

For the Land and Its People

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RLND Program Celebrates 20 Years of Leadership Development

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Having a “growth mindset” means believing that your abilities and successes can improve with continued resilience, effort and learning. Whether that means helping North Dakotans build and grow their leadership capacity, helping farmers find effective solutions to crop diseases, or allowing students to grow their critical thinking and presentation skills through real-world projects, NDSU Agriculture is focused on inspiring a growth mindset in those we serve. This issue of For the Land and Its People highlights how the College of Agriculture, Food Systems, and Natural Resources (CAFSNR); North Dakota Agricultural Experiment Station (NDAES); and NDSU Extension are working to embody growth and the spirit of the land-grant mission.

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

NDSU's Home Garden Variety Trials Engage Hundreds of Gardeners



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RLND Program Celebrates 20 Years of

Leadership Development

NDSU Extension's Rural Leadership North Dakota (RLND) Program began 20 years ago to develop agricultural and community leaders. One hundred fifty-nine people from 87 communities in 41 counties have participated in RLND since the program began in November 2003.

RLND is an 18-month program. Participants attend seven in-state workshops with tours of agricultural and community businesses; a regional seminar and a national seminar to meet with agricultural, business and government leaders; and an international study tour to learn about global agricultural policies and rural development. Previous classes visited Brazil, Costa Rica, Panama, Thailand, Vietnam, Chile and Spain.

The program helps participants to enhance leadership skills, such as thinking critically, communicating effectively, strategic planning and managing conflict. Participants also learn about agricultural and rural policy, trends that could affect North Dakota, finding innovative ways to fund local and regional development projects, the value of coalitions and partnerships, and agricultural and community advocacy.

Program participants then use the skills they have learned to implement a project that benefits their organization, community or region. For example:

- Watford City gained a community playground and multifamily housing units.
- Dawson is attracting tourists with a visitor center/museum of the area's history.
- Hannaford's old elementary school became a multipurpose building with a library, fitness center, craft room, technology center, and space for start-up businesses and community events.

"RLND allowed me to expand my network of leaders throughout the state of North Dakota," says Anthony Larson, Adams County commissioner. "Further, it caused me to engage and commit to leadership roles at a higher level than previously. My experiences in the RLND program have allowed me to gain confidence and be more effective as a leader on local, regional and national boards."

This year, RLND is looking for participants for Class X, which begins in November. The deadline to apply is May 15.

FOR MORE INFORMATION:

RLND Website - www.ndsu.edu/agriculture/extension/programs/rural-leadership-north-dakota

RLND Facebook Page - www.facebook.com/RuralLeadershipND

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NDSU's Home Garden Variety Trials Engage Hundreds of Gardeners



Each spring, NDSU Extension horticulturist Tom Kalb distributes thousands of seed packets to North Dakotans who participate in the North Dakota Home Garden Variety Trial Program. The results of the research determine variety recommendations for gardeners across the state.

In 2022, gardeners at 287 sites rated a total of 130 vegetable varieties for germination, plant health, earliness, yield and food quality. Data were obtained from 43 of 53 counties in North Dakota. The results were published and are being shared with thousands of gardeners in 2023.

“The program is open to everybody—new and experienced gardeners, commercial growers and even youth,” says Kalb. “We want to know the performance of these varieties under actual, home gardening conditions. Finding the best varieties for our state has been shown to help gardeners increase their yield, reduce their use of pesticides and grow vegetables that taste better.”

Gardeners can join the garden variety trials team by signing up online. They must pledge to manage their trials responsibly and submit results promptly at the end of the growing season.

“We have an expanding team of hundreds of gardeners who volunteer their time and effort to help conduct research for NDSU,” says Kalb. “I am impressed by how engaged and responsible people are. They enjoy being part of a team and contributing to research that benefits fellow gardeners.”

Participants also benefit. Last year, 192 responses (71% response rate) to an online survey showed:

- 98% were introduced to new varieties.
- 96% will change the way they grow their garden in the future.
- 92% reported more productive gardens.
- 82% reported healthier diets.

Parents in households with youth participants reported:

- 92% of youth improved their diets.
- 91% of youth increased their level of physical activity.
- 76% of youth sharpened their skills in science and math.

The 2023 catalog is available now through early summer.

MORE INFORMATION:

www.ndsu.edu/agriculture/extension/programs/home-garden-variety-trials

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Join the North Dakota
Home Garden Variety Trial Program



NDSU Research Finds Low-cost Solutions to Crop Disease Management

Managing crop diseases can become a major expense for farmers, and ineffective management strategies often lead to significant economic losses.

Michael Wunsch, plant pathologist based at the NDSU Carrington Research Extension Center, and his team are working to find low-cost strategies for managing two major diseases – root rot in field peas and white mold in soybeans. Both are serious problems that have defied easy management.

On soybeans, Wunsch and his team evaluated many different management strategies and made significant breakthroughs in yield gains once they started evaluating fungicide application timing and spray droplet size.

“We learned that the fungicide application timing and spray droplet size generally used for white mold management in soybeans were not optimal,” says Wunsch. “Optimizing fungicide application timing relative to growth stage and canopy closure increased the yield gain from the fungicide by 50%, and calibrating fungicide droplet size relative to soybean canopy closure and nozzle manufacturer increased the yield gain by another 50% to 100%.”

On field peas, he and his team have generated promising results suggesting it may be possible to manage *Fusarium* and *Aphanomyces* root rots successfully with the combined use of early planting, fungicide seed treatment and a six-year crop rotation.

In research conducted in central and western North Dakota over multiple years, field pea yields have been increased by 4 to 8 bushels per acre with early planting, 4 to 6 bushels per acre with fungicide seed treatment, and 9 to 11 bushels per acre with a six-year crop rotation in fields with severe root rot pressure.

“None of these management strategies is sufficient when utilized alone, but the effects are additive,” says Wunsch. “We’ve achieved commercially acceptable yields by combining all three.”

The cost of implementing these management strategies in soybeans and field peas is minimal.

“In a time of surging input costs, it’s great to find low-cost solutions,” says Wunsch.

MORE INFORMATION:

www.ndsu.edu/agriculture/ag-hub/research-extension-centers-recs/carrington-rec/research/plant-pathology
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NDSU Pigs Help Scientists Understand More About Ketogenic Diet

According to the 2020-2025 Dietary Guidelines for Americans, the combination of food and nutrients consumed by humans have a collaborative and accumulative effect on their health and disease risk.

The growing concern for metabolic diseases and obesity has helped develop the creation of popular diets as healthier alternatives to the standard Western diet. One of most popular diets among adults is the ketogenic diet where carbohydrates used for energy are replaced by fat sources.

A classic ketogenic diet is defined as very low carbohydrate (<50g per day or 10% of daily energy intake) and high fat (>75% of total energy). It is primarily composed of high-fat and protein-rich foods such as meat, poultry, fish, eggs, nuts, seeds and oils, while grain products, fruits, starchy vegetables, and sugar-containing products are avoided.

Scientists at North Dakota State University wanting to learn about the effects of ketogenesis turned to pigs to help them understand more. A recent study examined 15 female pigs (gilts) that were fed either a balanced, traditional diet containing corn as an energy source, or a ketogenic diet using beef tallow as an energy source.

The 28-day research project found that:

- Body weight remained stable for the pigs on the ketogenic diet while the pigs fed the traditional corn/soybean diet continued to gain weight.
- External fat (subcutaneous fat) increased on the corn-fed pigs (but not a statistically significant amount), while over time, the pigs on the ketogenic diet lost backfat (significantly).
- The pigs fed the ketogenic diet had less intramuscular fat in the loin muscle. Accumulation of intramuscular fat in humans is an indication of pre-diabetes and metabolic syndrome.
- Pigs fed the ketogenic diet had less abdominal fat, which is associated with many metabolic disorders.

“The National Institute of Health notes that pigs are the best model for studying how food influences physiology, as pigs and humans have the same physiological response to food—both are simple stomached omnivores,” says Chris Byrd, NDSU Department of Animal Sciences assistant professor and co-principal investigator of the research.

“This research is helping us to understand more about the role of meat in the human diet as a means to optimize health and wellbeing,” says Eric Berg, NDSU Animal Sciences professor and co-principal investigator. “With the end goal being increasing knowledge and awareness of the benefits of consuming meat and other animal products.”

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4-H Hippology Program Helps Youth Build Life Skills

Each year, North Dakota 4-H members have the opportunity to demonstrate their equine knowledge at the state hippology contest. The winning team advances to the Western National 4-H Roundup in Denver, Colorado, where they represent North Dakota on a national stage.

Hippology is the study of horses that consists of veterinary science, nutrition, horse care and general horse knowledge. The contest has four main components: horse judging, station identification, a written test and a team problem.

This winter, the Ward County hippology team represented North Dakota at the Western National 4-H Roundup and was named the overall national champion team. Members Emily Fannik of Max, Olivia Lebrun of Berthold, Anne Schauer of Carpio and Mikaela Woodruff of Edgeley also brought home individual honors. This is the second year in a row that North Dakota has won the national hippology contest. Last year, a team from Benson County placed first.

Participants in the state and national hippology contests work hard to build their equine knowledge, but along the way, they also build skills that will serve them throughout their lives.

“These youth learn so much more than the incredible amount of equine knowledge they demonstrate at the contest,” says Paige Brummund, NDSU Extension agent and coach of the Ward County hippology team. “They gain time management skills, learn how to be professional, and practice making decisions as a group. Overall, they transform into outstanding citizens.”

Leigh Ann Skurupey, assistant director for the Center for 4-H Youth Development, adds that preparation for the contest helps youth grow skills in goal setting, communication and being open to challenge.

“The hippology contest helps foster a growth mindset and helps youth become comfortable learning how to learn,” says Skurupey. “Youth who participate in 4-H hippology contests often walk away empowered with confidence, resiliency and essential life skills to thrive and lead for a lifetime.”

FOR MORE INFORMATION:

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www.ag.ndsu.edu/4H



Visit www.ndsu.edu/vpag/newsletter to subscribe to For the Land and Its People e-newsletter.

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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Hosted by the NDSU Agricultural and Biosystems Engineering (ABEN) Department, the 75th annual Agricultural Technology Exposition named Ben Van Berkomp and Scott Drovda as the grand champions this year.

The two NDSU seniors presented their project, "High-Capacity Batteries in Agriculture," during the Feb. 11 event. Van Berkomp is a precision agriculture major, while Drovda is majoring in agribusiness. Both are graduates of Des Lacs-Burlington High School.

The Agricultural Technology Expo began in 1948 and is sponsored by the student branch of the American Society of Agricultural and Biological Engineers and the Agricultural Systems Management Club. It is the largest student activity in the ABEN Department.

During the event, students present on a topic related to technology within agriculture. Van Berkomp and Drovda explored the technology being advanced by companies such as Bobcat and John Deere in battery-powered equipment. The project explored the advantages and disadvantages of the batteries and specifications on how they operate.

"The biggest thing I learned from it, content-wise, was the fact that there are so many variables that go into electric or battery-powered machinery," says Van Berkomp. "One thing I really enjoyed about this project is the learning



Students Share Projects at 75th Agricultural Technology Expo

I was able to do as I presented. I learned more presenting our project than I did while I was preparing it."

"The Agricultural Technology Exposition is a great environment to hone presentation skills," Van Berkomp added. "Battery powered machinery can be a hotly-debated topic. I thought it was fun to practice presenting information and having open conversations about a topic that can sometimes be controversial."

More than \$1,500 in scholarships are typically awarded during the event. Scholarships are awarded to the grand champion project, division winners and best freshman project.

FOR MORE INFORMATION:

www.ndsu.edu/aben/student_clubs/agricultural_technology_expo/

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(Story by Luann Dart, edited by NDSU ABEN Department)