For the Land and Its People

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

NDSU Extension Releases Updated Cow Herd Appraisal Performance Software

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Finding ways to help farmers and ranchers be more profitable. Creating opportunities for learning and discovery. Sparking creativity. Developing partnership to strengthen communities. These are the themes of the stories in this issue of For the Land and Its People. Throughout 2022, 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 2022 and our next steps in 2023.

Enjoy.

Greg Lardy
Vice President for Agricultural Affairs

NDSU NORTH DAKOTA STATE UNIVERSITY

College of Agriculture, Food Systems, and Natural Resources
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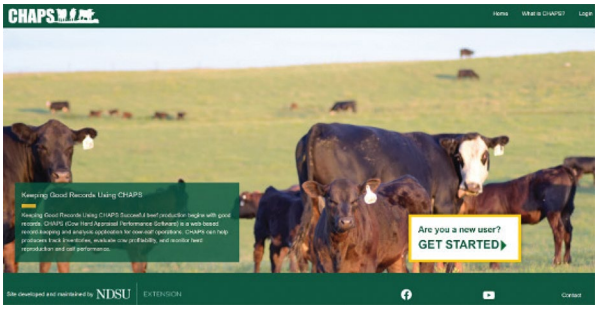

Ranchers can only manage what they measure, and this new version of CHAPS makes it even easier to measure and track data. We believe this will be a powerful tool for ranchers to improve their cow herd.

NDSU Extension Releases Updated Cow Herd Appraisal Performance Software

For almost 40 years, the Cow Herd Appraisal Performance Software (CHAPS) program has provided beef producers with a reliable herd management tool, including benchmarks to assess herd performance.

Since its initial development, NDSU Extension has updated CHAPS to CHAPS II (with improvements to the original program), followed by an update to CHAPS 2000, a program for Windows 2000.

"Online data management and analysis programs are increasingly common in agriculture," says Zac Carlson, NDSU Extension beef cattle specialist. "To serve this need, NDSU Extension developed CHAPS Online, a web-based application where users log in and enter, store securely and access their cow herd data. This eliminates the need to install and use CHAPS on a single computer and allows data access from any location through an internet connection."

CHAPS Online, developed through the North Dakota Beef Cattle Improvement Association (NDBCIA), allows farmers and ranchers to input and track their herds performance based on a set of benchmarks.

CHAPS Online offers a variety of herd reports. The Calf Performance Report displays the number of calves born, died and sold; individual calf birth and weaning data; calf weight and growth benchmark averages.

The Cow Lifetime Progeny Report lists all cows in the herd, including cow data, average calf performance data and individual calf data for each cow.

"These are just two of the reports that can be generated to assess herd performance," says Carlson. "Ranchers can only manage what they measure, and this new version of CHAPS makes it even easier to measure and track data. We believe this will be a powerful tool for ranchers to improve their cow herd."

"We like using the CHAPS program to track our cow-calf performance," says Amy Miller, of the Miller/Bauman Ranch outside of Ashley, North Dakota. "It is quick and easy to look up records for any cow, calf or sire in our herd. CHAPS is useful when making herd management decisions such as choosing replacement heifers and cull cows to keep our herd uniform."

Extension specialists in Iowa, Nebraska and Virginia have expressed interest in using the NDSU Extension CHAPS Online software to pilot similar systems.

FOR MORE INFORMATION:

CHAPS Online Software - https://www.ndsu.edu/chaps/
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Nitrogen-producing Bacteria Reduce Dependence on Fertilizer

Microbes play a big role in agriculture. The bacteria present in the soil, plants and animals can impact factors such as yield, profitability and sustainability of agriculture. Recognizing the importance of microbiome research for North Dakota farmers, NDSU Microbiological Sciences launched an agribiome initiative to study various ways bacteria impact farming and ranching.

"North Dakota farmers are feeding the world, and we are trying to help them do that as productively and sustainably as possible," says Barney Geddes, assistant professor of microbiological sciences.

Geddes researches a specific group of nitrogen-producing bacteria called rhizobia. Rhizobia form a tight symbiotic relationship with legume plants, including soybeans, peas, dry beans and alfalfa. The roots of legumes form nodules to house the bacteria, and the bacteria take nitrogen from the air and supply it to the legume.

While chemical nitrogen fertilizer is a proven method of increasing crop yield, it is often the biggest input cost for farmers. Finding alternative methods of delivering nitrogen to crops can create significant cost savings for farmers and also have a beneficial impact on soil health and the environment.

The Geddes lab is working with North Dakota farmers to optimize rhizobium use in agriculture and develop precision agriculture tools to monitor their populations in North Dakota soils. As their work progresses, they hope to improve the technology that farmers have access to and develop a deeper understanding of which strains create the best results in North Dakota. In the long term, they will look at engineering a symbiotic relationship with cereal crops such as corn, wheat and barley.

"Microbes are the next revolution in agriculture," says Geddes. "It's crucial that, as a leader in agriculture, NDSU participates in this research to ensure North Dakota farmers are benefiting from the latest developments."

MORE INFORMATION:

www.ndsu.edu/agriculture/academics/academic-units/microbiological-sciences/research/geddes-lab

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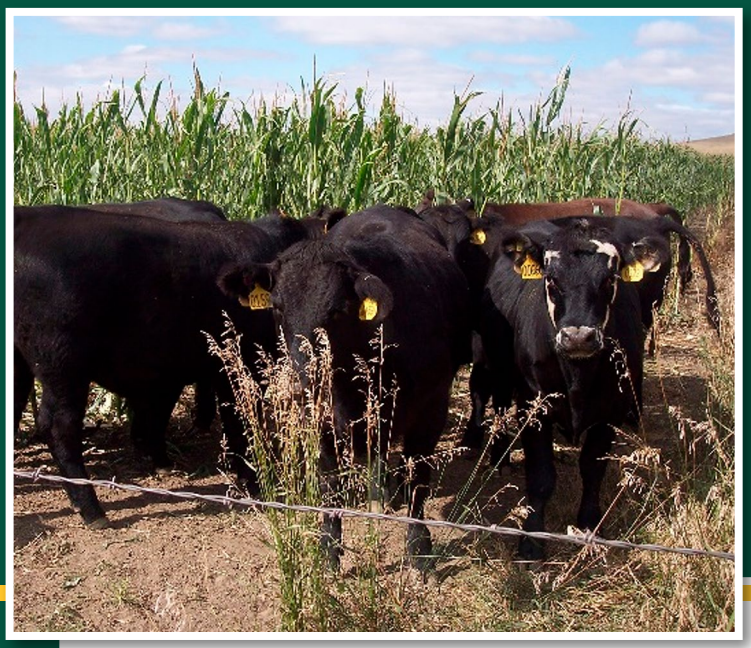

DREC Integrated Crop and Livestock Research Shows Benefits

For the past 15 years, a multidisciplinary team of NDSU scientists and specialists have studied the impacts of integrating cattle and crop production and have seen significant results.

"Producers in our area were looking for regenerative agriculture practices to help restore their soil's health and reduce the cost of production," says Doug Landblom, animal scientist at NDSU's Dickinson Research Extension Center and research team leader. "Our focus on crop production, beef production and soil health in an integrated system, seeks to understand how these things can work together to be profitable."

As part of the study, yearling steers grazed on a crop rotation of spring wheat, cover crop, corn, field pea-barley mix and sunflower. Three of the rotation crops were harvested by grazing, instead of the traditional method, before the steers entered the feedlot.

The team found that:

- Keeping the steers grazing well beyond the normal grazing season, thus delaying their entry into the feedlot, saved feedlot costs, reduced sickness and antibiotic use, and produced yearlings that weighed considerably more than if they had gone through the traditional growing/finishing process.
- Employing a diverse multi-crop rotation with beef cattle grazing increased water infiltration and soil water holding capacity as well as improved and reduced reliance on commercial fertilizer application.
- Soil nutrients, especially nitrogen, increased, eliminating the need to apply nitrogen to the crops.
- Grazing reduced carbon dioxide and tended to reduce nitrous oxide greenhouse gases.
- Spring wheat yield and net return increased.

"The longer you allow cattle to graze, the more opportunities there are to make money," says Landblom. "This approach requires a true paradigm shift, but I'm confident in saying that it shows multiple benefits for the cattle and the land."

Others involved in the research, funded by Sustainable Agriculture Research and Education grants, include Songul Senturklu, a visiting scholar from Turkey; Larry Cihacek, Soil Science professor; Dr. Gerald Stokka, NDSU Extension veterinarian and livestock stewardship specialist; Rob Maddock, former Animal Sciences associate professor; Tim Petry, Extension livestock economist; Cheryl Wachenheim, Agribusiness and Applied Economics professor; and Steve Paisley, director, Sustainable Agricultural Research and Extension Center, University of Wyoming.

FOR MORE INFORMATION:

Forage Grazing Systems and Soil Health YouTube Video - https://youtu.be/SdUwBK6cu6c
The SARE Program - https://youtu.be/Cg6jmUymyek
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NDSU Alumna Shares Her Spark with Students and Faculty

North Dakota native and NDSU graduate, Magan Lewis, equipment and automated field sensing lead from Bayer Crop Science, spoke to students, faculty and staff on October 14. Magan shared her experiences and inspired attendees with her unique leadership approach.

"I encourage my teams to not focus on failures, but embrace the unexpected results and focus on the lessons learned," said Lewis, who earned a Ph.D. from the Department of Plant Sciences in 2012. "This mindset shift I gained from NDSU has made me more adaptable and open to new adventures."

Following her presentation, Lewis signed copies of the Seed World magazine where she was recognized as one of the Top 10 Next Generation leaders. Lewis was also named Des Moines Business Record's Forty under 40.

Lewis also serves as a 4-H adult volunteer leader in Iowa. She says her passion is helping individuals ignite their spark!

"Though leadership, mentoring and coaching at my local 4-H Clover Kids Chapter, I strive to help everyone activate the best version of themselves," said Lewis. "Our children are our future leaders and problem solvers and the sooner we light their flame, the better our world will be. If that flame is STEM…BONUS!"

Lewis also sponsors the Dr. Magan Lewis' scholarship which is awarded to a female graduate student. Magan strives to help others to be the best version of themselves through leadership, mentorship and coaching. Sponsoring a scholarship is one way she can encourage others in the STEM field.

"Magan is an example of the caliber of students that we have at NDSU," says David Buchanan, associate dean for academic programs, CAFSNR. "NDSU graduates are using their quality hands-on learning to address real world challenges, and many, like Magan, also generously give back to their alma mater."

Learn more about NDSU Foundation scholarships at www.ndsu.edu/agriculture/academics/scholarships and www.ndsufoundation.com.

FOR MORE INFORMATION:
Magan Lewis Presentation – https://youtu.be/eWC5fxPwu3A

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NDSU Partners With Tribal Communities to Build Healthier Communities

NDSU is working with Standing Rock and Turtle Mountain communities to address food access issues and promote physical activity. The project is supported by a five-year grant from the Centers for Disease Control and Prevention to address obesity-related challenges in communities with adult obesity rates over 40%. In North Dakota, Rolette County and Sioux County passed this threshold.

"The Healthy Outcomes Project (HOP) was built on existing and new partnerships and relied on community input to co-create efforts that are locally meaningful and designed to be sustainable even when the grant funding is complete," says Megan Ditterick, program director for the Expanded Food and Nutrition Education Program and Family Nutrition Program and HOP principal investigator.

NDSU helped support coalition development through the coordination of existing committees while acknowledging community assets and expertise. Each coalition had the opportunity to select and implement strategies based on the identified needs and existing capital of their community. Strategies were focused on culturally responsive food access through a food sovereignty lens and physical activity promotion.

One such project was a community mural festival held in Fort Yates in partnership with the Standing Rock Community Development Corporation. The festival brought community members together to enjoy the creation of 14 murals celebrating their culture, food sovereignty and physical activity. Standing Rock community artists and mural artists from Babe Walls co-created the murals to become focal points for a larger beautification effort aimed at encouraging walking and biking in the community.

Additional projects have included leveraging the knowledge and experience of indigenous gardeners and local Extension agents to establish community gardens and hydroponic host sites in both communities. To date, 16 gardens and more than a dozen hydroponic sites have begun growing fresh produce that is donated to local senior living centers, food pantries, schools and other group meal settings.

Now in the final year of the grant, project leaders are focused on strengthening the foundation that has been established so the work can continue in a meaningful way for years to come.

MORE INFORMATION:
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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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Richland County Leads Successful Celebration of National 4-H Week

This year during National 4-H Week, NDSU Extension in Richland County found innovative ways to celebrate and promote 4-H in their communities. Members, families, supporters and all community members could participate in various ways.

For Extension agents Ronda Gripentrog and Lacy Christopher, recruitment for 4-H in Richland County was a primary objective of 4-H Week. With no existing 4-H clubs in Lidgerwood, the agents scheduled a visit to Lidgerwood Elementary School to talk to students about opportunities in 4-H. After hearing about the different types of projects and competitions available, students wanted to know how to join. Gripentrog and Christopher followed up their school visit by hosting a Skills Day for interested students to get a taste of 4-H programming.

"The reception was very positive," says Christopher. "We have an upcoming meeting with parents and are hopeful that our efforts will result in a brand new 4-H club soon."

Existing 4-H members around the county joined the celebration of National 4-H Week and helped recruit new members by hanging posters on their lockers and speaking to students in younger grades. Several 4-H members recorded radio clips to be featured on the local radio station. NDSU Extension helped to coordinate scavenger hunts for 4-H members in their local communities and gave 4-H window clings to 4-H families and supporters to hang on their vehicle windows.

The NDSU Extension office in Richland County also partnered with local businesses on 4-H-themed special offerings. Econofoods, a grocery store in Wahpeton, offered a special 4-H-themed flavored popcorn, and Wahpeton's 3 Bean Coffee Company featured a green and white Italian soda. Both locations posted a flyer with information about 4-H in Richland County.

While recruitment was a major focus of this year's National 4-H Week, recruitment efforts continue year-round, says Gripentrog. They are always looking for opportunities to promote 4-H.

"You never know where you can ignite that spark," she adds.

MORE INFORMATION:
https://www.ndsu.edu/agriculture/extension/extension-topics/4-h-youth-development/join-4-h
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