

Senate Bill 2020 Testimony

January 16, 2025

North Dakota Agricultural Experiment Station

Greg Lardy, Director

Good morning, Chairman Wanzek and members of the Government Operations Division of the Senate Appropriations Committee.

My name is Greg Lardy, and I have the privilege of serving as the director of the North Dakota Agricultural Experiment Station.

The North Dakota Agricultural Experiment Station is the research and development agency of North Dakota agriculture. Our scientists generate solutions to meet the short- and long-term challenges faced by our state's agriculture. Through innovative and creative partnerships with a variety of entities, we develop technologies that help our farmers and ranchers adjust to changing market conditions, consumer preferences, disease threats, and a changing landscape of production scenarios. We develop more cost-effective feeding and grazing strategies for livestock, release plant varieties that are specifically suited to our unique growing conditions, and provide research-based solutions for a myriad of technological challenges faced by our farmers and ranchers. Our scientists help identify new uses for agricultural commodities, enhance marketing opportunities, and bring local solutions to the state through our network of operations on the main campus of North Dakota State University and our seven Research Extension Centers that are located strategically throughout the state.

I want to take a moment to thank the members of the 68th Legislative Assembly for their support of critical infrastructure and programmatic needs that were funded in the 2023 session. You will hear more about several of those projects and programs throughout the day today, but specifically, I wanted to thank you for the support of the employee compensation package, the agricultural field laboratory, and the positions included in our budget last biennium. Specifically, I will mention the field laboratory building which was funded in the 2023 session. We have begun construction on this project and expect it to be completed in mid-2026. It will spur additional growth in the ag economy by providing more timely research-based solutions to the industry in the years to come. These efforts will have a lasting positive impact on our agency and could not have been completed without your support.

The impact of agriculture on the state's economy is significant. Agriculture contributes over \$30 billion annually to the state's economy. One in five jobs is directly tied to agriculture.

This morning, in addition to my testimony, you will hear firsthand from several grassroots users of our research programs. They will share how our research is making a difference in their daily

operations and contributing to a brighter future for their families, their communities, and the state.

Agriculture touches every corner of North Dakota. The impact is felt by businesses across the state, whether it is a specialty crop buyer in Beach, a soybean processor in Spiritwood, a dairy in Carrington, a pasta plant in Casselton, or a precision agriculture software company in Fargo.

As Chairwoman Lovas mentioned, SBARE has listened carefully to the needs of the state's citizens through a series of listening sessions and dialogue regarding the programmatic priorities for the North Dakota Agricultural Experiment Station.

SBARE's responsibilities in Century Code include setting the programmatic and budgetary priorities for the agency. They have identified several critical needs including:

Agency Needs

1. Center for Agricultural Policy and Trade Studies (CAPTS): Research into the effects of national and international policies and trade on North Dakota's agriculture is essential. Export markets for agricultural products have become increasingly more complex, leading to higher levels of risk for farmers and agribusinesses. North Dakota's economy, heavily dependent on agriculture and trade, faces vulnerabilities due to tensions in international relations and trade dynamics, impacting food security and global trade patterns. The prosperity of North Dakota's agricultural sector is closely tied to the success of its farmers, ranchers and agribusinesses. Unique challenges confront the state, including the fact that its location requires rail transport to export markets. Research is crucial to understand the impact of changes in agricultural policies and global market trends on North Dakota's agricultural community. Request: Three FTEs total. Positions are: (1) Agricultural policy analyst – \$275,000, (2) Market and trade analyst – \$275,000 and (3) Economic impact/contributions specialist – \$275,000. \$150,000 in operating. Total: \$975,000
2. Digital Transformation of Agriculture: Digital agriculture, precision farming and ranching, and related technologies are advancing rapidly, driven by breakthroughs in artificial intelligence (AI) and machine learning (ML). NDAES scientists are leveraging these technologies to transform food production. Investing in new technologies, staff and infrastructure will equip scientists with the necessary resources to accelerate research in sensor technology, plant breeding, precision livestock farming and other digital initiatives. This effort is key to enhancing global food security through innovations in North Dakota agriculture. Such funding is crucial for improving infrastructure and capabilities in agricultural data analysis and precision agriculture. Request: Six FTEs total. Positions in prioritized order are: (1) AI/ML engineer – \$280,000, (2) Database

architect – \$430,000, (3) Data manager – \$280,000, (4) Data scientist – \$280,000, (5) GIS specialist – \$230,000 and (6) Unmanned Aircraft Systems chief pilot – \$230,000.

Operating request of \$904,000 for software subscriptions for cloud server access, network servers, high-speed computers for AI computations, data archiving, storage architecture specialized for AI and ML, and software licenses. Total: \$2,634,000

3. Livestock Animal Health: North Dakota faces a significant risk of having no veterinary toxicologist available. To address this critical need, funding is requested for a toxicology resident position. A toxicologist plays a vital role in supporting the state's livestock industry by developing assays for the detection of mycotoxins, ergot, blister beetle toxin, bromethalin in feed and other challenges that affect the industry. Request: One FTE total. Veterinary toxicology resident to support critical needs in the Veterinary Diagnostic Laboratory – \$275,000. \$50,000 in operating. Total: \$325,000
4. Operating, Equipment and Graduate Research Assistantships: Enhanced operating budgets are essential for sustaining growth and achieving ongoing success. The operational costs associated with the NDAES research mission have escalated. Expenses for fuel, equipment maintenance, repairs, feed, fertilizer and more limit the ability of scientists to be responsive to critical research needs. Additionally, operating funds are crucial for fostering the early career development of scientists, enabling them to acquire necessary start-up equipment and supplies and to support graduate student salaries. Sufficient start-up and operating funds are vital for establishing successful research programs. Modern research equipment is essential for conducting accurate experiments and advancing new methods to improve North Dakota's livestock and cropping systems. Funding is requested to ensure laboratories and agricultural field operations are equipped with modern equipment needed to generate world-class results. Graduate research assistants play an indispensable role in the successful completion of every NDAES agricultural research project. They are deeply involved in conducting experiments, analyzing data and applying research findings to solve real-world agricultural problems. Graduate students also share their advancements with the wider community through the dissemination of research through publications and presentations. Additionally, their research prepares them as the next generation of leaders, equipped with the knowledge and skills needed to address challenges facing North Dakota agriculture. This initiative requests an increase in the number of assistantships to support the research activities by attracting talent to NDSU. Request: Equipment and graduate research assistantship funding. \$1,190,000 in operating (\$560,000 for seven branch stations + \$630,000 for main station units), \$1,000,000 in equipment and \$900,000 for graduate research assistants Total: \$3,090,000
5. Biofuels and Carbon Management: As a consequence of the national and international agricultural customer base, North Dakota farmers can achieve economic gains through the adoption of carbon and climate-smart farming strategies. This is key to reducing carbon intensity scores to more effectively participate in markets for renewable fuels. There is a significant need for research to develop advanced farming techniques tailored

to North Dakota's unique agricultural conditions. This research will focus on practices such as crop rotation, cover cropping and efficient nutrient management aimed to both reduce carbon intensity and enhance the production of biofuel feedstocks. This supports efforts to improve sustainability and profitability in farmers' operations. Request: Two FTEs total. Positions are: (1) Scientist – \$275,000 and (2) Research specialist – \$200,000. \$50,000 in operating. Total: \$525,000

6. Research Specialists: Technical support staff are critical in assisting agricultural scientists to achieve their research goals. They provide essential expertise in the operation and maintenance of sophisticated laboratory and field equipment that ensures experiments are conducted efficiently and accurately. Staff contribute to the collection and analysis of data, which is fundamental for validating research findings and advancing scientific knowledge in agriculture. By providing logistical and administrative support, they enable scientists to focus on their core research activities, thereby accelerating the progress and impact of agricultural research. Request: Five FTEs total. Positions are technical support in needed areas: (1) Grapes/vineyards – \$200,000, (2) Agronomy – \$200,000, (3) Plant pathology – \$200,000, (4) Soybean breeding – \$200,000 and (5) Biosystems engineering – \$200,000. 8/30/2024 Total: \$1,000,

We are grateful to the 68th Legislative Assembly for their support of capital improvement projects at the Main Station and the branch centers in 2023.

SBARE also ranks the capital improvement project needs for the ND Agricultural Experiment Station. A summary of these capital improvement project requests is included in your budget book on Pages 11 (SBARE ranked projects) and 13 (special fund authorization projects) in your budget book.

1. Oakes Irrigation Research Site (OIRS) Building Completion: Since 1975, the Garrison Diversion Conservancy District (GD CD) has collaborated with the NDAES to promote irrigation research in North Dakota. The Carrington Research Extension Center (CREC) is taking possession of a building at the Oakes site that will serve as the headquarters for NDAES irrigation research. Requested funding is for the completion of the OIRS headquarters interior. Total: \$620,000
2. Langdon REC Seed Conditioning Plant: A modern seed cleaning facility is essential for providing North Dakota foundation crop varieties bred to grow in the state's unique environment. The current facility was built in the 1960s and is incapable of conditioning the full production capacity grown on NDAES land at the Langdon Research Extension Center. Total: \$2,600,000
3. NDAES Equipment Storage Sheds: Purchasing and/or leasing expensive field equipment is an investment that the NDAES needs to protect. Storing expensive research plot equipment such as tractors, planters and combines outdoors reduces the life of the equipment and can compromise the sophisticated electronics typically used on such

equipment. Sheds are needed at the Dickinson REC, Central Grasslands REC and Carrington REC. Total: \$1,567,500

One-time Requests

Deferred Maintenance Request: \$1,500,000

Williston Research Extension Center Capital Projects: The NDAES was unable to obtain any successful bids for the Nesson Valley facility or the storage shed at the Williston Research Extension Center in the 2023-2025 biennium.

Nesson Valley Request: 1. A change in scope to build a structure with a heated shop, restrooms and an employee break room (removing a planned conference room), 2. Special fund authority to raise an additional \$1.3 million and 3. Carryover of \$1.7 million in general funds appropriated by the 68th Legislative Assembly.

Storage Shed Request: 1. Carryover of \$475,000 in strategic investment and improvements funds appropriated by the 68th Legislative Assembly, 2. Special fund authority to spend an additional \$325,000 as needed to complete the shed and 3. Continuation of Section 14 Exemption in H.B. 1020 relating to the construction of the storage sheds.

On page 25 in the budget book, you will find a financial schedule that details our base budget and the governor's executive budget recommendation. At this time, I will walk through what he has included in his budget recommendation for our agency.

The North Dakota Agricultural Experiment Station works to provide timely solutions to the wide variety of challenges faced by the state's farmers and ranchers. These solutions are an investment in the future of North Dakota and provide a return on investment through improved yields, enhanced productivity, better milling characteristics in grains that lead to enhanced consumer acceptance and market opportunities, improved livestock performance, and more cost-effective input solutions. Most importantly, these solutions provide a means to enhance the state's economy and improve the economic condition of our communities, large and small, across the state. In short, when we provide research-based solutions, farmers, ranchers, and agribusinesses are more profitable, and they reinvest those dollars locally.

Here are just a few examples of our impacts:

- Innovative solutions for livestock health and productivity enhance disease detection, optimize livestock management and improve nutritional strategies.
 - The Veterinary Diagnostic Laboratory played a crucial role in safeguarding animal and public health by conducting essential tests for diseases like rabies, anthrax and avian flu.
 - NDAES scientists demonstrated the effectiveness of virtual fencing technology in improving grazing management, calf performance and forage efficiency, making precision farming more accessible and cost-effective.

- Leveraging cutting-edge technologies like AI and data analytics accelerates crop improvements and promotes sustainable farming practices.
 - The Agricultural Data Analytics team is combining genetic data with field tests to develop models that improve crop varieties faster and more efficiently for North Dakota producers.
 - Scientists are integrating AI-driven weed identification with autonomous systems, reducing herbicide use and fostering more environmentally sustainable agriculture.
- New crop varieties and farming practices improve yield, quality and sustainability, while also reducing input costs for farmers.
 - Research on innovative nitrogen application methods and extensive variety testing have led to higher yields and better quality in crops like durum wheat, providing North Dakota farmers with seeds specifically suited to local conditions.
 - Newly released pulse crop, winter wheat and oat varieties will increase farm income, expand market opportunities and improve farm sustainability while reducing input costs and boosting resilience against environmental challenges.

Thank you for your support of our agency. At this time, I would be happy to answer any questions you may have.