in teams on data-intensive challenges. Participants analyze complex datasets, develop innovative solutions and communicate their results to a panel of judges representing academia, industry and end users.

“The AgTech Hackathon is designed to foster collaboration, creativity and practical problem-solving,” says Ana Carcedo, NDSU Extension broadleaf crops agronomist and event organizer. “It gives participants the opportunity to work with real datasets, strengthen their analytical skills and translate scientific insights into solutions that matter for agriculture.”

This hackathon is open to participants interested in agronomy, plant sciences, data science, engineering, computer science, statistics and other related fields.

Teams work intensively over the course of the event, culminating in final presentations, during which solutions will be evaluated based on scientific rigor, creativity and clarity.

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NDSU teams with Bayer to prepare the next generation of scientists

Preparing the next generation of agricultural scientists requires more than classroom learning. To be successful, students need real-world insight and soft skills to thrive in today’s research environment. That’s why North Dakota State University is collaborating with Bayer Crop Science to offer the B4U Mentorship Program to students. The program is designed to support students through high-impact, industry-based mentorship.

NDSU launched its inaugural B4U cohort in 2025. Nine NDSU students and one student from South Dakota State University participated in one-on-one virtual mentoring sessions with Bayer experts, gaining personalized career guidance and exposure to real-world innovation.

“The growth, collaboration and inspiration that emerged through this program are a testament to the power of mentorship and the strength of academia-industry partnerships,” says Ana Heilman-Morales, program co-organizer and NDSU director of agricultural data analytics.

Mentors focused on helping students develop soft skills — attributes related to interaction, collaboration and communication in the workplace. Heilman-Morales emphasizes that these skills are paramount in a research environment.

After NDSU partnered with Bayer to host the inaugural NDSU Hackathon in 2024, Heilman-Morales looked to collaborate on a mentorship program to help students build confidence and competency in the workplace, regardless of their specific career path.

“We are committed to equipping the next generation of scientists and leaders with the essential tools they need to thrive and make a lasting impact,” says Magan Lewis, project co-lead organizer from Bayer.

Abbeah Navasca is a Ph.D. candidate in NDSU’s Department of Plant Pathology, Microbiology, and Biotechnology. Her main goal for the yearlong program was to get a “360-degree exposure to agriculture, academia, the industry and its growers.” She says B4U did just that.

Her assigned mentor was Connie Davis, a corn breeder and product development scientist at Bayer. Davis connected Navasca with other plant pathologists at Bayer and shared her career experiences.

“In addition to sharing about her years of experience, she had advice for me in terms of self-advocacy and work-life balance,” says Navasca.

In June, the B4U at NDSU team visited Bayer Crop Science in Ankeny, Iowa. This was the first trip to offer a firsthand view of operational scale and innovation in action, such as at Bayer’s genotyping laboratory and seed center.

Davis travelled to Iowa to meet Navasca for the first time in person, and Navasca says Davis making the trip was meaningful and supportive.

Cameron Matthews is a Ph.D. candidate in NDSU’s Department of Plant Sciences. His love for genetics led him to his current role in the barley breeding program.

His interest in the Bayer mentorship program stemmed from his desire to work in the private sector. He had heard about the program at other universities and was eager to see how it could shape his own career path.

Matthews’ mentor, Tom Jury, is the head of North American field testing at Bayer. Together, the two focused on leadership skills, team management and achieving program goals. They explored technical aspects such as efficiency and resource distribution in large-scale operations.

Throughout 2025, Matthews took on a leadership role in his research fellowship, so his meetings with Jury focused on effective leading, facilitating and uniting a team toward a common goal. Navigating differing approaches was relevant to his lab experience, and he was drawn to Jury’s experience working his way up to senior management at Bayer.

In July, NDSU held a Bayer growers meeting at the Peltier Complex on campus — a meeting Navasca describes as “really linking industry, academia and the growers.”

“We’re all doing research in the agriculture sector and trying to make positive impacts on farmers’ lives,” says Matthews, “but a lot of students don’t have a strong personal connection to farms.”

Matthews says meeting with producers helped students gain a real-world perspective on their work, and he was happy to see Jury made the trip up as well.

In October, the group took a trip to St. Louis, Missouri, to Bayer’s global headquarters. There, students experienced Bayer’s innovation culture, networked with scientists and executives, and participated in leadership and communication development workshops.

Matthews’ advice to the next class of mentees?

“Jump headfirst into the program, and embrace the opportunities presented.”

Matthews and Navasca agree that, in addition to sharing a bond with their Bayer counterparts, the mentees had a good time connecting and learning from one another, especially during their travel.

Heilman-Morales feels confident that these students “were able to see themselves in the industry ... to see how this can be their future.”

With the second annual cohort launching in February, another round of students will have the opportunity to learn from industry leaders and begin to see how they can contribute to the future of agriculture.

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NDSU's Land-Grant Mission

The College of Agriculture, Food Systems, and Natural Resources has a tradition of excellence in educating students for real-world careers. Our students learn from and work with world-class scientists in state-of-the-art facilities. These interactions, along with a relatively low student-faculty ratio, provide opportunities for students to develop their critical thinking skills, to work in a team setting, and to capitalize on hands-on learning experiences that will allow them to be competitive in a global economy.

The North Dakota Agricultural Experiment Station consists of seven Research Extension Centers placed strategically throughout the state, the Agronomy Seed Farm in Casselton and the Main Station in Fargo. We work to develop techniques and technologies to enhance the production and use of food, feed, fiber and fuel from crop and livestock enterprises.

NDSU Extension empowers North Dakotans to improve their lives and communities through science-based education. We serve all people of the state through our 52 county and Fort Berthold offices, seven Research Extension Centers and the main campus in Fargo.

For more information on the programs in this publication, contact the faculty and staff listed. For more information about our other programs or have questions, comments or suggestions, please contact me.

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Giving Hearts Day is Thursday, February 12

Founded in 2008, Giving Hearts Day is a 24-hour event for charities in North Dakota and northwest Minnesota. Each year, Giving Hearts Day provides a platform for charities to fund their missions through an ever-increasing community of donors. The longest-running giving day in the country, Giving Hearts Day has helped participating charities raise \$195 million since its founding.

The North Dakota 4-H Foundation and NDSU's Bison Strides Equine Assisted Services Program are two of the many organizations where support is needed.

North Dakota 4-H Foundation

4-H is a research-based organization that equips youth with the skills and experiences they need to grow into thriving individuals. Your generosity provides the North Dakota 4-H Foundation with financial support to ensure all North Dakota 4-H youth have the opportunity to participate in quality programming, camping opportunities, in-school activities and much more. As a result of your gift, youth who participate in 4-H are beyond ready for work and life!

NDSU Bison Strides Equine Assisted Services Program

Bison Strides provides veterans and people with physical, cognitive, emotional, behavioral and mental health challenges the opportunity to experience the therapeutic power of the horse. Through partnerships with horses, people experience more joy and confidently engage in their daily lives. They build core strength and balance, learn mindfulness and emotional regulation and strengthen problem-solving and cognitive skills. By supporting Bison Strides, you help create opportunities for people to experience the therapeutic power of the horse.

Giving is an easy way for donors to support causes they are most passionate about, such as NDSU's Bison Strides program or the North Dakota 4-H Foundation. To make your donation, visit the Giving Hearts Day website at <https://app.givingheartday.org/>.



Giving Hearts Day

