

For the Land and Its People

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CAFSNR teaching impacts students for life

4-H experiences impact
lifelong leadership



Extension food and nutrition
programs empower families



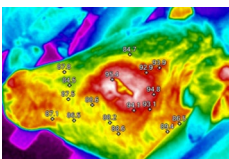
Wheat scab research
reduces losses



Intercropping research shows
increased efficiency and
favorable returns



Beef cattle temperament is
linked to health, meat quality



July–August 2020

Students recently returned to the NDSU campus. That may not seem like much of an opening line in any other year, but in the midst of a global pandemic, having our students back on campus has been a major undertaking. Preparations have been underway for many months to prepare for this event and we are thrilled to see them back, even if we only see the parts of their faces not hidden by face coverings.

Meanwhile, our faculty and staff in the College of Agriculture, Food Systems, and Natural Resources (CAFSNR); North Dakota Agricultural Experiment Station (NDAES); and NDSU Extension continue to carry out their missions in spite of the challenges related to COVID. I'm exceedingly proud of their efforts and all that they have accomplished during this difficult time. This issue of *For the Land and Its People* shares just a few of the impacts of their work.

Enjoy.

Greg Lardy

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

CAFSNR Teaching Impacts Students for Life

The College of Agriculture, Food Systems, and Natural Resources (CAFSNR) is proud of the impact its teaching has—not just on students' knowledge but also on their lives.

For 50 years, Ed Deckard, Plant Sciences professor, has been one of those impactful teachers and advisers.

Heather Feiring, an NDSU Crop and Weed Sciences graduate, said, “People don’t care how much you know until they know how much you care. Dr. Deckard embodied this statement. He understood that success in the classroom built the foundation for success outside the classroom. Yes, the content he taught was valuable, but the more valuable lessons were how to be a good human because he combined his academic excellence with being invested in our success. In return, I invest in others because I know the impact it can have for them. Dr. Deckard did that for me.”

Deckard taught and advised Lee Briese who now is an agronomist with Centrol Inc. of Twin Valley based in Edgeley.

“Dr. Deckard uses a very patient and encouraging style of teaching,” Briese said. “He actively listens to your questions and ideas and helps to lead you toward answers without just giving them to you. He helps guide your thinking until you find a solution and then celebrates with you. I strive to follow his example of actively listening to others, understanding their ideas and providing constructive input whenever I am interacting and explaining science to customers and coworkers.”

As the CAFSNR associate dean, David Buchanan encourages and facilitates high-quality teaching and advising from faculty.

“I was in Agronomy 103 with Dr. Deckard just a year after he started at NDSU,” Buchanan said. “His professionalism and care for students were already evident. Those features have had a positive impact on thousands of students over his 50 years of teaching.”

Deckard says, “Students impact the lives of many, but no one more than me. They have been an inspiration and a lifeline; they are one of the ways I love and feel loved. Students plunge in and grow so much during their time at NDSU, but, in reality, they help me grow even more. I am blessed and grateful that they allow me to join their dance.”

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4-H Experiences Impact Lifelong Leadership

Though generations apart, two former Hettinger County 4-H'ers credit 4-H for their early leadership experiences.

Teddy Mayer, who recently concluded his membership in the Flickertail Club at Mott, now is a 3rd Class cadet at the U.S. Military Academy at West Point.

"4-H Communication Arts and the Ambassador program taught me how to speak clearly and effectively in front of others to best communicate my ideas," Mayer says. "I just finished cadet field training at West Point this summer, which is meant to teach and inspire the sophomore class to be able to lead the incoming freshman class as team leaders. 4-H Communication Arts provided me a great foundation for honing my own leadership style and abilities through effective communication."

Former U.S. Sen. Byron Dorgan was a member of the Indian Creek Club near Regent.

"My 4-H experience was a real treasure in my life," Dorgan says. "When I served as a congressman and U.S. Senator, I decided to speak about my 4-H experience because I thought it had contributed so much to my knowledge and understanding of so many other things we experience and confront in our lives."

Meagan Scott Hoffman, a 4-H youth development specialist in the NDSU Extension Center for 4-H Youth Development, recently surveyed 4-H members.

"Every child has the potential to be a true leader," she says. "However, youth often report lacking life experiences to build the skills they need to reach their full potential as leaders, including perseverance, decision making, integrity, inclusivity, positive relationships and leadership skills. The more time youth spend in 4-H is positively associated with the development of these true leader skills."

In the survey, half of the 4-H members said they already feel comfortable being a leader. In addition, 66% said they are willing to work hard on something difficult, 54% look for ways to involve all members of a group and 50% get along with others who are different than they are. Hoffman says all of these are important leadership skills.

Dorgan and Mayer are just two of the thousands of former North Dakota 4-H'ers who have used their 4-H experiences to provide leadership in their careers, with organizations and through other avenues, Hoffman says.

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Our programs are more important than ever as they teach those struggling with food insecurity the knowledge and skills to make healthier choices for their families.



Extension Food and Nutrition Programs Empower Families

Learning about good nutrition is doubly important for Jayda Provorse.

The Jamestown, N.D., woman has diabetes and suffered a heart attack.

To learn how to make better food choices, Provorse participated in NDSU Extension's Expanded Food and Nutrition Education Program (EFNEP) and Family Nutrition Program (FNP).

EFNEP is a nutrition education program for families with young children and limited resources. Families learn about healthy food choices, food safety and stretching their food dollar through a series of lessons.

FNP is a nutrition education program for individuals and families who are receiving or are eligible to receive Supplemental Nutrition Assistance Program (SNAP) benefits.

"One of the most important things I have learned is how to choose nutritious foods and read (food) labels," Provorse says.

She was among 97 adults and 781 youth EFNEP reached in 2019. Survey results show that:

93% of adult program graduates and **79%** of youth improved one or more nutrition practices

84% of adult graduates improved one or more food resource management practices

57% of youth graduates improved one or more food safety practices

37% of youth improved physical activity behaviors

In 2019, FNP provided direct education to 975 adults and 4,545 youth with significant results:

73% of youth choose healthier snacks

80% of youth are more physically active

71% of youth drink less sugar-sweetened beverages and **61%** drink more water

53% of adults are eating more vegetables and **50%** are eating more fruit

70% of adults adopted one or more habits to spend their food dollars more wisely

"Food insecurity has been on the rise in North Dakota as a result of the pandemic and other economic pressures," says Megan Ditterick, director of EFNEP and FNP. "Our programs are more important than ever as they teach those struggling with food insecurity the knowledge and skills to make healthier choices for their families."

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NDSU Extension Takes on Fusarium Head Blight



Fusarium head blight (FHB), or scab, is a fungal disease that can occur on all small-grain crops grown in North Dakota. The disease commonly is seen on spring wheat, winter wheat, durum and barley, causing significant reductions in yield and quality.

“FHB is not a new disease to North Dakota, yet it is the most important disease for approximately 8 million acres of small grains in the state,” says Andrew Friskop, NDSU Extension plant pathologist. “The disease can cause significant reductions in yield and quality, and FHB-infested grain may contain fungus-produced toxic substances called mycotoxins.”

The most common mycotoxin associated with Fusarium-infected grain in the northern Great Plains is deoxynivalenol (vomitoxin) or DON (VOM). This mycotoxin may cause vomiting and feed refusal in nonruminant animals, such as pigs. The presence of this toxin also may result in substantial price discounts at the market and even refusal to purchase if DON toxin levels are high.

Since 2015, growers have lost tens of thousands of dollars in yield and quality, prompting a strong Extension response.

Friskop and a team of Extension specialists and local agents are using a combination of North Dakota Agricultural Experiment Station research and NDSU Extension information and resources to help North Dakota small-grains producers take on this disease.

With more than \$120,000 in grant funds from the U.S. Wheat and Barley Scab Initiative, Friskop and his team have conducted multiple fungicide experiments and scab-resistant variety trials in North Dakota. In 2020, 13 trials were conducted at four locations: the Carrington Research Extension Center, Fargo Main Station, Langdon Research Extension Center and Nesson Valley Irrigation Project site.

The data received from these trials is combined with Extension recommendations and then presented to producers in scab-stricken areas at Extension winter meetings, crop in-service meetings, field days, trade shows and other agricultural events. In addition, Friskop has co-authored two recent Extension publications focused on FHB and DON, and shares timely information through social media, news releases and the NDSU Crop & Pest Report.

Data is showing that Friskop's work is having an impact.

“When I gave my first presentations on this topic in 2015, 15% percent of the audience indicated that they had gained important insight that they would apply to their own operation,” Friskop says. “In 2019, 50% indicated that they had learned something new, and 25% of the audience indicated that they had gained knowledge that they would apply to their own operation.”

FOR MORE INFORMATION:

<https://www.ag.ndsu.edu/publications/crops/fusarium-head-blight-scab-of-small-grains>

<https://www.ag.ndsu.edu/publications/crops/plant-disease-management-deoxynivalenol-don-in-small-grains-1/pp1302.pdf>

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Intercropping Research Shows Increased Efficiency and Favorable Returns

Research at the NDSU Williston Research Extension Center's (WREC) Nesson Valley Irrigation Project site shows intercropping field peas and canola has positive effects on field pea lodging, increased canola yields, and when examined from an economic standpoint indicates positive returns.

Intercropping, the practice of growing two or more crops together in the same field, is not a new practice, but it has not been widely adopted, says Justin Jacobs, WREC irrigation research specialist.

"The idea of growing field pea and canola together, to then be separated as individual cash crops, is a relatively new and emerging idea," Jacobs continues.

Field peas and canola are well-suited for intercropping research because they have similar maturities, are easily separated by varying seed size, utilize field peas' natural trellising to reduce lodging and are compatible with western North Dakota's semi-arid climate.

Now in their third year of research, Jacobs and a team of WREC researchers have planted four different ratios of field peas and canola together, applied varying rates of nitrogen and have subjected each trial to irrigation and non-irrigation protocols.

Among their findings: In the 2018 and 2019 trials, a reduction in the lodging of field peas was seen when intercropped with canola. Although significant differences were seen in yields of canola and field peas across fertilizer rates and planting ratios in the irrigated and non-irrigated trial, when an economic analysis was performed in 2019, the addition of canola into an intercropping production practice provided favorable net returns.

Jacobs notes that the economics are variable based on the year.

"Our goal is to conduct research that helps producers in this region of North Dakota stay profitable," says Jerry Bergman, WREC director. "We believe our intercropping and other alternative cropping systems research will be beneficial to these producers." Jacobs and his research team also are conducting similar trials in 2020 and anticipate more data after harvest is complete. In addition, Clair Keene, WREC Extension cropping systems specialist, has ongoing research trials on intercropping chickpeas and flax under dryland conditions.

FOR MORE INFORMATION:

2020 WREC Field Day Intercropping Video – https://youtu.be/vv_eWx6-CFA
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The Land-Grant Mission of NDSU

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.

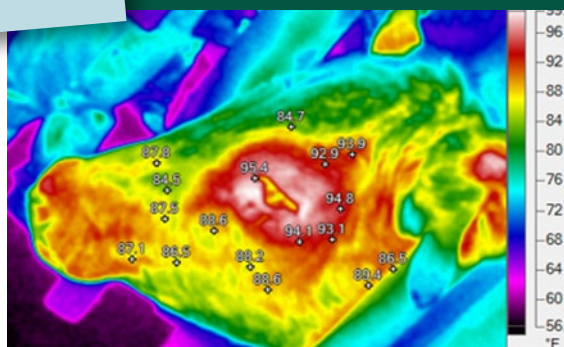
If you would like more information on the programs in this publication, contact the faculty and staff listed. If you would like more information about our other programs or have questions, comments or suggestions, please contact me.

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Beef Cattle Temperament is Linked to Health, Meat Quality

NDSU scientists have found a link between beef cattle temperament and their health and meat quality.

Xin Sun, an assistant professor in the Agricultural and Biosystems Engineering Department; Eric Berg, a professor in the Animal Sciences Department; Lauren Hanna, an associate professor in the Animal Sciences Department; and William Ogdahl, an Animal Sciences graduate student, are using video, color and near-infrared imaging to evaluate beef cattle temperament.

"Think of it this way," Berg says. "A person with a type A personality is often more susceptible to becoming ill or contracting a disease because their temperament is always on edge. Beef cattle that possess a nervous temperament may be more prone to disease. Also, because these animals are for meat production, the heightened metabolism associated with a very active instinct for fight or flight means they will deposit less fat for marbling and the tense muscles will lead to tougher meat."

According to Sun, one of their most significant findings was a relationship between beef cattle eye temperature from the thermal imagery data and beef cattle temperament scores. Also, an excited animal will have a larger pupil dilation as an involuntary mechanism associated with the survival instinct.

Feedlot managers and producers have known that excitable cattle are more difficult to handle and can be more costly to raise because they require more handling and cattle-damaged equipment needs to be repaired. Having objective measurements will allow producers to make better management decisions that could impact worker and animal welfare positively, the scientists say.

The study also showed that steers subjected to isolation and restraint stress had darker lean meat, which leads to lower beef quality.

"If we provide an easier, accurate research tool to let beef producers better manage the cattle with temperament, the producers will provide a better beef product to the consumers," Sun says.

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