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Testimony on Ag Research and Education Priorities

State Board of Research and Education

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Good Morning Chair Lovas and State Board for Agricultural Research and Education members. I am Nancy Johnson and I serve as the Executive Director for the North Dakota Soybean Growers Association, representing soybean growers in North Dakota. We appreciate this opportunity to come before you and outline some of our Association's agricultural research and extension priorities for your consideration.

The NDSGA and our sister agency, the North Dakota Soybean Council, have enjoyed an excellent partnership with SBARE and NDSU Research and Extension. We look forward to working with you to help make your SBARE priorities a reality for the benefit of all of North Dakota's agricultural community.

Before we begin, thank you for your support during the past biennium for program specific to the soybean industry and the broad industry such as the farm and ranch safety coordinator and big data funding. The following are priorities that our Association would like you to incorporate into the coming biennium's funding request.

Twenty years ago, soybeans were a \$250 million crop at the farm gate. Last year, the soybean crop was valued at over \$2 billion. This threshold was first crossed in 2016. We believe that significant contribution to the North Dakota economy was supported by the work of NDSU ag research and extension.

This year, a record 7.25 million acres of soybeans were planted in North Dakota and there were 87.235 million total acres planted. While we see the potential local impact for state farmers with the announcement of a 50-million-bushel crush plant opening in 2023, the demand for soybean oil in renewable fuels is a national trend. Analysts are already projecting 90.5 million acres for 2022 and an increase of 5 to 7 million acres per year for several years to meet demand.

On-Farm Research

Soybeans are grown in most counties in North Dakota, but most production and research is in the eastern third of the state. Demand for soybean oil has prompted profitable prices for farmers and we see potential for additional acres in the west. Research in Minot, Williston and Dickinson has supported the crop, but demonstrated the need to understand more about local soils, growing conditions, row spacing and plant population. We have received calls from innovative soybean growers who want to help the industry expand and develop best practices for their area. Based on what we've seen in other states, we believe an on-farm research program would help build our industry.

This program would bring research-based information to farmers from field-scale demonstrations of plot-scale concepts. It has proven to be an effective way to convince soybean producers to implement concepts that they might be hesitant to try. To create this program, we propose an Extension position to coordinate the program and technicians at all western RECs for implementation.

Extension Water Specialist and Operational Support – Currently, water use and management in agriculture is addressed in specific silos like tile drainage and livestock. Producers seeing information about sustainable water use may not think to look at a specific silo and may not look to state regulatory agencies for advice.

The direct transmission of accurate information on the science of water through educational programming is critical for decision-making by individual citizens, as well as our community and state leaders.

Center for Agricultural Policy and Trade Studies (CAPTS) – While it is still 2021, work is underway to craft revisions to the Farm Bill which will be discussed in 2023. CAPTS is critical to our understanding of the impact of various Farm Bill titles to North Dakota producers. Yet there is no hard funding for this important Center.

Soybeans have provided an excellent economic opportunity for many North Dakota farmers. This economic impact is best measured with accurate information. Census data used to measure the dollar volume of exports points to extensive soybean exports from Washington state and Oregon, where no soybeans are grown, but little or no soybean exports from North Dakota, where hundreds of millions of bushels are grown, but few are used. While there is reliable data which tracks commodity movements out of North Dakota via rail and trucks which indicated extensive soybean shipments to the Pacific Northwest, the dots were a little tricky to connect.

So, how do you do farm policy when you have sketchy information? How can decisions be made to diversify the economy, minimize risk and stabilize revenue without this kind of information? While models have been developed which can be used to analyze some of the Farm Bill titles, the work was driven with the financial support of several commodity groups. With the addition of a food security and trade technician, the capabilities of CAPTS would be expanded so that we can help plan for the next big thing in agriculture.

Additional initiatives

Details of many of the programs highlighted below have been or will be presented by others during these input sessions. Valuable discussions leading to this support have been ongoing since challenges presented by nature and the marketplace continue to evolve.

Soybean-specific initiatives

- Soybean Extension Specialist and operating for soybean testing and surveys
 - As a new form of soybean cyst nematodes emerges, conventional genetic resistance may not perform as expected so performance trials are critical
- Western-focused soybean specialist
- Dickinson REC agronomist

Additional initiatives

- Increased capacity for soil testing lab
- Value-added cropping systems staff and operating includes work on cover cropping and carbon markets
- Stronger workforce to meet the demands in agriculture
- Increased food security, including cybersecurity threats in agriculture
- Expand and Protect Livestock Industry
 - Operational support for veterinary epidemiology at VDL
 - Operation support for integrated livestock management at NDSU and RECs
- Build resilient communities
 - Mental health and resiliency programming delivery
- Equipment storage at RECs
- Faculty and support for intelligent systems at ABEN
- Further support for Oakes Irrigation Research Site
 - While less than 1% of soybeans are typical produced under irrigation, 2021 weather reminded us that we need to know more

Waldron Hall Replacement – (Capital Project) This facility was initially designed and built in the 1950s with an addition in the 1960s and is used as laboratory space for plant-based research programs.

When built, there were less than a dozen field related programs involving plant-based research; today, there are more than 13 breeding programs, as many pathology programs, and several soils programs that occupy the space. It is poorly designed for 21st Century agricultural sciences, and the numerous program requirements make it very cramped, resulting in inefficiencies and frustrated researchers. There is no adequate long-term

seed storage space for breeding and pathology programs – close proximity of field labs to short, mid, and long-term seed storage is critical for efficiency. Effective seed drying and cleaning facilities providing for worker safety and improved efficiencies is critical.

Waldron Hall simply does not have the capability or capacity to meet the day-to-day needs of complex laboratory research necessary in today's competitive environment and most importantly, our state's needs in a food security or crop disease crisis.

Departments and offices located in, or using laboratory space, in Waldron Hall include:

ND Agricultural Weather Network (NDAWN Center)

The North Dakota Agricultural Weather Network, known as NDAWN, is celebrating more than 30 year of providing weather data to enhance crop management in North Dakota.

Originally designed specifically for agriculture, the network's 131 stations have proven useful in other areas as well. In a state with extreme weather conditions, access to detailed local weather data can be a valuable resource for everyone.

The network provides weather data that is used in developing various agricultural models such as late blight, degree-day and growth stage for barley, corn, canola, potatoes, sugar beets, sunflowers, wheat and other small grains. NDAWN users also can monitor irrigation scheduling, crop water use and conditions for detrimental insect development.

Plant Diagnostic Lab

For over 40 years, the NDSU Plant Diagnostic Lab has provided unbiased assistance to the general public and professionals in agriculture and horticulture to identify plant pest and disease problems. The lab has been a member of the Great Plains Diagnostic Network, a region of the National Plant Diagnostic Network, since 2002. A goal of this network is to enhance our ability to detect and diagnose high-risk plant problems more quickly.

Local university plant pest diagnostic labs can provide assistance in solving plant problems. Local experts are often better equipped to address particular questions in our area, since crops, lawns, and other plants and trees around the country experience different problems.

Modest service fees apply on submitted samples for routine diagnosis to the NDSU Plant Diagnostic Lab, and a surcharge is applied to out-of-state samples. The NDSU Plant Diagnostic Lab also independently performs limited seed health testing.

Soil Science

Soil Science is the key factor in food production and is at the forefront of environmental and natural resource issues such as land use, soil contamination, ground water quality and waste disposal.

The Soil Science Department is home to a robust array of sub-disciplines researching every aspect of the soil, including:

Environmental Quality	Soil Fertility
Soil Physics and Hydrology	Soil Management
Agricultural Meteorology and Climatology	Soil Chemistry
Soil Genesis, Morphology, and Classification	Soil Health

Our Soil Science disciplines demand a 21st Century laboratory facility to accommodate successful research facilitating the needed care and maintenance of our soils as we pass them to successive generations.

Plant Pathology

Plant Pathology finds itself similarly situated. Its bachelors, masters and doctorate programs all ache for a 21st Century laboratory facility to accommodate successful analysis of current diseases, while looking to future prevention opportunities.

The faculty has expertise in host-parasite genetics, microbiological ecology, epidemiology, tissue culture, molecular biology, genetic resistance, nematology, bacteriology, mycology, virology and electron microscopy. The Plant Pathology Department faculty has been successful in developing management practices and controls for major diseases.

The research emphasis within the department is placed on small grains, potatoes, oilseeds, beans and prairie forestry. Research projects cover root rots, head blights, foliar diseases, stem rust, leaf rust and viruses of cereals as well as diseases of canola, dry edible beans, flax, potatoes, soybeans, sugar beets, sunflowers, urban forestry and shelterbelts.

NDSU plant pathologists constantly seek to improve control programs to meet market demands, address environmental concerns and apply emerging technologies. With plant breeders, pathologists find disease resistant genetic materials from domesticated and wild varieties worldwide. New biotechnology techniques enable incorporation of genetic resistance into crop varieties. Pathologists seek safer and more effective pesticide use, including biological controls, for crop protection until adequate genetic resistance is available. They also examine cultural practices to reduce disease threats.

The Forest Pathology conducts one of the only US University research programs in prairie forest pathology; monitoring tree and shrub diseases and developing integrated disease management practices.

Seed Health Testing Laboratory identifies seed borne pathogens.

Extension plant pathologists have major outreach programs. They help growers apply research results controlling plant diseases.

Additional programs – The North Dakota Soybean Council will provide additional information about programs which benefit the soybean industry. We support those initiatives.

Success Pathways

In conclusion, providing farmers and ranchers with pathways to success is your and our success. Dividends are dependent on investments. Agricultural research success is rooted in people, facility and equipment investments. Peoples' talents, skills and creativity are among the most important ingredients of our futures.

We ask that you fully consider our priorities and stand beside you supporting SBARE's final priority determinations.

Thank you for your time and attention.