

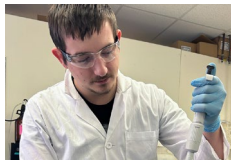
# For the Land and Its People

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## NDSU Extension, Central Grasslands REC Explore High-Tech Cattle Grazing Management



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### November–December 2023

Exploring new technology and services to benefit North Dakotans. Building relationships to help NDSU students succeed. Offering knowledge and wellness to busy parents. These are some of the topics highlighted in this issue of For the Land and Its People. Throughout 2023, we have shared similar stories about the people and programs that make up the College of Agriculture, Food Systems, and Natural Resources (CAFSNR); North Dakota Agricultural Experiment Station (NDAES); and NDSU Extension. We hope that these stories convey our dedication to the land-grant mission and our commitment to bettering North Dakota. Keep reading to learn more about the work we've done in 2023 and our next steps in 2024.

Enjoy.

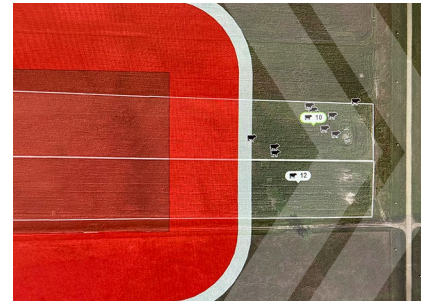
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Vice President for Agricultural Affairs

**NDSU** NORTH DAKOTA  
STATE UNIVERSITY

College of Agriculture, Food Systems, and Natural Resources  
North Dakota Agricultural Experiment Station  
NDSU Extension





This focus of this research is to evaluate strip grazing and grazing technologies on soil health, animal performance and behavior, and economic viability for cattle producers.

# High-Tech Cattle Grazing Management

Imagine it is 8 p.m. and you just sat down in your recliner after a long day of ranch work. Your mind goes over the things you need to get done tomorrow, but one of those things can be done tonight with the click of your laptop mouse. In just a few seconds, you've opened up a new section of pasture for your cattle to graze. No moving fences, no time spent outside in the cold. Sounds high-tech, right?

From June to November of this year, NDSU Extension specialists and researchers at the Central Grasslands Research Extension Center (CGREC), near Streeter, North Dakota, have been piloting the use of virtual fencing to explore precision grazing management strategies.

Virtual fencing, a relatively new technology, allows ranchers to control livestock distribution in a pasture without physical fences. Livestock wear collars that communicate with GPS and reception towers to form a virtual fence set by the rancher. This technology allows ranchers to track their animals in real time and move them to specified areas within a pasture using computer software.

When an animal wearing a virtual fence collar gets too close to a virtual fence boundary, a series of beeps alert the animal to move away from the fence.

"Virtual fencing as a tool to implement rotational grazing could have many potential benefits, with the largest benefits being time and labor savings," says Zac Carlson, NDSU Extension beef cattle specialist. "Other benefits may include better pasture management, and therefore increased animal performance and efficiency."

In addition to more traditional grazing systems, they are testing the use of virtual fence to graze cropland. "The focus of this research is to evaluate strip grazing and grazing technologies on soil health, animal performance and behavior, and economic viability for cattle producers," says Miranda Meehan, NDSU Extension livestock environmental stewardship specialist.

"This past fall we tested three different techniques of strip-grazing a cover crop, including manual fence movement, automated fence movement and virtual fence at the CGREC," says Kevin Sedivec, CGREC director and NDSU Extension rangeland management specialist. "We also tested the use of virtual fencing for rotational graze of cow/calf pairs on summer pasture to assess livestock performance and degree of use patterns."

While the benefits of virtual fencing seem exciting, the researchers are also exploring whether the cost of the technology and initial labor of set-up may prohibit its use for most ranchers.

Meehan, Carlson and Sedivec will be sharing the initial findings of their research in the spring of 2024 through NDSU Extension Café Talks, social media and other outreach efforts.

This research was funded through a U.S. Department of Agriculture cooperative agreement on precision agriculture, and grants from the State Board of Agriculture Research and Extension and North Central Sustainable Agriculture Research and Education program.

Through collaborations with the North Dakota Agricultural Experiment Station and with colleagues at the University of Nebraska – Lincoln, the research will continue through 2026.

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## Changes in the NDSU Soil Testing Lab Point to New Opportunities



The NDSU Soil Testing Lab offers soil sampling and analysis that helps researchers, farmers and homeowners identify and solve soil-related problems that impact plant growth and could lead to economic losses. The results help answer questions about whether or not to fertilize, what type of fertilizer to use, and what management or remediation efforts can improve excess salts, high or low pH, or problematic soil texture.

“Not only can soil test results guide management strategies for the current year, but repeated testing can reveal trends or determine whether remediation efforts are effective,” says Isaac Cuchna, soil testing diagnostician for the lab.

Cuchna has been managing operations for the lab for the past year, following the lab’s move to the NDSU Department of Plant Pathology. The move has been advantageous for the lab, forging new connections with NDSU’s successful plant diagnostic lab.

The soil testing lab has seen other changes in the past year, including an increase in the percentage of samples sent in by homeowners looking to improve their lawns and gardens.

“The highest portion of the soil testing lab’s work has been to support the research of the NDSU Research Extension Centers across the state,” says Jack Rasmussen, chair of the Department of Plant Pathology. “That will always be an important part of the lab’s mission, but we see potential for growth in the service we offer for the state’s home gardeners.”

Homeowners who submit soil samples will receive detailed information on the nitrogen, phosphorus, potassium, pH, soluble salts and organic matter in their soils, along with customized recommendations to improve their soil.

In addition to serving more homeowners, Rasmussen and his team are exploring ways to add new services for production agriculture that are not available commercially. The connection with NDSU Plant Pathology research may help open doors for new opportunities in soil testing.

### FOR MORE INFORMATION:

[www.ndsu.edu/agriculture/academics/academic-units/plant-pathology/soil-testing-lab](http://www.ndsu.edu/agriculture/academics/academic-units/plant-pathology/soil-testing-lab)  
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## NDSU Academic Advisors Help Students Reach Full Potential

For many first- and second-year college students, navigating their first years away from home can be challenging.

Knowing what courses to take, understanding the university services available to students and being a listening ear regarding life decisions are all things an NDSU Academic Advisor is prepared to help students navigate in their first years of college life.

NDSU's College of Agriculture, Food Systems and Natural Resources (CAFSNR) has three dedicated academic advisors available to help provide supportive and responsive information to students.

Following admission to NDSU, each student is assigned an advisor from the college or department in which the student is majoring.

Joel Hanson is the lead advisor for CAFSNR and the College of Engineering. In the spring of 2023, he celebrated his 25th year at NDSU with the last 15 years having served as the Director of the Student Support Center in the College of Engineering. Prior to that he served in NDSU's Career Center for 10 years.

"I really enjoy working with students from all backgrounds but find a certain level of satisfaction in working with undecided students, first generation students, transfer students (having been one myself), and students with military/veteran status," says Hanson.

Rob Glarum serves as the academic advisor for students majoring in agricultural education, animal science, biotechnology, crop and weed Science, equine science, family and consumer science education, food safety and food science, general agriculture, horticulture, microbiology, precision agriculture, soil science and veterinary technology.

Jennifer Carney is the academic advisor for students with interest in agribusiness, agricultural economics, economics and other majors in the College of Business.

"Getting to know our students and then seeing all the things that they accomplish at NDSU and beyond makes my role as an academic advisor very fulfilling," says Carney.

"Our goal is to help every NDSU student find success in their educational endeavors," adds Glarum. "Whether that's helping them explore different majors, guiding them to professional development opportunities, or helping them during tough times, we want every student to feel supported."

### FOR MORE INFORMATION:

<https://career-advising.ndsu.edu/academic-advising/>  
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# Extension Parent Education Program Joins Forces with 4-H

A recent collaboration between NDSU Extension's Parent Resource Centers and 4-H youth development programs created a unique opportunity to engage entire families in NDSU Extension programming.

Thanks to funding from the North Dakota Department of Human Services, Extension parent educators in the western half of the state joined together to design a full-day educational retreat for parents. With additional support from NDSU Extension, they partnered with local Extension agents to add a 4-H youth

development component for children of parents attending the retreat.

The North Dakota 4-H camp near Washburn was the perfect setting for the parent and family retreat they envisioned.

"It was fun to host an event at 4-H camp, where we were able to introduce kids to 4-H, provide parents with opportunities to learn and relax, and facilitate fun activities for families to do together," says Jacey Wanner, Extension parent and family educator.

In her role, Wanner's goal is to equip parents with tools to confidently handle challenges and make parenting more enjoyable. At the retreat, she and fellow parent and family educator Deb Theurer led three educational sessions for parents, providing evidence-based parenting strategies and tips for giving clear directions, fostering positive characteristics in children, adjusting parenting based on the individual child, and empowering children through encouragement.

Another important component of the parent sessions was the opportunity for attendees to connect in meaningful conversations with other parents.

"Parents were able to bond over personal stories of parenting challenges and successes," Wanner says. "Being able to share this with others who are going through something similar helps parents be better parents."

While parents were learning and connecting, the children were exploring all that 4-H Camp has to offer. The youth program included a mix of educational activities and outdoor fun.

Kamile Moderegger, Extension agent in McLean County, was in charge of planning the 4-H youth activities. She and Metta Pfliger, Extension agent in Mercer County, led STEM activities and a hike around the camp to scout for animal tracks. The youth participants also had the chance to enjoy the camp's obstacle course and sporting equipment.

"This was a great opportunity to expose a new group of youth to the hands-on educational opportunities 4-H can provide," says Moderegger. "The best part was seeing them enjoy the beautiful camp setting."

In between the parent education lessons and 4-H activities, families reunited to share in meals and a family scavenger hunt around the camp.

"At the end of the day, we wanted parents and guardians to go home feeling refreshed with good memories of time spent with their children and new tools to help them better enjoy being parents," Wanner says.

#### **FOR MORE INFORMATION:**

[ndsu.edu/agriculture/extension/programs/parent-education](https://ndsu.edu/agriculture/extension/programs/parent-education)

[ndsu.edu/agriculture/extension/extension-topics/north-dakota-4-h-youth-development](https://ndsu.edu/agriculture/extension/extension-topics/north-dakota-4-h-youth-development)

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Visit [www.ndsu.edu/vpag/newsletter](http://www.ndsu.edu/vpag/newsletter)  
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[www.ndsu.edu/vpag](http://www.ndsu.edu/vpag)

### 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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## New 4-H Educational Trunk Helps Youth Learn About Pharmacy

To facilitate hands-on, project-based learning, the NDSU Extension Center for 4-H Youth Development offers a collection of educational trunks for use by Extension professionals, volunteer leaders and 4-H members. The trunks contain everything needed to lead youth through activities that help them learn about various project areas.

This fall, the collection gained a new trunk called "The Prescription Puzzle," an escape room style activity developed by Jeanne Frenzel, professor in the NDSU Department of Pharmacy Practice, to introduce youth to the world of pharmacy. The activity engages youth in a series of puzzles that unlock boxes containing clues related to the practice of pharmacy. After solving all the puzzles, youth will have everything they need to make a custom lotion.

"The new pharmacy trunk is an innovative way to teach youth about the field of pharmacy, educating them about a possible career path they might not have considered before," says Meagan Hoffman, 4-H youth development specialist. "The trunk aligns with 4-H's focus on career readiness and is a great way to share NDSU's pharmacy program with youth."

The partnership with the NDSU School of Pharmacy has allowed 4-H to expand its offerings to encompass new areas of career exploration that may spark an interest for 4-H members.

4-H clubs can reserve "The Prescription Puzzle" trunk and others by contacting their NDSU Extension office.

#### FOR MORE INFORMATION:

[www.ndsu.edu/agriculture/extension/extension-topics/north-dakota-4-h-youth-development](http://www.ndsu.edu/agriculture/extension/extension-topics/north-dakota-4-h-youth-development)  
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