North Dakota Agricultural Experiment Station

NDSU Extension

2023-2025 Biennial Budget Request

House Bill 1020

Government Operations Division
Representative David Monson, Chair
January 16, 2023

NDSU NORTH DAKOTA STATE UNIVERSITY

NDSU Extension - Budget No. 630

North Dakota Agricultural Experiment Station
- Main Station - Budget No. 640
- Branch Research Extension Centers - Budget No. 628
- Agronomy Seed Farm - Budget No. 649

David Cook – President, North Dakota State University

Sarah Lovas – Chair, State Board of Agricultural Research and Education

Greg Lardy – Vice President, Agricultural Affairs
Director, ND Agricultural Experiment Station
Director, NDSU Extension

www.ndsu.edu/agforlegislators

SBARE

SBARE

State Board of Agricultural Research and Education

Who we are and what we do

History

The State Board of Agricultural Research (SBAR) was established by legislative decree in 1997. It was responsible for budgeting and policy-making associated with the supervision of the North Dakota Agricultural Experiment Station.

The law was changed during the 1999 legislative session to include responsibility for the North Dakota State University Extension Service. SBAR became the State Board of Agricultural Research and Education (SBARE).

Duties

SBARE, within the policies of the State Board of Higher Education (SBHE), is responsible for budgeting and policy-making associated with the North Dakota Agricultural Experiment Station and North Dakota State University Extension.

SBARE responsibilities are to:

- Determine the causes of any adverse economic impacts on crops and livestock produced in the state;
- Develop ongoing strategies for the provision of research solutions and resources to negate adverse economic impacts on crops and livestock produced in this state;
- Develop proactive strategies for NDSU Extension to fulfill the mission of improving the lives and livelihood of the citizens of North Dakota by providing research-based education;
- Implement the strategies developed under bullets 2 and 3, subject to approval by the SBHE;
- Develop, with the North Dakota Agricultural Experiment Station and NDSU Extension, an annual budget for the operations of these entities;
- Develop a biennial budget request based on its prioritized needs list and submit that request to the president of NDSU and the SBHE, and forward its prioritized needs list and request without modification to the Office of Management and Budget and the appropriations committees of the legislative assembly;
- Maximize the use of existing financial resources, equipment, and facilities to generate the greatest economic benefit from research and extension efforts and to promote efficiency;
- Annually evaluate the results of research and extension activities and expenditures, and report the findings to the Legislative Council and the SBHE;
- Advise the President of NDSU regarding the recruitment, selection and performance of the Vice President for Agricultural Affairs, the NDSU Extension Director and the Station Director; and
- Provide a status report to the budget section of the Legislative Council.

Membership

The State Board of Agricultural Research and Education consists of:

- NDSU President or the President's designee
- NDSU Vice President for Agricultural Affairs*
- North Dakota Agricultural Experiment Station Director*
- NDSU Extension Director*
- Five people appointed by Ag Coalition
- Five people appointed in the geographic areas represented by NDSU Extension's multicounty program units
- North Dakota Agriculture Commissioner*
- Two members of the legislative assembly appointed by the chair of Legislative Council

** serve in ex-officio, nonvoting capacity*

Current Membership

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7/1/2022

Agency Overview

NDSU Extension

Agency Statutory Authority

North Dakota Century Code Chapter 11-38

Agency Description

North Dakota State University (NDSU) Extension is part of a nationwide, university-based educational system that provides research-based educational programs to advance the lives and livelihoods of citizens in all 53 counties and four American Indian reservations in North Dakota. Programs focus on addressing current needs and issues affecting the state's agriculture, youth, families, communities and natural resources. In an effort to provide extensive reach and share knowledge and resources across North Dakota, NDSU Extension staff are located at state, area and local/county offices. NDSU Extension combines funding from federal, state, county and grant sources to specifically address local concerns and make a positive impact on our land and our people.

Agency Mission Statement

Empower North Dakotans to improve their lives and communities through science-based education.
NDSU Extension believes:

- In lifelong learning through transformational education
- That all people belong and deserve respect
- In stakeholder input to guide program development
- In science-based, locally relevant information
- In the value of partners and collaboration

Agency Performance Measures

Per North Dakota Century Code 15-12.1-17 the State Board of Agricultural Research and Education (SBARE) presents a status report to the budget section of the legislative council. SBARE's most recent presentation to the budget section was on June 28, 2022. The report they gave and provided in written form included the status of the North Dakota Agricultural Experiment Station and NDSU Extension. A copy of the information is on file in the legislative council office.

Agency Future Critical Issues

SBARE carefully considered stakeholder input and has identified several NDSU Extension program initiatives which are described on the next page.


(NDSU photo)


(NDSU photo)


(NDSU photo)

CRITICAL PRIORITY – Hiring and retaining diverse candidates strengthens our ability to expand on critical needs in research, teaching, and extension. **Building attractive compensation packages for employees will be crucial in the recruitment and retainment of top talent.**

1 Cropping Systems Initiative

North Dakota is a dominant force in agriculture, generating more than $7.6 billion annually and leading the United States in the production of multiple commodities. However, there is room to grow. To help maximize the financial impact that NDSU Extension has on the state, additional expertise and educational programs are needed in response to the rapid expansion of soybean and corn acreage, new and emerging plant diseases and fungicide-resistant pathogens that limit crop yields, controlling the spread of noxious and invasive weeds, and advancing cropping systems that sequester soil carbon, increase plant growth, retain water and build soil health.

The cropping rotation mix across the state is changing as new and emerging crops move into western growing regions. While the crop rotation is changing, herbicide-resistant weed populations are also expanding in North Dakota. The combination of these changes creates a challenging environment for managing weeds. Best management practices for noxious weeds are also necessary to maximize crop yields in this region of the state.

Soybean acreage continues to increase in North Dakota; however, between 2015 and 2019, an estimated 1.1M bushels, worth well over $10 million, was lost to soybean diseases, and additional diseases and pathogen variants. As examples, the diseases Sudden Death Syndrome and Frogeye Leaf Spot were first reported in North Dakota in 2018 and 2020, respectively, and new variants of the soybean cyst nematode were reported. An NDSU Extension soybean pathologist is needed to develop and deliver disease management information to growers and their industry partners to help prevent or mitigate economic loss to the North Dakota soybean crop.

Increasing interest in carbon contracts from a variety of entities means farmers and ranchers are being asked to sign long-term contracts and utilize practices that will help sequester carbon in soils. It is critical that we provide education and assistance around these carbon-capture practices so producers are fully informed as they consider using them on their farms.

Innovative farmers contribute to the development of best management practices for the commodities they grow. On-farm research programs serve as a bridge between the field-scale problems and novel plot-sized concepts and/or research-based solutions. On-farm research is an effective way to validate research advances while helping farmers envision the value those advances bring to their farm.

Request: Five FTEs total. Western crop production specialist, soybean pathologist, weed specialist, carbon credit specialist, on-farm research coordinator. $400,000 operating support that includes $200,000 operating for on-farm research.

Total: $1,400,000

NDSU Extension Program Initiatives

Final Ranking by SBARE – March 2, 2022

2. Livestock Development Initiative

Livestock production in North Dakota accounts for approximately $1.5 billion in gross revenue annually, and there is ample opportunity for growth. North Dakota lags its neighboring states in livestock production, and livestock integration has been identified as a top priority to utilize and add value to North Dakota agricultural products.

The health of livestock is also imperative to the state's economy. NDSU Extension continues to serve as a key technical resource that helps protect the health of North Dakotans and their livestock by enhancing the monitoring and surveillance of zoonotic diseases common to animals and people. Educational programming related to livestock production and management, business and economics, and animal health and biosecurity is needed to enhance existing opportunities and develop new opportunities to grow this industry in the state.

Request: Three FTEs total. Veterinary epidemiologist, swine specialist, off-campus livestock development specialist. $120,000 operating support.

Total: $770,000

3. Farm and Ranch Safety and Health Initiative

The health and safety of those involved in agriculture is of utmost importance. A leading cause of agriculture accidents is stress and fatigue. When stress, adversity or trauma occur, having the ability to adapt to difficult situations allows farmers, ranchers and their families to continue to function.

Farmers and ranchers regularly experience uncertainties throughout the year, such as extreme weather, fluctuating commodity prices or trade disruptions. Extension personnel across the state offer prevention resources, and Extension is uniquely positioned to coordinate additional efforts and critical resources related to farm and ranch health and safety. Prevention efforts help build skills that can reduce the need for expensive, crisis-level services.

Request: $250,000 operating support for farm and ranch safety and health resources.

Total: $250,000

4. Program Support for 4-H Initiative

North Dakota is facing a workforce crisis, with a particularly high demand for individuals with strong science, technology, engineering, math and entrepreneurial skills. These technical skills, combined with teamwork, decision-making, critical thinking and communication can help build a strong and effective workforce for the state. To build this workforce, expanding and developing quality youth development programs and experiences, such as 4-H, is essential.

Support for 4-H youth development programs will advance North Dakota's future, growing leaders through positive youth development experiences, club involvement, year-round camping opportunities, school enrichment, and after-school programs to promote youth who thrive with workforce readiness skills.

Request: 320,000 One FTE total. 4-H entrepreneurship specialist. $120,000 operating funds to include support for camping, clubs and after-school programs.

Total: $320,000

5. Extension and State Soil Conservation Committee Operating Support Initiative

Operating support allows Extension specialists to develop innovative programming in a timely fashion, reach audiences as the need arises, or develop new methods to connect with local communities, and leverage resources needed to address larger issues facing our citizens. Operating support for the State Soil Conservation Committee provides an increase in direct assistance funding to be distributed to local Soil Conservation Districts for technical assistance and conservation planning support.

Request: $300,000 in operating support for Extension and $300,000 in operating support for the SSCC.

Total: $600,000

6. Increased Food Security Initiative

Agriculture continues to be a cornerstone of North Dakota's economy in both rural and urban communities. With the increased emphasis on agricultural processing capacity within North Dakota, there is a need for continued education on the food supply chain. Support for food processing efforts and activities, particularly for value-added food products, can enhance nutrient dense foods.

The pandemic facilitated an increased interest in locally-produced and sustainable food, gardening and horticulture. This initiative would provide funding for enhanced support of Extension agents with expertise in horticulture to support this growing interest across the state.

Request: One FTE total. Urban ag/value-added food technologies specialist. $200,000 in operating support to include two county-based horticulture agents in partnership with counties.

Total: $400,000

NDSU | EXTENSION

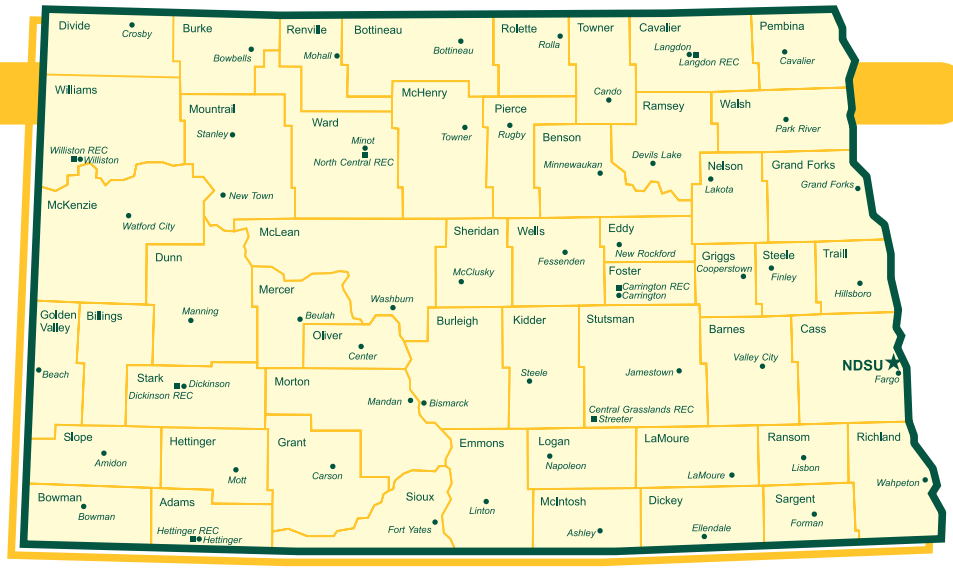
NDSU EXTENSION EXTENDING KNOWLEDGE ❯❯ CHANGING LIVES

NDSU | EXTENSION

2022 NDSU Extension impacts

NDSU Extension is:

- A statewide network of professionals located on the NDSU campus, at Research Extension Centers and in every North Dakota county.
- A system of trusted community members. We meet people where they live to deliver tailored, innovative and accessible education programs, resources and partnerships.



- A research-based, data-driven organization. Administered by North Dakota State University, we connect university science to community issues to change lives. We place a special emphasis on strengthening agriculture and developing the potential of youth, adults and communities.
- Where co-created solutions happen. By linking resources and organizations to address locally-identified problems, we empower resilient people and communities to address pressing problems in rural and urban North Dakota.
- An important component of agriculture's **$30.8 billion economic contribution** to North Dakota.

We help families mitigate stress, injuries and fatalities so agricultural operations can continue successful production, which increases food security across the state.

- NDSU Extension certified 26 youth ages 14-15 in operating tractors and ATVs, so they could enter the agricultural workforce and use their safety skills to help prevent youth injuries and fatalities in the workplace.
- We issued pesticide applicator certifications to 4,560 farmers and ranchers through training on best management practices and legal requirements when using pesticides.

We develop field recommendations that maximize production and protection of crops that benefit North Dakota farmers and their families, rural communities and our environment.

- By using NDSU's recommendations for wheat/durum, sunflower, barley and sugarbeet, North Dakota farmers could reduce nitrogen use by 400 million pounds and increase farm profitability by more than $40 million.
- Growers who attended NDSU Extension training reported that they will gain $12.95 per acre by using best management practices for soybean production. The potential economic gain to the state will be more than $65 million dollars.

2022 NDSU Extension Impacts continued on page 2

We invest in growing tomorrow's leaders by cultivating engaging experiences where young people receive high quality, hands-on opportunities to foster essential life skills.

- More than 390 youth attended the North Dakota 4-H camps including Trades Camp, Cultural Cooking Camp and Forensic Science Camp. Regional North Dakota 4-H Volunteer Project Trainings reach over 175 volunteers annually.
- 88% of youth involved in North Dakota 4-H shooting sports programs reported that they have learned new skills. 94% reported that the program helped them learn how to safely handle shooting sports equipment.
- Through an increased reach across underserved communities, more than 143 Indigenous youth in Sioux County participated in learning experiences and explored careers by building hydroponic gardens, flying drones, learning coding and participating in activities to grow and develop coping skills.
- 87% of adults who were in the North Dakota 4-H State Ambassador program now volunteer in their communities.

We educate Master Gardeners, whose volunteer efforts improve food security, beautify our communities and protect our environment.

- Since 2015, Master Gardeners have grown, gleaned or collected 138,183 pounds of fresh produce to support local food pantries. This has provided 552,732 servings of fruits and vegetables to North Dakotans and their families.
- Since 2016, Extension Master Gardeners designed and built 27 public pollinator gardens in 20 counties. Prominent garden sites were the International Peace Garden, Chahinkapa Zoo, School for the Deaf, Nueta Hidatsa Sahnish College Gardens and the Red River Zoo.

We help ranchers enhance livestock health and performance, and increase the economic sustainability of livestock operations.

- In 2022, NDSU Extension agents conducted 287 water screenings and identified 70 with toxicity levels high enough to result in extreme illness or death of cattle. This program led to active management and mitigation of 52 existing water sources, and 31 participants installed a water development. Since 2019, this effort is estimated to have saved the lives of 46,000 head of livestock and increased health and performance of 37,000 head.
- Market-based research provided by NDSU Extension to the USDA Farm Service Agency resulted in a 170% increase of the Livestock Indemnity Program (LIP) for calves up to 250 pounds. To date, North Dakota ranchers have received $922,810 in LIP.

We help North Dakotans make changes to lifestyle, including diet and amount of physical activity, to prevent chronic disease. By delaying or preventing the development of chronic diseases, healthcare costs are reduced for the individual and state-funded insurance programs.

- Of 430 youth participants in the 2021-2022 *On the Move to Stronger Bodies Program*, 65% of respondents ate more vegetables and 76% increased their physical activity. Parents and caregivers responded that 45% of children drank less soda after participating in the program.
- Eligible participants of the *Diabetes Prevention Program* lost an average of 10.5 pounds over a 12-month period and completed on average between 170 and 230 minutes of physical activity per week. These efforts reduce the risk of developing Type 2 diabetes by 58% in those under 60 years old and 71% in those over the age of 60. Additionally, 50% of the participants lowered their blood pressure, 45% lowered their cholesterol and 42% indicated a reduction in blood glucose levels.

We train current and emerging leaders to increase civic engagement in communities and organizations across North Dakota. Successful community involvement and volunteerism hinges on the development of leadership skills and mentoring, and increases the effectiveness of public leaders.

- 100% of *Lead Local* participants can develop a meeting agenda using the components of an effective meeting and model effective ways to deal with group conflict, and 98% can run a meeting using parliamentary procedure.
- Area Conservation and Leadership Planning Program Coordinators were introduced in two of the five areas in North Dakota, which represents 21 soil conservation districts. Fourteen percent of these districts adopted a new plan of work template and 29% created a long-term conservation plan in 2022.

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NDSU EXTENSION EXTENDING KNOWLEDGE ›› CHANGING LIVES

NDAES
Main Research Station

Main Research Station

North Dakota Agricultural Experiment Station

Agency Statutory Authority

ND Constitution Article XIX; North Dakota Century Code Chapter 15-12.1

Agency Description

The North Dakota State University Main Research Station is located on the campus of the North Dakota State University of Agriculture and Applied Science. The station is the administrative location of the North Dakota Agricultural Experiment Station. The station conducts research and coordinates all research activities of the Agricultural Experiment Station. The purpose of the research is the development and dissemination of technology important to the production and utilization of food, feed, fiber, and fuel from crop and livestock enterprises. The research provides for an enhancement of economic development, quality of life, sustainability of production, and protection of the environment. The Main Research Station keeps detailed records of all activities and publishes the information that will be of value to the residents of this state.

Agency Mission Statement

The Agricultural Experiment Station shall develop and disseminate technology important to the production and utilization of food, feed, fiber, and fuel from crop and livestock enterprises. The research must provide for an enhancement of the quality of life, sustainability of production, and protection of the environment.

Agency Performance Measures

Per North Dakota Century Code 15-12.1-17 the State Board of Agricultural Research and Education (SBARE) presents a status report to the budget section of the legislative council. SBARE's most recent presentation to the budget section was on June 28, 2022. The report they gave and provided in written form included the status of the North Dakota Agricultural Experiment Station and NDSU Extension. A copy of the information is on file in the legislative council office.

Agency Future Critical Issues

SBARE carefully considered stakeholder input and has identified several priorities for the ND Agricultural Experiment Station which are described on the next page.

NDSU NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION

SBARE Priorities for the

North Dakota Agricultural Experiment Station

Final Ranking by SBARE – March 2, 2022

NDSU NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION


(NDSU photo)


(NDSU photo)


(NDSU photo)

CRITICAL PRIORITY – Hiring and retaining diverse candidates strengthens our ability to expand on critical needs in research, teaching, and extension. **Building attractive compensation packages for employees will be crucial in the recruitment and retainment of top talent.**

1 Plant Production and Protection Initiative

Crops and cropping systems account for more than 80% of the gross agricultural receipts in North Dakota. Each year, new challenges and research questions emerge, especially related to crop rotations, agronomic practices, varietal selection and disease. Crop rotations in North Dakota are diverse and complex, and new and emerging diseases continually arise. To maintain the success of the state's agricultural operations, the need for specialized research is critical for a wide variety of crops and cropping systems, and for new bacterial and viral diseases. Research that addresses many of the most challenging problems in cropping systems generates almost immediate return on investment by improving agricultural productivity.

Research that addresses agronomic conditions in western North Dakota at the Dickinson Research Extension Center (REC) is critical to helping farmers address issues related to crop rotations, drought concerns and other issues specific to southwest North Dakota.

In addition, more emphasis on plant breeding, especially with pulse crops, is needed as pulses have become an increasingly important part of crop rotations throughout the state.

Plant diseases are a constant concern for producers. Over the past twenty years, over twenty new diseases have arrived in North Dakota. Several of these are caused by bacterial plant pathogens that are now major diseases on the crops they affect. Examples include Goss' wilt of corn, bacterial leaf streak of wheat and barley, and Dickeya soft rot of potatoes, all of which can cause tens of millions in damage in the state. Other, longer-established bacterial diseases in the state, such as common blight of dry bean and ring rot of potato, reduce producer profitability and can limit seed production in the state. New virus diseases in the state, such as pea seedborne mosaic virus, and new variants of existing viral diseases, such as potato virus Y, have emerged and hamper efforts to breed new crop varieties and reduce producer profitability. Expertise in these new and emerging diseases caused by bacteria and viruses are needed to reduce the risk associated with these diseases, ensure farm profitability, and reduce expense.

Request: Seven FTEs total. One agronomist at the Dickinson REC, one plant bacteriologist and one plant bacteriologist technician, one plant virologist and one plant virologist technician, one pulse breeding technician, and one technician for clubroot fungus at the Langdon REC. $120,000 in operating support.

Total: $1,580,000

SBARE Priorities for the
North Dakota Agricultural Experiment Station

Final Ranking by SBARE – March 2, 2022

2. Operating Support

Operating support is requested for the Oakes Irrigation Research Site (OIRS), which provides important research on irrigation strategies, farming practices in the southeast part of the state and high value crops. The additional operating support will ensure the OIRS maintains its critical research activities.

Additionally, operating support to enhance collaborative opportunities between the Main Station and REC network is vital to bringing additional scientific collaboration to key projects, facilitate collection of preliminary data and enhance competitiveness for grant funds.

Scientists have become progressively more reliant on grant funds to conduct research, and consequently their time spent on administering the grant process has greatly increased. The complexity of many grant applications has expanded significantly and scientists find themselves spending increasing amounts of time on administrative functions related to grant applications. Administrative support staff dedicated to assisting scientists to identify sources of grant funds, navigate complex submission requirements and gather paperwork would improve efficiency and increase the ability of our scientists to identify, submit and compete successfully for grant funds.

Graduate students enhance research programs by providing key labor to complete research activities, collect field data and conduct various analyses associated with research projects. Graduate students also enhance collaborations between the main campus and the REC network by providing a vital link between scientists. These same graduate students are the next generation of scientists that will be hired into important roles in the public and private sector in the future.

Request: Three FTEs total. Three FTEs will provide administrative support for grant development work, $594,000. Graduate student funding to hire graduate research assistants (no FTEs), $720,000. Operating support for Main Station and RECs, $480,000. Operating support for the Oakes Irrigation Research Site, $400,000.

Total: $2,194,000

3. Big Data Initiative

Agricultural research activities have become much more data intensive. Advances in UAVs, agricultural sensors, computational speeds and networking technologies produce massive volumes of data, and advances in precision agriculture will only increase data production at a rapid pace. The demand for data storage, management and analysis within agriculture and food production is greatly needed to provide the producer with meaningful management outputs that will improve their operations. Large volumes of data are part of every conceivable field of agricultural research, including plant varietal selection, soils, livestock production, weather and climate, economics and agribusiness, and food production.

In addition, weather is the primary factor that impacts all fields of agriculture, and the ability to monitor, process and analyze weather data is essential to improve producer management and reduce risk. The North Dakota Agricultural Weather Network (NDAWN) is a mesonet of more than 150 stations and generates a tremendous amount of data multiple times per hour. The value of this data and its uses can greatly improve agricultural operations through more timely applications of crop inputs, determining planting and harvesting dates, minimizing risk, etc.

Request: Three FTEs total. One-and-a-half FTEs to support research related to data analytics, management and curation; one-and-a-half FTEs to support enhancements to NDAWN. $200,000 in operating.

Total: $838,000

4. Climate Smart Agriculture

There is little room for error in producing a crop during a "typical" North Dakotan growing season, and extreme variability exasperates this challenge of producing a successful crop. For example, the harvest of 2019 was the wettest autumn since 1895 and resulted in prevent plant enrollment of 3.7 million acres in 2020. This record wetness was then followed by one of the worst droughts experienced in North Dakota during the growing season of 2021. Climate Smart Agricultural (CSA) practices provide land management strategies to help deal with such problems, and research is needed to implement CSA strategies that enhance resiliency for North Dakota producers.

Climate Smart Agricultural practices include water- and soil-conservation practices such as strip- or no-till, cover crops, rotation diversity and livestock integration, all of which increase carbon levels in the soil. Additionally, producers are increasingly being offered contracts to enter private sector carbon markets if they implement CSA practices. Producers need science-based information that helps them realize the benefits of CSA practices and the potential economic benefit from private sector carbon markets.

Request: Two FTEs total. One climate smart agricultural scientist, and one climate smart agricultural technician. $40,000 in operating.

Total: $458,200

5. (Tie) Bee and Apiary Research

North Dakota is the number one producer of honey in the United States. As a state, the total number of bee colonies is 495,000 or 18% of all colonies in the United States. These colonies contribute to 26% of all honey produced nationally, which is valued at approximately $67 million. Although North Dakota produces more honey than any other state, we have no research program supporting beekeepers.

North Dakota honey producers need apiary research to address pressing issues such as colony collapse and improve honey production by developing greater winter hardiness, improved might resistance, and increased hygiene. Additionally, research can improve interactions with other agricultural systems of the state while benefitting native pollinator populations and ecosystem services through improved land use.

Request: Two FTEs total at the Hettinger REC. One bee and apiary scientist, and one bee and apiary research technician. $40,000 in operating.

Total: $458,200

5. (Tie) Precision Agriculture

The need for intelligent systems, such as sensors, artificial intelligence, robotics and automation, is greatly increasing across all aspects of agriculture, from farm to plate. Additional resources can provide researchers with equipment and tools needed to build capacity and incorporate advanced agriculture applications for improving cropping systems and livestock operations of the state.

Request: $600,000 in operating.

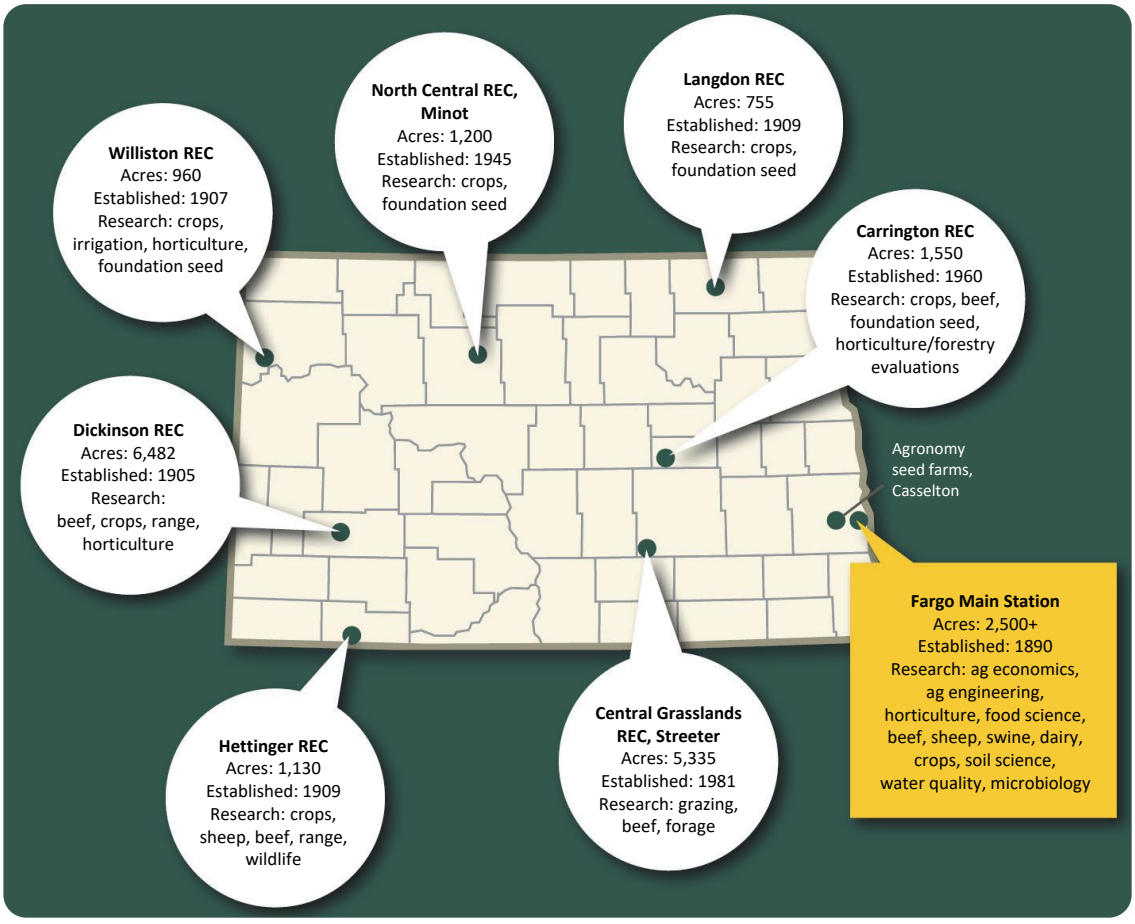
Total: $600,000

NDSU NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION

2021-2022 North Dakota Agricultural Experiment Station impacts

The North Dakota Agricultural Experiment Station is:

- A state-wide network of NDSU professionals located on the NDSU campus, seven strategically located Research Extension Centers and the Agronomy Seed Farm.
- An engine that provides the research that develops and disseminates the technology important for the production and utilization of food, feed, fiber and fuel from crop and livestock enterprises.
- An enhancement of economic development, quality of life, sustainability of production and protection of the environment.
- An important component of agriculture's $30.8 billion economic contribution to North Dakota.



Major Accomplishments

We advance animal health outcomes for our state's livestock farmers and ranchers and provide frontline vigilance to protect animals from disease:

- Researchers found exercise and diet improves pregnancy outcomes of mother and offspring, such as improved colostrum quality in milk that ensures newborns get vital antibodies necessary for fighting disease.
- Veterinary pathologists performed foreign animal disease testing for highly pathogenic avian influenza as part of the USDA National Animal Health Laboratory Network.

We are at the forefront of today's agriculture to ensure we provide the most advanced solutions to our state stakeholders and private partners:

- Precision agriculture researchers advanced fertilizer efficiencies and the control of weeds. They used on-the-go optical sensors to measure in-season plant nutrient status and prescribed fertilizer delivery to improve nitrogen use efficiency. Researchers also developed autonomous weed control systems to rapidly detect and eliminate weeds using robots and UAS data to inform commercial sprayers.
- Collaborations with Emerging Prairie continue to grow. NDSU is now a Sky Tiere Partner on Grand Farm, their top level of partnership, a testament to the high degree of collaboration.

We find advanced solutions that improve our land and natural resource stewardship, while improving agricultural outcomes:

- NDAES scientists determined water use needs of different industries and municipalities and assessed requirements for growing municipalities under normal and drought conditions.
- Rangeland scientists determined conservation reserve programs for North Dakota grasslands increased grassland bird abundance by 2%-7% and increased beekeeper revenue by $30 per acre. They also developed unique grazing strategies to simultaneously increase pollinator habitat and livestock forage quality in rangeland ecosystems.
- Researchers completed a large five-year pollinator monitoring study across all 53 counties of North Dakota, establishing a foundation for species conservation. Over 200,000 individual pollinators were collected and 68 butterfly and 317 bee species were identified and located.

We develop crop varieties that thrive in our state's environment and provide profits to farmers:

- New plant varieties developed by NDSU can realize an almost $70 million increase in annual revenues to North Dakota's economy. A new low cadmium durum wheat was released. Also, the NDSU Dakota Russet was selected by McDonalds as one of only seven varieties for their french fries.

We develop solutions to enhance crop protection, reduce risk and improve efficiencies that increase productivity:

- Pathologists advanced crop protection through new chemistries, new tools and monitoring for new diseases. Collaborations with private partners fostered the development of new chemistries, and improved application timing and amounts. Scientists developed new tools, such as disease risk models and molecular diagnostics, as means to manage plant diseases.
- New models were implemented in the North Dakota Agricultural Weather Network that provide pest emergence predictions, such as for the sugarbeet root maggot that can cause up to 45% yield loss.
- Microbiologists studying plant root microbiome developed a novel tool to identify nitrogen-fixing rhizobia in fields, providing a way to evaluate inoculants necessary for improved crop yields.

NDSU | NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION

NDAES
Branch Research Centers

Carrington Research Extension Center

North Dakota Agricultural Experiment Station

Agency Statutor Authority

North Dakota Century Code Chapter 15-12.1

Agency Description

The Carrington Research Extension Center (CREC) was established in 1960. The CREC operates on a land base of around 2,100 acres and has infrastructure to irrigate about 260 acres with center-pivot systems and 120 acres by surface methods. The balance of the acreage is managed as traditional dryland and is utilized primarily for dryland field crop research activities and foundation seed production.

The CREC conducts research and educational programs to enhance the productivity, competitiveness, and diversity of agriculture in central North Dakota. Research activities at the CREC include scientists and support staff trained and implementing programs in these disciplines: Agronomy, Plant Pathology, Soil Science, Precision Agriculture and Animal Science. These program teams are able to address a broad scope of factors that impact North Dakota agriculture. The crop diversity of the state is addressed in all program areas and is further supported by the ability to conduct research under both dryland and irrigated conditions, with livestock integration options. Projects addressing organic crop production and a northern hardy fruit program broaden the constituency being served. The foundation seed program of the center is an integral part of the overall NDSU Foundation Seed program. Based on the research capacity across multiple disciplines, the CREC strives to implement relevant research impacting current agricultural issues and is prepared to contribute significantly to future opportunities to enhance North Dakota agriculture.

The CREC maintains a strong Extension program as four extension specialists base their educational programming from the center. The Extension program emphasis areas addressed by these specialists include: agronomy, livestock, precision agriculture and livestock environmental management.

Agency Mission Statement

The Carrington Research Extension Center conducts research that will lead to the enhancement of agriculture and improve the quality of life across the central region of North Dakota. Specifically, the Carrington Center conducts research on both dryland and irrigated crop production methods and systems, improved crop cultivars, feeding of beef cattle, cow/calf nutrition, sustainable agricultural production, and produces foundation seedstocks. The objective is to discover the balance between farm enterprise profitability and conservation of the natural resource base. The results of these studies are disseminated to the entire state through an on-going Extension educational program.

Agency Performance Measures

Per North Dakota Century Code 15-12.1-17 the State Board of Agricultural Research and Education (SBARE) presents a status report to the budget section of the legislative council. SBARE's most recent presentation to the budget section was on June 28, 2022. The report they gave and provided in written form included the status of the North Dakota Agricultural Experiment Station and NDSU Extension. A copy of the information is on file in the legislative council office.

NDSU NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION

Agency Future Critical Issues

- The CREC Oakes Irrigation Research Site has served south central North Dakota since 1970. This site has provided needed high productivity data on corn and soybean production and varieties on dryland and irrigated sites, as well as information on dry beans and specialty crop performance. This site will need operational support to continue to serve the region at this uniquely positioned location.
- It is important that grant fund opportunities continue to be widely available in future years. Funds that support crop and livestock production or agricultural related issues in general are needed to leverage public funding. The CREC research programs must continue to have a diversity of opportunities to compete for grant funds that, when successful, allow us to most effectively empower current research programs.
- The programs of the CREC are supported by a diversity of facilities that include not only the primary buildings like headquarters and laboratory but also feedlot pens, feed and seed storage, animal shelters, water supply features, storage buildings, parking lots, roadways and waste containment. Current support for maintenance of these facilities is inadequate to address the current deferred maintenance costs.
- Equipment storage capacity at the CREC is critically limited resulting in a number of high-value pieces of equipment being stored outside year-round and exposed to the elements. This exposure has resulted in repair costs and rodent infestations that would not have been experienced if the equipment was stored indoors and faster depreciation especially on the higher-value equipment.
- A secure (owned or long-term leases) land base is critical to sustain the current and future research mission of the Carrington Center. The diverse programs of the CREC operate on a relatively small land base. The Carrington REC operates on a land base of around 2,140 acres with the state owning around 840 acres. The 1,300 acres not secured by state ownership must be sourced by annual rental agreements with multiple landlords. This heavy reliance upon a willing group of land owners to annually rent a significant portion of the acreage required to support the CREC puts these programs at risk. If any one parcel of rented land were not made available in a given year, the CREC would be forced to reduce or eliminate program contributions that are depended upon by North Dakota producers and are basic to our department mission.

Carrington Research Extension Center

2021-2023 IMPACTS

- Developed a new online spatial layout for live crop scout reporting to indicate pest severity hotspots in North Dakota.
- Hosted over 2500 guests to CREC through workshops, plot tours, and site visits.
- Beef feedlot trials were conducted to evaluate more avenues to utilize soybean crush bi-products (hulls).
- Optimized sulfur fertility recommendations for canola to improve fertilizer use efficiency.
- Provided crop performance information to farmers and industry for 26 different crops annually.
- Generated novel mechanisms for improved fungicidal disease suppression in multiple broadleaf crops, while simultaneously maintaining or reducing input costs.

The CREC optimized sulfur fertility recommendations for canola to improve fertilizer use efficiency.

Agency Overview

Central Grasslands Research Extension Center—Streeter

North Dakota Agricultural Experiment Station

Agency Statutory Authority

North Dakota Century Code Chapter 15-12.1

Agency Description

The Central Grasslands Research Extension Center (CGREC) conducts research for the Coteau region of North Dakota, an area bounded by the Missouri River on the west and the James River on the east, and extends from Divide and Burke counties in northwestern North Dakota in a southeasterly direction through Dickey County.

Research objectives should 1) increase or maintain carrying capacity of native range while emphasizing conservation and preservation, 2) create resiliency in grass production to compensate for the vagaries of the weather and precipitation as it influences forage production in the dryland agriculture, 3) identify the impact of different management strategies on beef production in the central region, and 4) explore the increased use of cover crops, annual forages and byproducts for the maintenance of the cow herd. CGREC's primary focus is management of grasslands, which occupies about one-third of the agricultural land in the state and aims to improve economic value to the natural resources while enhancing soil health and habitat for pollinators, birds, and mammals.

Agency Mission Statement

The legislated mission of the CGREC is as follows: "The CGREC shall conduct research designed to fulfill needs within an area bounded by the Missouri River on the west and the James River on the east with research objectives as follows:

1. To increase the range-carrying capacity of native range with emphasis on conservation.
2. Stabilization of grass production to determine how to best compensate for the variability of the weather as it influences forage production.
3. Identification of different management systems on beef production in the central region of the state.
4. Exploration of increased use of crop residues and by-products for the maintenance of the cow herd.
5. To disseminate research results and information for the benefit of the state of North Dakota.

Agency Performance Measures

Per North Dakota Century Code 15-12.1-17 the State Board of Agricultural Research and Education (SBARE) presents a status report to the budget section of the legislative council. SBARE's most recent presentation to the budget section was on June 28, 2022. The report they gave and provided in written form included the status of the North Dakota Agricultural Experiment Station and NDSU Extension. A copy of the information is on file in the legislative council office.

NDSU NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION

Agency Future Critical Issues

- Deferred maintenance and other repairs that affect both safety and use of facilities continue to be a critical issue.
- Replace old equipment with new equipment that uses present day technology. Some of our equipment and machinery is 25 years old or older.
- Provide an increased salary packet to bring employee salaries back to average levels for similar employment found in private industry. Over the past five years, the station staff have averaged a 1.2% annual pay increase. Average US inflation rate over the same 5-year period is 2.46%, with the rate being 4.7% in 2021. It will be difficult to retain current staff without a major pay increase in the next biennia, with recruiting being even more difficult at the current salaries.

Central Grasslands Research Extension Center – Streeter

2021-2023 IMPACTS

- Initiated a large landscape level research project that compares innovative grazing strategies on livestock performance; livestock production; habitat for pollinators, birds, and mammals; soil health; and microbiology of the soil.
- Expanded winter grazing research to include grazing of corn residues, cover crops, and bale grazing projects.
- Studied impacts of supplementing enhanced mineral and energy feeds to grazing developing heifers on pasture using radio frequency identification technology and GPS technology.
- Continued to expand on collaborative research efforts evaluating the impacts of management on reproductive performance of beef cows and bulls.
- Expanded and initiated annual forage trials to assess varieties and explore economic return by forage species and systems.

The CGREC expanded winter grazing research to include grazing of corn residues, cover crops, and bale grazing projects.

Dickinson Research Extension Center

North Dakota Agricultural Experiment Station

Agency Statutory Authority

North Dakota Century Code Chapter 15-12.1

Agency Description

The Dickinson Research Extension Center (DREC) has an established record of service to the people in the 13-county region south and west of the Missouri River. The DREC operates 6,506 acres of owned land within the region as well as annual land leases needed to accommodate ongoing projects. The land base provides opportunities for a broad perspective in evaluating various agricultural systems that can serve as engines for economic development. This is a continuation of what has taken place for over 100 years. Currently, the DREC assists agricultural producers in solving production problems with agronomy, animal science, soil science, and range science, while integrating new developments. Six major areas are served: agronomy, beef management, bio-security, range management, soil health, and sustainable agricultural practices. Faculty and staff are committed to engaging people of the region and to the identification of current economic opportunities, while sustaining natural resources for future generations as directed by the mission statement and Advisory Board. Research data and producer ideas are continually considered so the DREC can leverage the latest knowledge to best benefit the people of North Dakota.

Agency Mission Statement

The Dickinson Research Center must be located at or near Dickinson in Stark County. The Center shall conduct research on increasing the carrying capacity of native rangeland, with emphasis on conservation and preservation for future generations. The Center shall conduct research on grass production to determine how to best compensate for the vagaries of the weather as it influences forage production in the dry land agriculture of western North Dakota. The Center shall conduct research at the ranch location in Dunn County with beef cattle breeding, feeding, management and disease control for the benefit of livestock producers of western North Dakota and the entire state. The Center shall conduct research designed to increase productivity of all agricultural products of the soil by maintaining or improving the soil resource base in the dry land agricultural region of southwestern North Dakota by the identification of adapted crop species and superior crop cultivars; propagation and distribution of selected seed stock; and development of profitable cropping systems that achieve the necessary balance between profitability and conservation of all natural resources. The Center shall disseminate research results and information for the benefit of this state.

Agency Performance Measures

Per North Dakota Century Code 15-12.1-17 the State Board of Agricultural Research and Education (SBARE) presents a status report to the budget section of the legislative council. SBARE's most recent presentation to the budget section was on June 28, 2022. The report they gave and provided in written form included the status of the North Dakota Agricultural Experiment Station and NDSU Extension. A copy of the information is on file in the legislative council office.

NDSU NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION

Agency Future Critical Issues

- Continue soil-plant-livestock-air research emphasizing soil health, agronomy, range management and livestock production. The current research focus and long research history provide a firm foundation to continue cutting edge research to match goals and objectives for work related to the agricultural biome. The integration of sustainable plant and beef systems requires more evaluation. In the future, more avenues for additional compensation need to be explored, to enhance the economic viability for beef producers and the rural areas associated with beef production. This compensation may come from not only beef but synergistic crop production. The DREC, as part of North Dakota State University, takes serious the need for sustainable beef, beef and grass systems. Currently, the DREC is striving to develop sustainable and integrated production strategies that match conditions of western North Dakota and surrounding regions. The inclusion of forages into traditional cropping systems can provide the resources necessary for the development of integrated production strategies that increase sustainability and profitability.
- Soil acidity research is needed to find more and better solutions to this important soil health issue. Current research is geared to determine soil liming needs. Future soil acidity research will evaluate cropping systems, agronomy practices, and their impacts on soil acidification.
- There is a need to develop agro-ecosystems that optimize the balance between forage-based and grain-based crop/livestock systems reflective of the many individual ecosystems. These integrated systems must be synergistic to, or enhance the native and agronomic plant communities, thus providing the base for future beef production. In addition, enhanced value for commodities produced from forage-based systems is key.
- Petroleum fuel alternatives that have been cultivated from North Dakota crops are becoming more important and extensive. Bi-products from fuel refinement are available that may serve as livestock feedstuffs. Research is needed to evaluate these value-added agricultural by-products as livestock feed.
- Deferred Maintenance Increase — The April 2022 blizzards demolished many miles of fence. The fence has been patched, but several fence miles need replacement. The DREC Ranch Headquarters near Manning underwent a feedlot expansion project in 2008. However, this was not completed. During the April 2022 Blizzards, dedicated staff camped at the ranch shop and removed snow daily for nearly three miles to care for cattle. Despite the harsh conditions, no cattle died as a result of the ranch team's efforts. Finishing this feedlot project will improve animal welfare as all cattle can be contained near the ranch headquarters, protected from the elements, and better accessed during inclement weather. Finishing the feedlot will open new livestock feeding opportunities. The Old original DREC office has been used as storage for years. This building could be repurposed as a single-family dwelling to house post-docs to conduct short-termed research projects.
- Capital Projects — A new machinery shed is needed to store and repair farm and research equipment and contain agricultural pesticides. A machinery shed with a heated bay will increase equipment longevity and help with equipment maintenance during the winter.
- Programmatic Needs — Maintain adequate operating funds. Fund an agronomy research specialist to allow us improve our efforts in cropping systems and soil science. Fund a research specialist with a master's level education to facilitate research and data collection. The Center needs annual support for a multitude of research projects, which require a broad understanding of various research techniques and data analysis related to the agricultural biome.

Dickinson Research Extension Center

2021-2023 IMPACTS

- Soil acidity is a growing soil health issue in western North Dakota that impacts all plants. Extensive research and outreach have been conducted to improve soil acidity management.
- Conducted soil health research and education to demonstrate how soil health is improved by the microbial action of microorganisms.
- Shifted research and educational efforts to explore new forage and cattle resources and inputs.
- Evaluated grass cultivars, soil mineral nitrogen, prairie ecosystems, grassland restoration and integrated grazing systems.
- Reduced soil disturbance, increased plant diversity, added animal diversity, maintained living roots to feed soil organisms and covered soil with plants and plant residues.

The DREC evaluated grass cultivars, soil mineral nitrogen, prairie ecosystems, grassland restoration and integrated grazing systems.

Agency Overview

Hettinger Research Extension Center

North Dakota Agricultural Experiment Station

Agency Statutory Authority

North Dakota Century Code Chapter 15-12.1

Agency Description

The Hettinger Research Extension Center (HREC) is a semi-arid site located in southwest North Dakota, providing the most southerly NDSU location in the non-glaciated portion of North Dakota as a site for its agronomy research program. The HREC also is located at the center of the North Dakota sheep industry, the focus of one of its animal research programs, and in an area of rapidly growing livestock feeding ventures, another focus of animal research at the HREC. Additionally, the HREC is located in a region where much of the land base is in the Conservation Reserve Program, which has resulted in additional research evaluating potential changes in the CRP program and how these changes may affect upland native and game bird populations. A new research program evaluating low-cost rangeland monitoring strategies on U.S. Forest Service lands and wildlife/livestock interactions has resulted in a significant increase in the quantity of rangeland research conducted at the HREC throughout the western Dakotas. Research at HREC involves the disciplines of animal science, range science, wildlife science, agronomy, and agri-business and applied economics. Collaboration is with Main Station scientists, Branch Station scientists, U.S. Forest Service, grazing associations, university scientists from WY, SD, and MT, and USDA research entities in these research disciplines to improve productivity of livestock, grazing, and cropping systems, and to improve economic development of the region.

Agency Mission Statement

The Hettinger Research Extension Center, an outreach of North Dakota State University, provides applied research and education in agriculture and environmental sciences that will enrich the lives of North Dakotans and support economic development.

Agency Performance Measures

Per North Dakota Century Code 15-12.1-17 the State Board of Agricultural Research and Education (SBARE) presents a status report to the budget section of the legislative council. SBARE's most recent presentation to the budget section was on June 28, 2022. The report they gave and provided in written form included the status of the North Dakota Agricultural Experiment Station and NDSU Extension. A copy of the information is on file in the legislative council office.

NDSU NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION

Agency Future Critical Issues

- Land currently being utilized by both the livestock and range & wildlife research programs is going to be sold within the next 2 years. The potential purchase of this land would solidify the land base for these research programs. The Hettinger REC currently owns only 28% of the land it operates on.
- The demand for apiary research has exceeded the time and resources that the range & wildlife management research program can devote to this industry. Southwest North Dakota has become a 4 state regional hub for the apiary industry, and a research program that is dedicated to their needs has been supported by the ND Beekeepers Association.
- Technical support for the livestock research program is needed to provide all research programs with a full time technician. This position is needed to meet the research needs of producers in SW North Dakota.
- Operating support for additional prescribed equipment such as UTVs, pumper, drop torches, and PPE.
- Deferred maintenance and safety issues are over $1,000,000. Specifically, due to past wet cycles and heavier than normal traffic, the road to the office is unstable and needs to be replaced. Additional needs include mechanical system renovation of the office, and re-paving the parking lot.

Hettinger Research Extension Center

2021-2023 IMPACTS

- Variety testing of crops to find the best performing cultivars for SW North Dakota.
- Conducted weed science research evaluating new herbicides for weed control and crop safety for crops grown in SW North Dakota.
- Evaluated the effects of patch-burning in post Conservation Reserve Program lands on livestock, vegetation, pollinators, and wildlife in western ND.
- Conducted honeybee research evaluating shelter belt use in western North Dakota.
- Developed a multidisciplinary research project evaluating an integrated crop-livestock system using annual forages, winter wheat, and sheep.
- Conducted a nationally recognized sheep research program evaluating alternative technologies for increasing reproductive efficiency in both males and females and feedlot nutrition.
- Initiated a project evaluating the potential of a genetic marker for structurally deformities in Rambouillet rams.
- Trained extension agents certified in Nitrate QuikTest Certification Program for annual forages, assisting in the statewide drought response for NDSU Extension.
- Trained M.S. and Ph.D. students in the fields of Natural Resource Management and Animal Science.
- Developed an exchange program with the University of Puerto Rico to give their students experience in sheep production, management, and research.

The HREC evaluated the effects of patch-burning in post Conservation Reserve Program lands on livestock, vegetation, pollinators, and wildlife.

Langdon Research Extension Center

North Dakota Agricultural Experiment Station

Agency Statutory Authority

North Dakota Century Code Chapter 15-12.1

Agency Description

The Langdon Research Extension Center (LREC) is located one mile east of Langdon on US highway five. The agricultural land base at the station consists of 549 owned acres and an additional 206 acres under lease agreement. The LREC serves a nine-county region located in northeast North Dakota and has North Dakota's highest precipitation rates, coolest temperatures, and richest productive soils. The climate supports diverse crop production and recurring disease problems.

The LREC has a strong tradition of assisting the region's producers to meet agricultural production challenges throughout the course of its existence since 1909. In 1993, the LREC redirected much of its research programming to focus on the significant increase of disease and insect pressure associated with its climate. This redirected applied research programming has provided producers with information regarding disease minimizing cultural farming practices and trusted information regarding chemical applications and other inputs that minimize disease and insect pressures that give growers the best return on investment for all crops grown in ND. The recent addition of extension specialists in cropping systems and soil health allows the LREC to be a full service research and extension center for local growers, families and communities.

Agency Mission Statement

The Langdon Research Extension Center will conduct applied agricultural research that enhances the quality of life for the region's citizens with a responsive, flexible and accessible overall agricultural based research program. This programming will combine the concepts of agricultural research, information technology and community/economic development while conserving the region's natural resources.

Agency Performance Measures

Per North Dakota Century Code 15-12.1-17 the State Board of Agricultural Research and Education (SBARE) presents a status report to the budget section of the legislative council. SBARE's most recent presentation to the budget section was on June 28, 2022. The report they gave and provided in written form included the status of the North Dakota Agricultural Experiment Station and NDSU Extension. A copy of the information is on file in the legislative council office.

NDSU NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION

Agency Future Critical Issues

- The primary issue currently for the NDSU Langdon Research Extension Center is to maintain a level budget and hopefully provide an increase based on inflation through the 2023-25 biennium based on the 2021-23 budget. This is essential to support the research and extension programming at its current level. The LREC is experiencing first hand inflation (and other) constraints as the recently funded greenhouse addition came in way over budget. Re-bidding will occur early in 2023 so an extension of the funding would be needed. Looking ahead, an upgrade on the LREC's 1960 seed cleaning plant will be needed for continuation of the foundation seedstocks program that provides local growers with new NDSU crop varieties.
- All research and extension programming are supported by all facilities at the Langdon REC, most built prior to 1960. Many are becoming outdated and unsafe. Acquiring additional funds for extraordinary repairs, including upgrades to minimize the spread of covid19, will help to shore up these facilities to support the level of research and extension programming currently supported at Langdon.
- Research at the Langdon REC has become more dependent on research grant opportunities. Additional support that helps scientists secure grants to leverage public funding will be essential to continue employing problem solving applied research for growers.

Langdon Research Extension Center

2021-2023 IMPACTS

- Continued to build strong research partnerships with agricultural input companies, commodity groups, regional crop improvement associations, growers, and others.
- Produced and distributed the highest quality foundation grade seed of the major crops grown in our region.
- Provided dependable support for main station crop breeding programs and other cropping system research programs including crop scouts throughout the growing season in northeast ND.
- Continued to foster and strengthen two new Extension Specialists outreach programs in cropping systems and soil health.
- Applied research at Langdon in agronomy, pathology and soil health is providing growers with answers they need to become more profitable.

The LREC produced and distributed the highest quality foundation grade seed of the major crops grown in our region.

Agency Overview

North Central Research Extension Center—Minot

North Dakota Agricultural Experiment Station

Agency Statutory Authority

North Dakota Century Code Chapter 15-12.1

Agency Description

The North Central Research Extension Center (NCREC) was established in 1945 and is located one mile south of Minot on Highway 83. The NCREC conducts research to increase agricultural productivity, with a focus in the north central region of ND. The NCREC serves agriculture producers in the region and state through crop research, Foundation seed production, and Extension education programs. Research and Extension programs at the NCREC focus on crop variety and new germplasm evaluation, weed control, cropping systems, crop pest management, reduced tillage, and soil fertility. Research is conducted on cereal grains, oilseeds, legumes, forages, grapes, and emerging specialty crops.

Agency Mission Statement

The North Central Research Extension Center conducts research to increase agricultural productivity in north central North Dakota. The center serves agricultural producers in a 12 county region surrounding Minot through crop research, foundation seed production and dissemination, and extension education programs in crop and livestock production. Studies at the center focus on crop variety and new germplasm evaluation, weed control, cropping systems, crop pest management, reduced tillage, and soil fertility. Research is conducted on cereal grains, oilseeds, legumes, forages, and new specialty crops.

Agency Performance Measures

Per North Dakota Century Code 15-12.1-17 the State Board of Agricultural Research and Education (SBARE) presents a status report to the budget section of the legislative council. SBARE's most recent presentation to the budget section was on June 28, 2022. The report they gave and provided in written form included the status of the North Dakota Agricultural Experiment Station and NDSU Extension. A copy of the information is on file in the legislative council office.

Agency Future Critical Issues

- Increased base funding to support research and Extension efforts
- Additional technical support
- Increased operating funds
- Equipment replacement
- Drain tile NCREC main yard
- Encroachment from city of Minot
- Sale and purchase of additional land for Foundation seed production

NDSU NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION

2021-2023 IMPACTS

- Produced, conditioned, and distributed foundation seed of seven crops grown in the region consisting of 24 unique varieties.
- Assisted in development of new varieties of economically important crops and evaluated production strategies for alternative crops.
- Researched crop production products in order to improve efficiencies and maximize economic return for minor and major acreage crops grown in ND.
- Provided transformational, Extension education in the areas of livestock, soil health, crop protection, and cropping systems.
- Conducted residue trials that led to registration of new agricultural pesticides.

The NCREC provided tranformational, Extension education in the areas of livestock, soil health, crop protection, and cropping systems.

Williston Research Extension Center

North Dakota Agricultural Experiment Station

Agency Statutory Authority

North Dakota Century Code Chapter 15-12.1

Agency Description

The Williston Research Extension Center (WREC), established in 1907 and relocated to the present site in 1954, is an 800-acre rain-fed farm located in northwest North Dakota near the city of Williston. In 2001, an additional 160 acres were purchased in the Nesson Valley and an irrigated research and development project was established. WREC research studies are conducted on crop variety evaluation, herbicide performance and other cultural management research, cropping systems and soil and water conservation practices. The main dryland crops are spring wheat and durum; barley, oats, safflower, pea, lentil, chickpea, canola, flax, alfalfa, and other alternative crops are also grown as cash crops or for livestock feed.

WREC research is intended to increase the producer's net profit, support crop diversification, and encourage more intensive cropping and irrigation development. Research on soil and crop management systems for sprinkler irrigation, on alternative irrigated high value and value-added crops are conducted. WREC also conducts variety development research on, winter wheat, spring wheat, durum, oats, peas, lentils, flax, canola, and other crops in cooperation with NDSU main station scientists cooperating state/federal agencies and private companies. WREC produces and supplies foundation seed to area farmers of new and adapted crop varieties adapted to our Mon-Dak region.

Agency Mission Statement

The Williston Research Extension Center conducts research to increase agricultural productivity in the semi-arid region for northwestern North Dakota while achieving a necessary balance between profitability and conservation of natural resources. Research on soil and crop management systems for sprinkler irrigation and alternative irrigated high-value/value-added crop production at the Nesson Valley site are conducted in cooperation with the Montana State University Eastern Agricultural Research Center at the USDA-ARS Northern Plains Agricultural Research Laboratory in Sidney, Montana and other cooperating NDSU and University of Minnesota scientists.

Agency Performance Measures

Per North Dakota Century Code 15-12.1-17 the State Board of Agricultural Research and Education (SBARE) presents a status report to the budget section of the legislative council. SBARE's most recent presentation to the budget section was on June 28, 2022. The report they gave and provided in written form included the status of the North Dakota Agricultural Experiment Station and NDSU Extension. A copy of the information is on file in the legislative council office.

NDSU NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION

Agency Future Critical Issues

- Increasing operating costs and higher labor costs for research activities continue to impact WREC's abilities to carry out our research programs vital to the improvement of the economic and environmental performance of our agricultural lands. Deferred maintenance funding continues to be an important need for WREC to maintain its facilities.
- A facility is badly needed at the Nesson Valley Irrigated Research and Development site for office/lab space/conference room, and a heated shop at the irrigation site located 27 miles from Williston. The irrigation research staff currently work out of a small office in a chemical storage and handling facility used to store chemicals and handle pesticides and other hazardous chemicals. The new facility will support research and educational efforts for irrigated growers and to support expansion of irrigation, food processing and livestock industries in western North Dakota.
- An equipment storage building is needed for WREC farm and plot research equipment to allow all WREC high-cost farm and research equipment to be stored indoors from the elements.
- A $500,000 capital campaign was authorized, and fundraising raised $500,000 for a WREC greenhouse but higher than budgeted costs for greenhouse will require additional special fund authorization.

Williston Research Extension Center

2021-2023 IMPACTS

- Continued to conduct a long-term no-till dryland research project. The objectives are to develop agricultural systems to improve soil health, precipitation use, and economic stability of no-till farming systems.
- Introduced a drone based (UAS) precision agriculture research project.
- Developed and utilize a 160-acre irrigated site in Nesson Valley 27 miles northeast of Williston to identify improved irrigated cropping and tillage systems, water use efficiency, and soil health of irrigated lands.
- Established and completed a pipeline reclamation research project.
- Established and continue a high tunnel research project with vegetable crops and cut flowers.
- Established and continue a saline seep reclamation research and demonstration project in collaboration with the Montana Salinity Control Association.
- The WREC seed conditioning plant built in 1954 was antiquated and posed considerable safety issues. A new horizontal seed conditioning plant with optical color sorter and higher bushel per hour capacity was constructed in 2021 that will efficiently allow WREC to condition Foundation seed of a wide array of new crop varieties to provide pure seed to growers.
- Redirected a vacant Extension position to conduct Extension programming related to weed science and management.

The WREC established and completed a pipeline reclamation research project.

Agronomy Seed Farm

North Dakota Agricultural Experiment Station

Agency Statutory Authority

North Dakota Century Code Chapter 15-12.1

Agency Description

The Agronomy Seed Farm (ASF) is a 590 acre farm located near Casselton, which has been a part of the North Dakota Agriculture Experiment Station (NDAES) since it was gifted to the state in 1950. It was the result of a fund drive conducted by the North Dakota Crop Improvement Association, which solicited farmers, seed companies and many others throughout the state to help establish a farm whose main purpose is to increase seed of new varieties as they are developed by the plant breeding and supporting departments of the NDAES. The ASF also propagates seed of older but still desirable varieties for the seedsmen of the area.

Agency Mission Statement

To produce an adequate supply of foundation-grade seed for the seedsmen of the state and area at a reasonable price and to support the varietal development research of the NDAES.

Agency Performance Measures

Per North Dakota Century Code 15-12.1-17 the State Board of Agricultural Research and Education (SBARE) presents a status report to the budget section of the legislative council. SBARE's most recent presentation to the budget section was on June 28, 2022. The report they gave and provided in written form included the status of the North Dakota Agricultural Experiment Station and NDSU Extension. A copy of the information is on file in the legislative council office.

Agency Future Critical Issues

- The critical issues facing the ASF are a continued demand for foundation-grade seed, favorable weather for growing seed and a good supply of varieties that are in demand by the seed industry. If these three conditions are present and good commodity prices accompany them, the future of the ASF is secure.

NDSU NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION

Agronomy Seed Farm

2021-2023 IMPACTS

- Produced 35,000 to 50,000 bushels of seed for availability to the seed industry annually.
- Conditioned 35,000 to 50,000 bushels of seed for availability to the seed industry annually.

The Agronomy Seed Farm's main purpose is to increase seed of new varieties as they are developed by the plant breeding and supporting departments of the NDAES.

Major Capital Projects and One-time Requests

NDSU NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION

Capital Improvement Requests

1. Field Lab Facility

Field agronomic, plant disease and soils research address the pressing questions and important issues needed by state producers. Unfortunately, the current field facilities used by scientists are no longer adequate to address these critical research needs. Waldron Hall, Widakas Laboratory, the Potato Research Laboratory, and the Horticulture laboratory were all built between the 1940s and 1960s prior to the advent of personal computers and other modern equipment commonly used in field research, and at a time when field crop production yields in North Dakota were much lower and consisted largely of small grains. The future of North Dakota's successful agriculture depends on modern field facilities that will allow researchers to address the needs of the industry with improved access to varieties that are adapted to the climate of North Dakota, better fertility recommendations, improved weed control, and improved responses to plant disease challenges.

A modern field laboratory requires space that facilitates collaborations between scientists and their teams, is safe, eliminates contamination from soilborne and insect pests, and provides better processing, cleaning and storing of seed. Additionally, this facility must support research in tuber and root crops, such as potato, and horticulture, including controlled-environment growing rooms that allow precise environments for plant development.

Request: $97,000,000

(NDSU photo)


(NDSU photo)

(NDSU photo)


(NDSU photo)

2. AES Equipment Storage Sheds

Purchasing and/or leasing expensive field equipment is an investment that the AES 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.

Request: Seven sheds ($475,000 per shed)
Total: $3,325,000

3. Nesson Valley Facility

A facility is needed for office and lab space, a heated shop, and a conference room at the Nesson Valley Irrigation site located 27 miles from Williston. The irrigation research staff currently uses a small office in a building used to store chemicals and other equipment and operating items. This facility would support ongoing educational efforts for growers related to irrigation and high value crops as well as meetings to support expansion of irrigation, food processing and livestock industries in western North Dakota.

Request: $1,700,000

4. Precision Agriculture Facility

A facility that would support precision agriculture activities across the entire North Dakota Agricultural Experiment Station is needed to integrate advanced research in precision and advanced agriculture. A modern facility would provide the workspace scientists need to develop synergistic activities across disciplines that are required to address the complicated challenges facing producers of North Dakota. A new facility would include industrial high bay research space, co-worker space to enhance interdisciplinary research, and other specialty spaces that include a dynometer bay, a fabrication laboratory and a soil laboratory.

Request: $55,000,000

5. Dairy Barn

The last time the 1940s era NDSU dairy barn was updated was in 1978, when cows were producing 11,000 pounds of milk. Today the average dairy cow produces over 23,000 pounds of milk (over 2,600 gallons) in one year. The North Dakota State University dairy herd is recognized consistently by the Holstein association of the United States as one of the top university herds in the country. The current unit needs substantial renovation to the cow barn to modernize it with robotic milking and automatic calf feeding, improve worker safety, and increase animal welfare. This renovation would support the state's dairy industry and help it grow.

Request: $1,700,000

One-time Requests

Deferred Maintenance

Request: $1,440,465

Equipment for an Ag Biotech Innovation Core

Microbiological sciences can best contribute to the future of North Dakota agriculture through the development of microbial inoculants and the microbial valorization of agricultural residues. Broader research interests exist across the NDAES surrounding the microbial transformation of agrifood products and bioproducts. NDAES scientists engaging in this research would benefit from a core facility where they could access specialized equipment and skilled technical support.

Funding would be used to purchase laboratory equipment needed to establish a core biotech facility. Equipment needed includes an array of bioreactors to support high throughput and scale-up experiments and metabolomics equipment including a GC MS/MS mass spectrometer.

Request: $1,000,000

2021-2023 Capital Improvement and One-time Request Update

North Dakota Agricultural Experiment Station

AES Equipment Storage Sheds

Purchasing and/or leasing expensive field equipment is an investment that the AES needs to protect. Storing expensive research plot equipment such as tractors, seeders and combines outdoors reduces the life of the equipment and can compromise the sophisticated electronics typically used on such equipment.

21-23 Request: 8 ($300,000 per shed)

21-23 Funding Received: $300,000 for Hettinger REC (Regular session – SIIF)

Funds Expended through 12/31/22: $294,310

Current Status: Hettinger REC storage shed is complete. The size of the shed was decreased from the original planned size to stay within budget.

23-25 Additional Funding Request: $3,325,000 ($475,000 per shed)

Central Grasslands Pasture Working Facilities

The Central Grasslands REC currently has damaged, small pens with no alleyways, working pen, or catwalks which are unsafe for livestock and people. Two working facility will be built, one in Barker's Unit and one in Wagon Wheel. These facilities will include holding pens, working facilities, bud box, cat walks, and alleyways to create safe working areas to work cattle, collect livestock data, breeding, and doctor cattle while on grazing research studies.

21-23 Request: $200,000

21-23 Funding Received: $200,000 (Regular session – SIIF)

Funds Expended through 12/31/22: $66,065

Current Status: One of the two pasture facilities is complete. The second pasture facility is approximately 50% complete. Completion is scheduled for May 2023.

Langdon REC Greenhouse

The Langdon REC identifies a need to develop greenhouse space for its plant pathology effort. Greenhouse space would allow for year-round testing of disease issues for crops grown in the region and provide an area for testing chemical control methods.

Because the climatic conditions in North Dakota allow only one crop a year, many researchers must limit their research projects to a certain number a year. If our facility gets a greenhouse, we can accomplish more than what we are doing now. Now, plant pathology greenhouse projects are directed to the main campus in Fargo as we do not have a greenhouse at our center.

Greenhouses accommodate many types of plant research and provide flexible environments to accommodate the growing needs for plant research in a shorter time. We currently have diverse types of research projects that need a greenhouse, such as:

- Isolated environments. For example, clubfoot of canola research first must be conducted in a greenhouse rather than in field conditions where the odds of spreading the disease are higher.
- Ambient conditions to replicate outdoor conditions for control and integrated pest management experiments dealing with local rare and newly introduced diseases and pests.

- Bioassays for crop-specific nematode detection, such as soybean cyst nematode.
- Bioassays for the determination of herbicide resistance.
- Fungicide efficacy tests for quick results. Instead of waiting for next summer, research can be done in winter and conveyed to the research community and growers, for example, fungicides to manage chocolate brown spot of Faba beans as no fungicides are registered so far in ND.

21-23 Request: $473,000

21-23 Funding Received: $473,000 (Regular session – SIIF)

Funds Expended through 12/31/22: $25,729

Current Status: One bid was received for $724,430 in June 2022. Architect has suggested to rebid the project in spring 2023.

23-25 Additional Funding Requested: $251,430

Central Grasslands REC Livestock Facility

The CGREC livestock facilities are in dire need of replacement. The existing space used as a support lab is small and inadequate to handle, prepare, and test blood and tissue samples, particularly as the research portfolio at this center has increased recently. This proposed facility would complement the research activities that will be carried out in the new Agronomy laboratory, thereby enhancing the two major research foci of this Center. Livestock holding pens and sheds also are inadequate to address the research and outreach needs for the Coteau region of the state. Specifically, the development of replicated dry lot research pens would allow scientists to answer a broader range of questions relating to beef cow and calf management; a feed handling facility would improve the Center's ability to ensure diet accuracy and improve overall feed management; and a nutrient management/wastewater containment system is lacking and is needed to address possible health and pollution issues.

21-23 Request: $1,963,000

21-23 Funding Received: $1,963,000 (Special session – ARPA)

Funds Expended through 12/31/22: $79,440

Current Status: Bid opening was held on 12/22/22. Several bids were received. Bids were not accepted as there were not adequate funds to complete the project.

23-25 Additional Funding Request: $400,000

Hettinger REC Sheep Feed Efficiency Research Facility

Traditionally, high grain prices and volatile commodity prices have raised interest and emphasis on increasing the efficiency of sheep production during all phases of production (rams, ewes and feedlot performance). No facility exists in the northern Great Plains to evaluate feed efficiency in sheep production, but the HREC is well situated and established in the sheep industry to expand its research capabilities through a new facility that can monitor individual animal intake in a pen setting. Research would evaluate genetic potential of breeding stock (rams and ewes) that measures feed intake in relation to performance, as well as feedlot research to complement and provide additional replication to the large-scale trials conducted at the Southwest Feeders Feedlot at the HREC.

21-23 Request: $1,891,000

21-23 Funding Received: $1,891,000 (Special session – ARPA)

Funds Expended through 12/31/22: $75,594

Current Status: Bid opening was held 1/5/23. Bid was accepted.

23-25 No additional funding requested

Carrington REC Feedlot Research Support Facility

Construction of a multi-use Feedlot Research Support Facility at the livestock unit would improve feedlot research operational capability, assist in sustaining Institutional Animal Care and Use Committee (IACUC) compliance, attain worker protection standards and reduce maintenance costs for equipment. The CREC has a critical need for a facility at the livestock unit that would combine a dispensary for processing and storing pharmaceuticals and animal health supplies; laboratory space for feeds, blood, fecal and tissue processing; inside tempered storage for daily use feeding equipment; and a shop area for tools, equipment, and equipment maintenance and minor repairs. This facility has been a longtime priority project for the CREC. The CREC livestock program is the primary outstate program for beef feedlot research and evaluation of feeds and feedstuffs for beef production.

21-23 Request: $450,000

21-23 Funding Received: $450,000 (Regular session – SIIF)

Funds Expended through 12/31/22: $30,010

Current Status: Bid opening in July 2022 resulted in one electrical bid and no general contractor bids. Project was re-advertised and bids opened in September 2022 resulting in one general contractor bid for $1,090,000. This bid was not accepted.

23-25 Additional Funding Request: $640,000

Hettinger REC Livestock Processing and Research Support Facility

The HREC Southwest Feeders Feedlot cattle and sheep feedlot (24 pens with a capacity of 192 calves or 960 lambs) has provided significant research and outreach to support the livestock industry in the state and region. Feedlot research results are annually published in refereed journals, the ND Beef Cattle Research Report, and the ND Sheep Research Report, in addition to being the centerpiece for research-related livestock outreach efforts at the HREC. The current feedlot has a small (512 square foot) facility that does not support current research or outreach activities. The facility does not provide a secure area to store and administer veterinary supplies, an area for sorting animals into treatments and pens, an area to hold animals indoors for observation and sample collection or office space for the herdsman and has no restroom facilities. A multi-species processing and research support facility would greatly enhance the livestock research conducted at the HREC and expand AES research capabilities in beef cattle and lamb feedlot nutrition and management.

21-23 Request: $1,529,000

21-23 Funding Received: $1,529,000 (Special session – ARPA)

Funds Expended through 12/31/22: $61,308

Current Status: Bid opening scheduled for 1/12/2022. Using a cost estimate of $353/sq foot (based on Central Grasslands REC livestock facility bid) we are projecting a budget shortfall for this project. Estimated cost is $2,280,720.

23-25 Additional Funding Request: $751,720

Dickinson REC Agricultural Lab and Shop Facility

The current facilities lack adequate heating and cooling and have inadequate dust collection systems necessary for the safety or the employees at the REC. The current shop facility is not large enough to allow repair of modern agricultural research equipment.

21-23 Request: $2,200,000

21-23 Funding Received: $2,200,000 (Special session – ARPA)

Funds Expended through 12/31/22: $71,914

Current Status: Bid opening is scheduled for 1/18/22. Using a cost estimate of $353/sq foot (based on Central Grasslands REC livestock facility bid) we are projecting a budget shortfall for this project. Estimated cost is $2,871,500.

23-25 Additional Funding Request: $671,500

Carrington REC Feedlot Pen Expansion with Waste Containment

Meeting the expanding demands for feedlot research is partially limited by available pens. Current pens are fully utilized. The CREC is continually challenged to do more livestock nutrition research; however, feedlot pen availability is a clear limitation. The addition of a minimum of 12 pens that would hold up to 240 head of cattle would allow the CREC to conduct at least one additional experiment per feed-out period. Further, the additional pens will allow more treatments and replications within other feedlot studies, which would improve statistical confidence and precision. Any feedlot pen expansion must include the associated waste containment facilities to remain compliant with state law. The CREC livestock program is the primary outstate program with the mission for beef feedlot research and evaluation of feeds and feedstuffs for beef production. Beyond the ability to conduct additional experiments or evaluate more treatments with greater replication, the additional feedlot pens would be developed to expand the depth and speed of the ability to evaluate other factors that impact feeding livestock in North Dakota. These factors include minimizing animal stress, mitigating winter stress, managing influences on environmental concerns, beef animal efficiency and other issues that ultimately impact the viability of beef cattle production and feeding in the state.

21-23 Request: $325,000

21-23 Funding Received: $325,000 (Regular session – SIIF)

Funds Expended through 12/31/22: $4,000

Current Status: One bid of $295,000 was received for the concrete portion of the pen expansion. The bid did not include the needed water and electrical work, feedlot penning and supplies which will be purchased separately. Estimated cost is $420,000

23-25 Additional Funding Request: $95,000

Carrington REC Covered Feeding (Hoop barn or Mono-slope)

The expansion of feedlot pens would be implemented in a manner that is conducive to future construction of a covered facility either in the form of a hoop barn or mono-slope. This would allow research to evaluate mitigation of winter and summer extremes on animal performance when compared to open lot production. Covered pens also will provide research data on changes to the waste and environmental issues that often challenge the livestock industry.

21-23 Request: $129,600

21-23 Funding received: $129,600 (Special session – ARPA)

Funds Expended through 12/31/22: $0

Current Status: This project is contingent on completion of the feedlot pen expansion. Mono-slope structure would better protect the smart feeders from the elements. Estimated cost for this project is $594,000.

23-25 Additional Funding Request: $464,400

Carrington REC Bulk Feed Commodity Storage Structure

A major program research responsibility of the CREC is to conduct research that evaluates how North Dakota-derived feedstuffs may be most appropriately utilized in livestock feeding rations with focus on beef production. The research program utilizes many different types of feedstuffs including those that must be stored in bulk. Presently, feedstuffs such as distiller's grains, soybean hulls, ground hay/straw, etc. are stored outside on the ground, which exposes the products to the weather elements, soil contamination and mixture with adjacent products. Animal nutrition research is compromised when the feed products become degraded or contaminated. This addition will enable the research program to expand the variety and number of commodities utilized in feeding studies, improve precision of mixed rations and reduce feed product waste, lowering costs to both the CREC and producers who consign cattle to the studies.

21-23 Request: $102,600

21-23 Funding Received: $102,600 (Special session – ARPA)

Funds Expended through 12/31/22: $2,800

Current Status: Project was put out for bid in June 2022 and was extended into August 2022 with no bids submitted. Project was reassessed and revised cost estimate is $260,000.

23-25 Additional Funding Request: $157,400

Carrington REC Smart Feed Technology System

These systems allow for more intensive data collection and individual animal application of treatment rations. Feed intake is one of the main drivers of livestock performance. By increasing the abilities of CREC and collaborating researchers to more accurately measure intake and expand the depth of treatments applied within studies, more detailed information can be provided to area producers. Smart feed systems would increase opportunities to study issues to a greater scope and depth, thereby increasing competitiveness for grant funds to support the broader research program.

21-23 Request: $213,800

21-23 Funding received: $213,800 (Special session – ARPA)

Funds Expended through 12/31/22: $0

Current Status: Installation of this equipment is contingent on completion of the other feedlot projects at the Carrington REC. Since those projects could not be completed, equipment purchase is on hold.

23-25 No additional funding requested

Central Grasslands REC Housing

The current director is living in the house that should be for the center herdsman. A new house will need to be built to provide housing for personnel who need to be on site for day-to-day operations. Construction of a new residence would offset the substantial costs associated with repair to the existing residence.

21-23 Request: $325,000

21-23 Funding Received: $325,000 (Regular session – SIIF)

Current Status: Project was bid in August 2022 with no bids submitted.

23-25 Additional Funding Request: $175,000 other funds authorization

Williston REC Greenhouse

A greenhouse is needed for the WREC plant pathology, weed science, agronomy, and horticulture programs to allow for conducting plant disease, weed, agronomic, and horticulture research during the winter months and to provide consistent growing conditions to replicate different environmental challenges.

19-21 Request: $500,000 other funds authorization

19-21 Funding Received: $500,000 other funds authorization

Funds Expended through 12/31/22: $0

Current Status: Special fund authorization in the amount of $500,000 was authorized by the 67th North Dakota legislative assembly, and $500,000 has been raised. Unfortunately, the current bidding environment indicates that $500,000 is no longer enough authorization for the construction of a new greenhouse. Estimated cost is now $1,250,000.

23-25 Additional Funding Request: $750,000 other funds authorization

HB1020

Sixty-eighth
Legislative Assembly
of North Dakota

HOUSE BILL NO. 1020
(Governor's Recommendation)

Introduced by

Appropriations Committee

(At the request of the Governor)

A bill for an Act to provide an appropriation for defraying the expenses of the North Dakota state university extension service, northern crops institute, upper great plains transportation institute, main research center, branch research centers, and agronomy seed farm; to provide for a transfer; and to provide an exemption.

BE IT ENACTED BY THE LEGISLATIVE ASSEMBLY OF NORTH DAKOTA:

SECTION 1. APPROPRIATION. The funds provided in this section, or so much of the funds as may be necessary, are appropriated out of any moneys in the general fund in the state treasury, not otherwise appropriated, and from special funds derived from federal funds and other income, to the North Dakota state university extension service, the northern crops institute, the upper great plains transportation institute, the main research center, branch research centers, and agronomy seed farm for the purpose of defraying the expenses of the North Dakota state university extension service, the northern crops institute, the upper great plains transportation institute, the main research center, branch research centers, and agronomy seed farm, for the biennium beginning July 1, 2023 and ending June 30, 2025, as follows:

Subdivision 1.

NORTH DAKOTA STATE UNIVERSITY EXTENSION SERVICE

	Base Level	Adjustments or Enhancements	Appropriation
Extension Service	$56,530,224	$6,342,158	$62,872,382
Soil Conservation Committee	1,211,520	0	1,211,520
Total All Funds	$57,741,744	$6,342,158	$64,083,902
Less Estimated Income	28,303,921	2,445,420	30,749,341
Total General Fund	$29,437,823	$3,896,738	$33,334,561
Full-Time Equivalent Positions	241.77	8.93	250.70

Subdivision 2.

NORTHERN CROPS INSTITUTE

	Base Level	Adjustments or Enhancements	Appropriation
Northern Crops Institute	$3,909,760	$5,760,258	$9,670,018
Total All Funds	$3,909,760	$5,760,258	$9,670,018
Less Estimated Income	1,922,618	5,578,507	7,501,125
Total General Fund	$1,987,142	$181,751	$2,168,893
Full-Time Equivalent Positions	13.55	4.60	18.15

Subdivision 3.

UPPER GREAT PLAINS TRANSPORTATION INSTITUTE

	Base Level	Adjustments or Enhancements	Appropriation
Upper Great Plains Transportation Inst	$23,527,957	$1,501,477	$25,029,434
Total All Funds	$23,527,957	$1,501,477	$25,029,434
Less Estimated Income	19,042,350	763,773	19,806,123
Total General Fund	$ 4,485,607	$737,704	$ 5,223,311
Full-Time Equivalent Positions	43.88	0.00	43.88

Subdivision 4.

MAIN RESEARCH CENTER

	Base Level	Adjustments or Enhancements	Appropriation
Main Research Center	$111,676,188	$12,230,687	$123,906,875
Total All Funds	$111,676,188	$12,230,687	$123,906,875
Less Estimated Income	57,087,956	5,139,753	62,227,709
Total General Fund	$ 54,588,232	$7,090,934	$ 61,679,166
Full-Time Equivalent Positions	334.56	22.91	357.47

Subdivision 5.

RESEARCH CENTERS

	Base Level	Adjustments or Enhancements	Appropriation
Dickinson Research Center	$ 7,078,838	$253,676	$ 7,332,514
Central Grasslands Research Center	3,553,320	143,955	3,697,275
Hettinger Research Center	5,174,885	276,157	5,451,042
Langdon Research Center	3,091,310	171,639	3,262,949
North Central Research Center	5,203,251	226,560	5,429,811
Williston Research Center	5,362,734	295,863	5,658,597
Carrington Research Center	9,827,963	549,185	10,377,148
Total All Funds	$39,292,301	$1,917,035	$41,209,336
Less Estimated Income	20,722,818	547,859	21,270,677
Total General Fund	$18,569,483	$1,369,176	$19,938,659
Full-Time Equivalent Positions	108.21	1.60	109.81

Subdivision 6.

AGRONOMY SEED FARM

	Base Level	Adjustments or Enhancements	Appropriation
Agronomy Seed Farm	$1,579,655	$58,421	$1,638,076
Total Special Funds	$1,579,655	$58,421	$1,638,076
Full-Time Equivalent Positions	3.00	0.00	3.00

Subdivision 7.

BILL TOTAL

	Base Level	Adjustments or Enhancements	Appropriation
Grand Total General Fund	$109,068,287	$13,276,303	$122,344,590
Grand Total Other Funds	128,659,318	14,533,733	143,193,051
Grand Total All Funds	$237,727,605	$27,810,036	$265,537,641

SECTION 2. ONE-TIME FUNDING. The following amounts reflect the one-time funding items approved by the sixty-seventh legislative assembly for the 2021-23 biennium and the 2023-25 one-time funding items included in the appropriation in section 1 of this Act:

One-Time Funding Description	2021-23	2023-25
Deferred Maintenance	$ 500,000	$ 720,000
Carrington Research Extension Center Capital Projects	1,221,000	0
Central Grasslands Research Extension Center Capital Projects	2,488,000	0
Hettinger Research Extension Center Capital Projects	3,720,000	0
Langdon Research Extension Center Capital Projects	473,000	0
Dickinson Research Extension Center Capital Projects	2,200,000	0
Remote Sensing of Infrastructure	2,225,000	0
Agricultural Experiment Station Equipment Storage Sheds	0	1,900,000
Northern Crops Institute Feed Center	0	3,900,000
Transportation Data Intelligence Center	0	432,600
Total All Funds	$12,827,000	$6,952,600
Total Other Funds	12,327,000	6,520,000
Total General Fund	$ 500,000	$432,600

SECTION 3. ADDITIONAL INCOME - APPROPRIATION. In addition to the amount included in the grand total special funds appropriation line item in section 1 of this Act, any other income, including funds from federal acts, private grants, gifts, and donations, or from other sources received by the North Dakota state university extension service, the northern crops institute, the upper great plains transportation institute, the main research center, branch research centers, and agronomy seed farm, except as otherwise provided by law, is appropriated for the purpose designated in the act, grant, gift, or donation, for the biennium beginning July 1, 2023 and ending June 30, 2025.

SECTION 4. DICKINSON RESEARCH EXTENSION CENTER - MINERAL RIGHTS INCOME. The Dickinson research extension center may spend up to $755,000 of revenues received during the 2023-25 biennium from mineral royalties, leases, or easements for ongoing operational expenses. Any revenues received in excess of $755,000 may be spent only for one-time expenditures for the biennium beginning July 1, 2023 and ending June 30, 2025.

SECTION 5. WILLISTON RESEARCH EXTENSION CENTER - MINERAL RIGHTS INCOME - REPORT. The Williston research extension center shall report to the sixty-ninth legislative assembly on amounts received and spent from mineral royalties, leases, or easements in the biennium beginning July 1, 2021, and ending June 30, 2023 and the biennium beginning July 1, 2023 and ending June 30, 2025.

SECTION 6. EXEMPTION - TRANSFER AUTHORITY. Upon approval of the state board of agricultural research and education and appropriate branch research center directors, the director of the main research center may transfer appropriation authority within subdivisions 1, 2, 4, and 5 of section 1 of this Act. Any amounts transferred must be reported to the director of the office of management and budget.

SECTION 7. EXEMPTION - FULL-TIME EQUIVALENT POSITION ADJUSTMENTS. The state board of higher education may adjust or increase full-time equivalent positions as needed for the entities in section 1 of this Act, subject to availability of funds. The board shall report any adjustments to the office of management and budget pursuant to this section.

SECTION 8. EXEMPTION - UNEXPENDED GENERAL FUND - EXCESS INCOME. Any unexpended general fund appropriation authority available to and any excess income received by entities listed in section 1 of this Act are not subject to the provisions of section 54-44.1-11, and any unexpended funds from these appropriations or revenues are available and may be expended by those entities, during the biennium beginning July 1, 2025 and ending June 30, 2027.

SECTION 9. EXEMPTION. The $775,000 of other funds appropriated for the Carrington research extension center capital projects, the $525,000 of other funds appropriated for the central grasslands research extension center capital projects, and the $473,000 of other funds appropriated for the Langdon research extension center capital projects subdivision 4 of section 1 of chapter 48 of the 2021 Sessions Laws, are not subject to the provisions of section 54-44.1-11, and any unexpended funds from these appropriations or related revenues are available and may be expended during the biennium beginning July 1, 2023 and ending June 30, 2025.

SECTION 10. ESTIMATED INCOME - STRATEGIC INVESTMENT AND IMPROVEMENTS FUND – NORTHERN CROPS INSTITUTE - MAIN RESEARCH CENTER. The estimated income line in subdivision 2 of section 1 of this Act includes the sum of $3,900,000 from the strategic investment and improvements fund for the northern crops institute feed center. The estimated income line in subdivision 4 of section 1 of this Act includes the sum of $2,620,000 from the strategic investment and improvements fund for agricultural experiment station equipment storage sheds.

SECTION 11. EXEMPTION – FEDERAL STATE FISCAL RECOVERY FUND. The $446,000 appropriated from federal funds derived from the state fiscal recovery fund for one-time projects at the Carrington research center in section 6 of chapter 550 of the 2021 Sessions Laws, the $1,963,000 appropriated from federal funds derived from the state fiscal recovery fund for one-time projects at the central grasslands research center in section 6 of chapter 550 of the 2021 Sessions Laws, the $2,200,000 appropriated from federal funds derived from the state fiscal recovery fund for one-time projects at the Dickinson research center in section 6 of chapter 550 of the 2021 Sessions Laws, and the $3,420,000 appropriated from federal funds derived from the state fiscal recovery fund for one-time projects at the Hettinger research center in section 6 of chapter 550 of the 2021 Sessions Laws, is not subject to section 54-44.1-11, and any unspent funds from these programs are available for the programs during the biennium beginning July 1, 2023 and ending June 30, 2025.

Other Legislation

Hettinger Research Extension Center
Land Purchase

The Hettinger Research Extension Center (HREC) currently utilizes 4,242 acres for grazing, forage, livestock research, and agronomic research, comprised of 1,200 acres of owned land and 3,042 acres of rented land. Rangeland research utilizes 3,328 acres, crop research 117 acres, feedstocks production 510 acres, facilities 90 acres, and non-ag lands 197 acres. Currently 28% of the land the HREC conducts research on is owned by NDSU, with the remaining being rented. Of the rented land, 1,379 acres are located near Bismarck and Mandan, ND on State Prison Lands (approximately 150 miles from the HREC), with the remaining rented land being in close proximity to the HREC. However, of the rented land around Hettinger, the majority of it is in its 3rd generation of rental contracts. One family has expressed a desire to sell 610 acres of land that is currently being utilized to support research programs in livestock production as well as range and wildlife. This land has been rented and used in these research programs since 2006 and this land is critical to these programs. The potential purchase of 610 acres of land would solidify the land base for these research programs. If these lands are sold our research programs will be drastically impacted as the majority of these lands have long term rangeland research being conducted on them. The family has agreed to provide the NDSU Hettinger REC the first opportunity to purchase the land before putting it up for sale privately. If sale is approved, exact acreage will be determined upon completion of a survey. The total acreage shown on the Adams County Real Estate Tax Statements is 610.96. That would represent a sales price of $1,038,632 at $1,700 per acre.

Financial Audit

North Dakota Agricultural Experiment Station, North Dakota State University Extension Services, and Northern Crops Institute

Audit Report for the Biennium Ended June 30, 2021 | *Client Code 630*

WHAT WE LOOKED AT AND WHY

North Dakota state law requires that our team perform an audit once every two years. This includes a review of financial transactions and determining that expenses are correct. Our audits report any errors, internal control weaknesses or potential violations of law identified in significant or high-risk functions of the agency.

WHAT WE FOUND

This audit did not identify any areas of concern.

North Dakota University System
NDSU Extension, Main & Branch Research Centers, and Agronomy Seed Farm
Major Components of current base level

	630 Extension	640 Main Station	641 Dickinson	642 Central Grasslands	643 Hettinger	644 Langdon	645 North Central	646 Williston	647 Carrington	649 Agronomy Seed Farm
Salaries	$ 56,118,138	$ 93,815,066	$ 2,997,958	$ 2,438,190	$ 3,140,280	$ 1,988,194	$ 3,119,558	$ 3,793,343	$ 6,679,699	$ 642,991
Operating	7,965,764	22,871,809	3,209,556	984,085	1,985,762	1,019,755	1,885,253	1,140,254	2,472,449	695,085
Equipment	-	4,600,000	1,125,000	275,000	325,000	255,000	425,000	725,000	1,225,000	300,000
Capital Projects	-	-	-	-	-	-	-	-	-	-
Total Budget	$ 64,083,902	$ 121,286,875	$ 7,332,514	$ 3,697,275	$ 5,451,042	$ 3,262,949	$ 5,429,811	$ 5,658,597	$ 10,377,148	$ 1,638,076
Funding:										
Federal Fund*	$ 9,458,045	$ 8,449,779	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
General Fund	33,334,561	61,679,166	3,845,780	2,237,929	2,529,723	1,818,980	2,185,672	3,183,301	4,137,274	-
Special Fund*	21,291,296	51,157,930	3,486,734	1,459,346	2,921,319	1,443,969	3,244,139	2,475,296	6,239,874	1,638,076
Total Funding	$ 64,083,902	$ 121,286,875	$ 7,332,514	$ 3,697,275	$ 5,451,042	$ 3,262,949	$ 5,429,811	$ 5,658,597	$ 10,377,148	$ 1,638,076

*No changes anticipated for 2023-25 biennium
Federal funds support salaries for programatic areas related to research and extension; deadlines vary among awards

Source: SHERPA 2023-25, Governor's Recommendation

Appropriation Status Reports

2021-23 Legislation that Included Reporting Requirements to 2023 Appropriations Committees – NDAES

SB2020 (NDSU Research & Extension, & Agronomy Seed Farm)

SECTION 2. ONE-TIME FUNDING - EFFECT ON BASE BUDGET - REPORT TO THE SIXTY-EIGHTH LEGISLATIVE ASSEMBLY. The following amounts reflect the one-time funding items approved by the sixty-sixth legislative assembly for the 2019-21 biennium and the 2021-2023 biennium one-time funding items included in the appropriation in section 1 of this Act:

One-Time Funding Description

Deferred maintenance - $500,000
Carrington research extension center capital projects - $775,000
Central grasslands research extension center - $525,000
Hettinger research extension center capital projects - $300,000
Langdon research extension center capital projects - $473,000

The 2021-23 one-time funding amounts are not a part of the entity's base budget for the 2023-25 biennium. The main and branch research center shall report to the appropriations committees of the sixty-eighth legislative assembly on the use of this one-time funding for the biennium beginning July 1, 2021, and ending June 30, 2023.

- Deferred maintenance
  Status: Additional deferred maintenance funds of $500,000 are on track to be spent by 6/30/2023.
- Carrington research extension capital projects
  Status: The Carrington REC feedlot research support facility project had a bid opening in July 2022 resulting in one electrical bid and no general contractor bids. Project was re-advertised and bids opened in September 2022 resulting in one general contractor bid for $1,090,000. This bid was not accepted. The feedlot pen expansion project received one bid of $295,000 for the concrete portion of the pen expansion. The bid did not include the needed feedlot equipment which will be purchased separately. Requesting additional funding and carryover to complete projects.
- Central Grasslands research extension capital projects
  Status: One of the two pasture facilities is complete. The second pasture facility is approximately 50% complete. Completion is scheduled for May 2023. The REC residence project was bid in August 2022 with no bids submitted. Requesting additional authorization and carryover.
- Hettinger research extension capital projects
  Status: Hettinger REC storage shed is complete. The size of the shed was decreased from the original planned size to stay within budget.
- Langdon research extension capital projects
  Status: One bid was received for $724,430 in June 2022. Architect has suggested to rebid the project in spring 2023. Requesting additional funding and carryover.

SECTION 3. DICKINSON RESEARCH EXTENSION CENTER - MINERAL RIGHTS INCOME. The Dickinson research extension center may spend up to $755,000 of revenues received during the 2021-23 biennium from mineral royalties, leases, or easements for ongoing operational expenses. Any revenues received in excess of $755,000 may be spent only for one-time expenditures for the biennium beginning July 1, 2021, and ending June 30, 2023.

Status: Oil revenue received July 1, 2021 to December 31, 2022 - $188,522

SECTION 4. WILLISTON RESEARCH EXTENSION CENTER - MINERAL RIGHTS INCOME. The Williston research extension center shall report to the sixty-eighth legislative assembly on amounts received and spent from mineral royalties, leases, or easements in the biennium beginning July 1, 2019, and ending June 30, 2021, and the biennium beginning July 1, 2021, and ending June 30, 2023.

Status: July 1, 2019 to June 30, 2021 - Amounts received $16,425; Amounts spent $21,250
July 1, 2021 to December 31, 2022 - Amounts received $773,251; Amounts spent $147,999

SECTION 10. EXEMPTION. The $500,000 of other funds appropriated for the Williston research extension center greenhouse and the $750,000 from the general fund appropriated for the Williston research extension center seed cleaning plant in subdivision 4 of section 1 of chapter 20 of the 2019 Session Laws and the $1,500,000 of other funds appropriated for the Williston research extension center seed cleaning plant in subdivision 5 of section 1 of chapter 45 of the 2017 Session Laws continued into the 2019-21 biennium pursuant to section 10 of chapter 20 of the 2019 Session Laws are not subject to the provisions of section 54-44.1-11, and any unexpended funds from these appropriations or related revenues are available and may be expended during the biennium beginning July 1, 2021, and ending June 30, 2023.

Carryover Status:

	OF Carryover	General Fund Carryover	Status
Williston greenhouse	$500,000		$500,000 raised; additional authorization and carryover requested
Williston seed cleaning plant	$1,500,000	$750,000	Project is complete

NDSU Extension Service - 630

Comparison of 2021-23 Appropriation and Estimated Spending

	2021-23 Appropriation	Actual Expenditures Through 11/30/22	Remaining Balance	Comments
Total General Fund Appropriation	**$ 29,437,823**	**$ 18,209,001**	**$ 11,228,822**	**--Balance will be drawn down for expenditures by end of biennium.**

Source: November 2022 Appropriation Status Report

Note: No significant changes anticipated in federal formula funds or federal grants

NDSU Main Research Station - 640

Comparison of 2021-23 Appropriation and Estimated Spending

	2021-23 Appropriation	Actual Expenditures Through 11/30/22	Remaining Balance	Comments
Total General Fund Appropriation	**$55,088,232**	**$34,049,009**	**$ 21,039,223**	**--Balance will be drawn down for expenditures by end of biennium.**

Source: November 2022 Appropriation Status Report

Note: No significant changes anticipated in federal formula funds or federal grants

NDSU Dickinson Research Center- 641

Comparison of 2021-23 Appropriation and Estimated Spending

	2021-23 Appropriation	Actual Expenditures Through 11/30/22	Remaining Balance	Comments
Total General Fund Appropriation	**$ 3,592,104**	**$ 2,399,907**	**$ 1,192,197**	**--Balance will be drawn down for expenditures by end of biennium.**

Source: November 2022 Appropriation Status Report

Note: No significant changes anticipated in federal formula funds or federal grants

NDSU Central Grasslands Research Center- 642

Comparison of 2021-23 Appropriation and Estimated Spending

	2021-23 Appropriation	Actual Expenditures Through 11/30/22	Remaining Balance	Comments
Total General Fund Appropriation	**$ 2,122,228**	**$ 1,502,750**	**$ 619,478**	**--Balance will be drawn down for expenditures by end of biennium.**

Source: November 2022 Appropriation Status Report

Note: No significant changes anticipated in federal formula funds or federal grants

NDSU Hettinger Research Center- 643

Comparison of 2021-23 Appropriation and Estimated Spending

	2021-23 Appropriation	Actual Expenditures Through 11/30/22	Remaining Balance	Comments
Total General Fund Appropriation	**$ 2,329,409**	**$ 1,603,834**	**$ 725,575**	**--Balance will be drawn down for expenditures by end of biennium.**

Source: November 2022 Appropriation Status Report

Note: No significant changes anticipated in federal formula funds or federal grants

NDSU Langdon Research Center- 644

Comparison of 2021-23 Appropriation and Estimated Spending

	2021-23 Appropriation	Actual Expenditures Through 11/30/22	Remaining Balance	Comments
Total General Fund Appropriation	**$ 1,689,312**	**$ 1,159,469**	**$ 529,843**	**--Balance will be drawn down for expenditures by end of biennium.**

Source: November 2022 Appropriation Status Report

Note: No significant changes anticipated in federal formula funds or federal grants

NDSU North Central Research Center- 645

Comparison of 2021-23 Appropriation and Estimated Spending

	2021-23 Appropriation	Actual Expenditures Through 11/30/22	Remaining Balance	Comments
Total General Fund Appropriation	**$ 2,069,772**	**$ 1,190,252**	**$ 879,520**	**--Balance will be drawn down for expenditures by end of biennium.**

Source: November 2022 Appropriation Status Report

Note: No significant changes anticipated in federal formula funds or federal grants

NDSU Williston Research Center- 646

Comparison of 2021-23 Appropriation and Estimated Spending

	2021-23 Appropriation	Actual Expenditures Through 11/30/22	Remaining Balance	Comments
Total General Fund Appropriation	**$ 2,923,825**	**$ 1,850,010**	**$ 1,073,815**	**--Balance will be drawn down for expenditures by end of biennium.**

Source: November 2022 Appropriation Status Report

Note: No significant changes anticipated in federal formula funds or federal grants

NDSU Carrington Research Center- 647

Comparison of 2021-23 Appropriation and Estimated Spending

	2021-23 Appropriation	Actual Expenditures Through 11/30/22	Remaining Balance	Comments
Total General Fund Appropriation	**$ 3,842,833**	**$ 2,452,554**	**$ 1,390,279**	**--Balance will be drawn down for expenditures by end of biennium.**

Source: November 2022 Appropriation Status Report

Note: No significant changes anticipated in federal formula funds or federal grants

NDSU Agronomy Seed Farm- 649

Comparison of 2021-23 Appropriation and Estimated Spending

	2021-23 Appropriation	Actual Expenditures Through 11/30/22	Remaining Balance	Comments
Total Appropriation	**$ 1,579,655**	**$ 962,197**	**$ 617,458**	

Source: November 2022 Appropriation Status Report

Note: No significant changes anticipated in federal formula funds or federal grants

Financial Schedules

North Dakota University System
NDSU Extension, Main and Branch Research Centers
Reconciliation of 2021-23 Orig. General Fund Appropriation to 2023-25 Executive Recommendation

	NDSU Extension	Main Research Center	Branch Research Centers
2021-23 Original General Fund Appropriation	**$ 29,437,823**	**$ 55,088,232**	**$ 18,569,483**
2021-23 Adjusted GF Appropriation	**29,437,823**	**55,088,232**	**18,569,483**
Base Adjustments:			
Capital Bond Payment adjustment		(178,069)	(63,173)
Less 2021-23 One-time Deferred Maintenance		(500,000)	-
Cost to Continue Salary Increase	227,797	392,772	122,123
2021-23 Adjusted Appropriation, Less Base Adjustments- (2023-25 Base Budget Request)	**29,665,620**	**54,802,935**	**18,628,433**
Executive Recommendation Base Increases (Decreases):			
Cropping Systems Initiative SBARE #1 5 FTE	1,400,000	-	
Big Data Initiative SBARE #3 3 FTE		838,000	
Climate Smart Agriculture SBARE #4 2 FTE		458,200	
Bee and Apiary Research SBARE #5 (Tie) 2 FTE		458,200	
Precision Agriculture SBARE #5 (Tie)		600,000	
Compensation package salary/benefit /health insurance increases	2,268,941	4,521,831	1,310,226
2023-25 Recommended Base General Fund Increases(Decreases)	**3,668,941**	**6,876,231**	**1,310,226**
2023-25 Total Executive Recommendation - General Fund	**33,334,561**	**61,679,166**	**19,938,659**
Increase (Decrease) From 2021-23 Adjusted Appropriation, Less Base Adjustments	**$ 3,668,941**	**$ 6,876,231**	**$ 1,310,226**
Full-time equivalent positions 2021-23	123.67	204.19	78.11
Full-time equivalent positions 2023-25 Executive Recommendation	115.27	214.79	70.25

North Dakota University System
NDSU Extension, Main & Branch Research Centers and Agronomy Seed Farm
Reconciliation of 2021-23 Original Other Fund Budget Appropriation to 2023-25 Executive Recommendation

	NDSU Extension	Main Research Center	Branch Research Centers	Agronomy Seed Farm
2021-23 Original Other Fund Appropriation	**$ 28,303,921**	**$ 59,160,956**	**$ 20,722,818**	**$ 1,579,655**
Cost to Continue Salary Increase	108,985	117,136	18,337	4,604
Remove Capital Project CREC	-	(775,000)	-	-
Remove Capital Project CGREC		(525,000)		
Remove Capital Project HREC	-	(300,000)	-	-
Remove Capital Project LREC	-	(473,000)	-	-
2023-25 Adjusted Other Fund Appropriation(Base Budget Request)	**$ 28,412,906**	**$ 57,205,092**	**$ 20,741,155**	**$ 1,584,259**
Executive Recommendation Base Increases (Decreases):				
Compensation package salary/benefit /health insurance increases	2,336,435	2,402,617	529,522	53,817
One-time deferred maintenance(SIIF)	-	720,000	-	-
One-time AES equipment storage sheds(SIIF)	-	1,900,000	-	-
Total Executive Recommendation Increases	**2,336,435**	**5,022,617**	**529,522**	**53,817**
2023-25 Total Executive Recommendation - Other Funds	**$ 30,749,341**	**$ 62,227,709**	**$ 21,270,677**	**$ 1,638,076**
Increase (Decrease) From 2021-23 Adjusted Appropriation, Less Base Adjustments	**2,336,435**	**5,022,617**	**529,522**	**53,817**
Full-time equivalent positions 2021-23	118.10	130.37	30.10	3.00
Full-time equivalent positions 2023-25 Executive Recommendation	135.43	142.68	39.56	3.00

North Dakota University System
Branch Research Centers
Reconciliation of 2021-23 Orig. General & Other Fund Appropriation to 2023-25 Executive Recommendation

	Dickinson	Central Grasslands	Hettinger	Langdon	North Central	Williston	Carrington	Total
General Fund:								
2021-23 Original General Fund Appropriation	$ 3,592,104	$ 2,122,228	$ 2,329,409	$ 1,689,312	$ 2,069,772	$ 2,923,825	$ 3,842,833	$ 18,569,483
								-
2021-23 Adjusted GF Appropriation	**3,592,104**	**2,122,228**	**2,329,409**	**1,689,312**	**2,069,772**	**2,923,825**	**3,842,833**	**18,569,483**
Base Adjustments:								
Capital Bond Payment adjustment		(24,026)			(39,147)			(63,173)
Remove one time funding								-
Remove Capital Project								-
Cost to Continue Salary Increase	19,612	9,255	18,290	13,350	15,330	20,352	25,934	122,123
2023-25 Adjusted Appropriation, Less Base Adjustments	**3,611,716**	**2,107,457**	**2,347,699**	**1,702,662**	**2,045,955**	**2,944,177**	**3,868,767**	**18,628,433**
Executive Recommendation Increases (Decreases):								
Compensation package salary/benefit /health insurance increases	234,064	130,472	182,024	116,318	139,717	239,124	268,507	1,310,226
SBARE Initiatives								
2021-23 Recommended Base General Fund increases	**234,064**	**130,472**	**182,024**	**116,318**	**139,717**	**239,124**	**268,507**	**1,310,226**
2023-25 Total Executive Recommendation - General Fund	$ 3,845,780	$ 2,237,929	$ 2,529,723	$ 1,818,980	$ 2,185,672	$ 3,183,301	$ 4,137,274	$ 19,938,659
Increase (Decrease) From 2021-23 Adjusted Appropriation, Less Base Adjustments	$ 234,064	$ 130,472	$ 182,024	$ 116,318	$ 139,717	$ 239,124	$ 268,507	$ 1,310,226
Full-time equivalent positions 2021-23	13.70	10.00	10.75	7.70	7.71	12.70	17.55	80.11
Full-time equivalent positions 2023-25 Executive Recommendation	13.20	8.50	9.80	5.79	6.71	11.70	14.55	70.25
Other Funds:								
2021-23 Original Other Fund Appropriation	$ 3,486,734	$ 1,431,092	$ 2,845,476	$ 1,401,998	$ 3,133,479	$ 2,438,909	$ 5,985,130	$ 20,722,818
Cost to Continue Salary Increase			1,809	181	2,659	1,802	11,886	**18,337**
Remove Capital Project								-
2021-23 Adjusted Other Fund Appropriation	$ 3,486,734	$ 1,431,092	$ 2,847,285	$ 1,402,179	$ 3,136,138	$ 2,440,711	$ 5,997,016	$ 20,741,155
Executive Recommendation Increases (Decreases):								
Compensation package salary/benefit /health insurance increases	-	28,254	74,034	41,790	108,001	34,585	242,858	529,522
		-						-
2023-25 Recommended Base Other Fund Increases	**-**	**28,254**	**74,034**	**41,790**	**108,001**	**34,585**	**242,858**	**529,522**
2023-25 Total Executive Recommendation - Other Funds	$ 3,486,734	$ 1,459,346	$ 2,921,319	$ 1,443,969	$ 3,244,139	$ 2,475,296	$ 6,239,874	$ 21,270,677

2023-25 Budget Request
North Dakota Agricultural Experiment Station

	2023-25 SBARE Priority List	FTE	Executive Recommendation	FTE
Main Research Center				
SBARE #1: Plant Production and Protection Initiative	$1,580,000		$0	
Agronomist (DREC)	$252,000	1.0	$0	-
Plant bacteriologist	$252,000	1.0	$0	-
Plant bacteriologist technician	$176,000	1.0	$0	-
Plant virologist	$252,000	1.0	$0	-
Plant virologist technician	$176,000	1.0	$0	-
Pulse breeding technician	$176,000	1.0	$0	-
Technician for clubroot fungus (LREC)	$176,000	1.0	$0	-
Operating	$120,000		$0	-
SBARE #2: Operating Support	$2,194,000		$0	
Grant development positions	$594,000	3.0	$0	-
Graduate research assistantships	$720,000		$0	-
Main Station and RECs-operating	$480,000		$0	-
Oakes Irrigation Research Site-operating	$400,000		$0	-
SBARE #3: Big Data Initiative	$838,000		$838,000	
Data analytics, management and curation position	$319,000	1.5	$319,000	1.5
NDAWN position	$319,000	1.5	$319,000	1.5
Operating	$200,000		$200,000	
SBARE #4: Climate Smart Agriculture	$458,200		$458,200	
Climate smart agricultural scientist	$242,200	1.0	$242,200	1.0
Climate smart agricultural technician	$176,000	1.0	$176,000	1.0
Operating	$40,000		$40,000	
SBARE #5 (Tie): Bee and Apiary Research	$458,200		$458,200	
Bee and apiary scientist (HREC)	$242,200	1.0	$242,200	1.0
Bee and apiary research technician (HREC)	$176,000	1.0	$176,000	1.0
Operating	$40,000		$40,000	
SBARE #5 (Tie): Precision Agriculture			$600,000	
Operating	$600,000		$600,000	
SBARE - Base Increase - Main Research Station	**$6,128,400**	**17.0**	**$2,354,400**	**7.0**
ONE-TIME & CAPITAL FUNDING				
Deferred maintenance	$1,440,465		$720,000	
Equipment for an ag biotech innovation core	$1,000,000		-	
Capital:				
SBARE #1 Field lab facility	$97,000,000		-	
SBARE #2 AES Equipment storage sheds (8 sheds)	$3,325,000		$1,900,000	
SBARE #3 Nesson Valley facility	$1,700,000		-	
SBARE #4 Precision agriculture facility	$55,000,000		-	
SBARE #5 Dairy barn	$1,700,000		-	
Total One-time & capital funding-North Dakota Agricultural Experiment Station	**$161,165,465**		**$2,620,000**	

2023-25 Budget Request
NDSU Extension

	2023-25 SBARE Priority List	FTE	Executive Recommendation	FTE
NDSU Extension				
SBARE #1 Cropping Systems Initiative	$1,400,000		$1,400,000	
Western ND crop production specialist	$200,000	1.0	$200,000	1.0
Soybean pathologist (campus)	$200,000	1.0	$200,000	1.0
Weed specialist	$200,000	1.0	$200,000	1.0
Carbon credit specialist	$200,000	1.0	$200,000	1.0
Operating	$200,000		$200,000	
On-farm research coordinator	$200,000	1.0	$200,000	1.0
On-farm Operating	$200,000		$200,000	
SBARE #2 Livestock Development Initiative	$770,000		$0	
Veterinary epidemiologist	$250,000	1.0		
Swine specialist	$200,000	1.0		
Off-campus livestock development specialist	$200,000	1.0		
Operating	$120,000			
SBARE #3 Farm and Ranch Health and Safety Initiative				
Farm and ranch health and safety resources operating	$250,000		$0	
SBARE #4 Program Support for 4-H Initiative	$320,000		$0	
4-H entrepreneurship specialist	$200,000	1.0		
4-H program operating support - including camping, clubs, after-school	$120,000			
SBARE #5				
Extension and State Soil Conservation Committee Operating Support Initiative	$600,000		$0	
Extension program operating support	$300,000			
SSCC operating support	$300,000			
SBARE #6 Increased Food Security Initiative	$400,000		$0	
Urban ag/value-added food technologies specialist	$200,000	1.0		
Operating support, including 2 new horticulture agents (western ND and in partnership with counties)	$200,000			
SBARE - Base Increase - NDSU Extension Service	**$3,740,000**	**10.0**	**$1,400,000**	**5.0**

CARES Act Schedule

Federal Coronavirus Relief Fund
CARES Act
Federal Funding made available by Emergency Commission and Budget Section Action
As of 09/27/2022

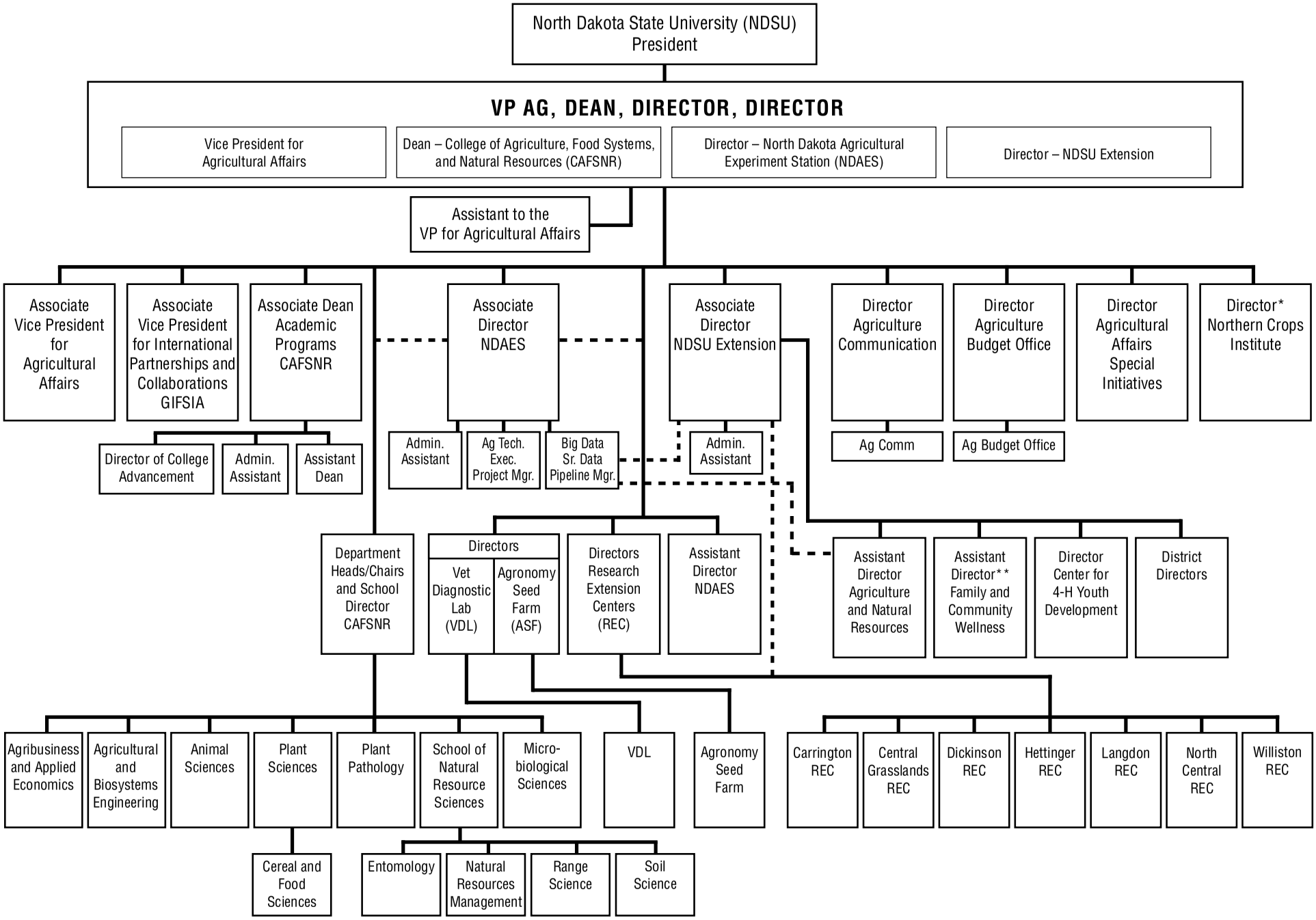
June 25, 2020

Agency	Amount Awarded	Amount Spent	To Be Spent/Invoiced	Purpose
Main Research Center	$ 989,968	$ 989,968	$ -	Technology and equipment for remote work, additional labor, travel, PPE, additional cleaning & physical barriers
Branch Research Centers (total)	$ 726,007	$ 726,007	$ -	Technology and video conferencing, employee teleworking, additional labor, travel, PPE, additional cleaning and physical barriers, other
NDSU Extension	$ 855,400	$ 855,400	$ -	Technology to enhance remote program delivery, PPE, sanitizing supplies/kiosks, telework for Extension programs
	$ 2,571,375	$ 2,571,375	$ -	

August 13, 2020

Agency	Amount Awarded	Amount Spent	To Be Spent/Invoiced	Purpose
Main Research Center	$ 174,999	$ 174,999	$ -	Digital Pathology slide scanner; Install HVAC Ionization equipment
Branch Research Centers (total)	$ 105,000	$ 105,000	$ -	Install HVAC Ionization equipment at each location
	$ 279,999	$ 279,999	$ -	

Organizational Charts

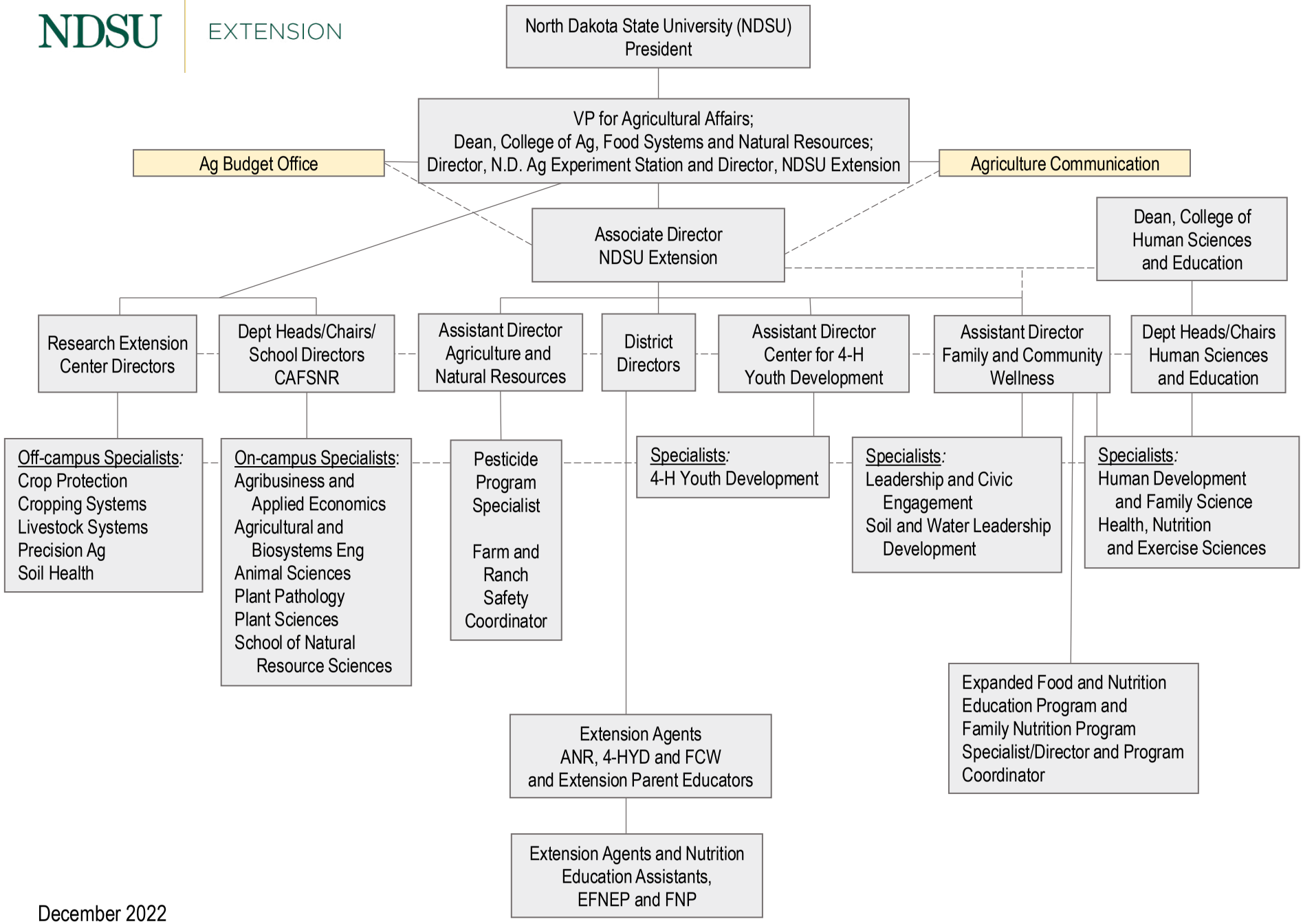


*Director reports to Northern Crops Council. NDSU administrative reporting only.

**Extension faculty and staff in the Department of Human Development and Family Science and the Department of Health, Nutrition and Exercise Sciences (not shown on this chart) report to their respective department head/chair and are co-supervised by the Assistant Director for Family and Community Wellness.

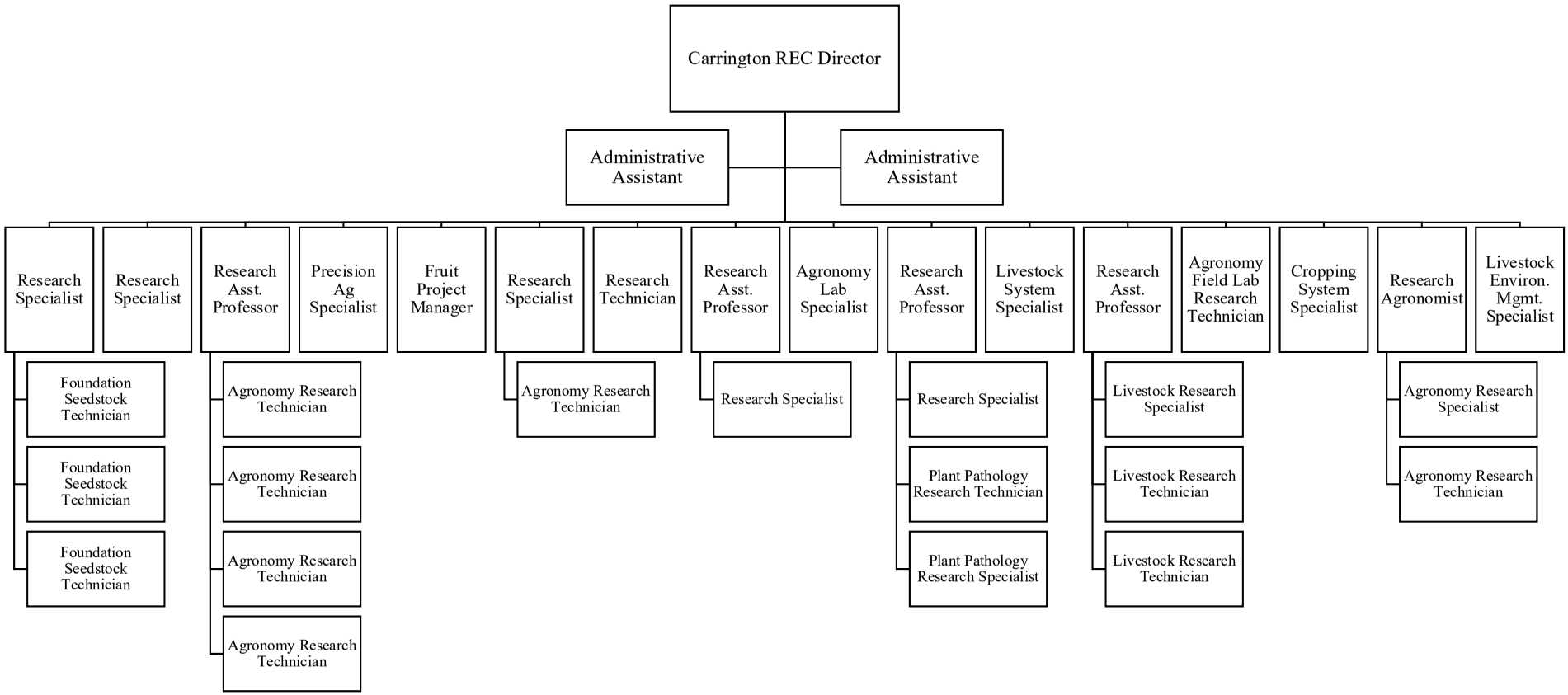
11/15/22

NDSU | EXTENSION

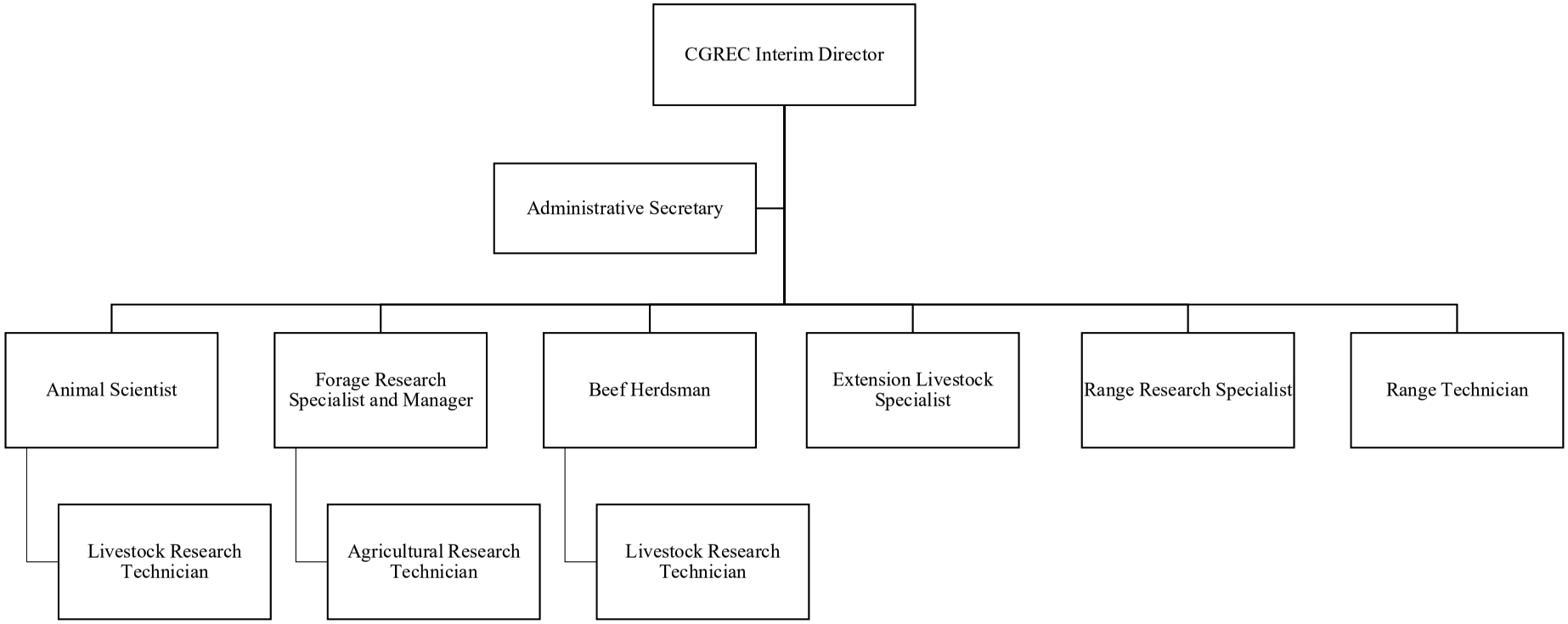


December 2022

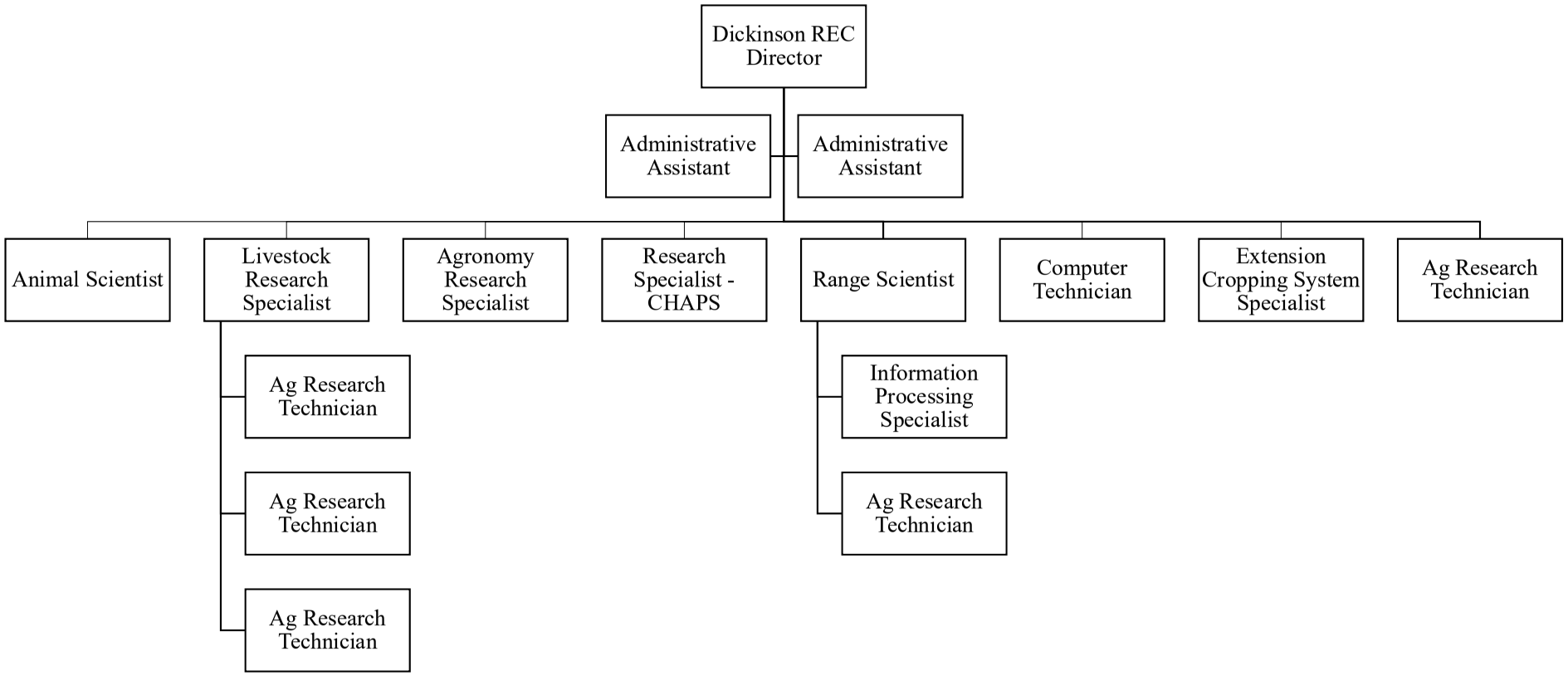
2023 NDSU Carrington REC Organizational Chart



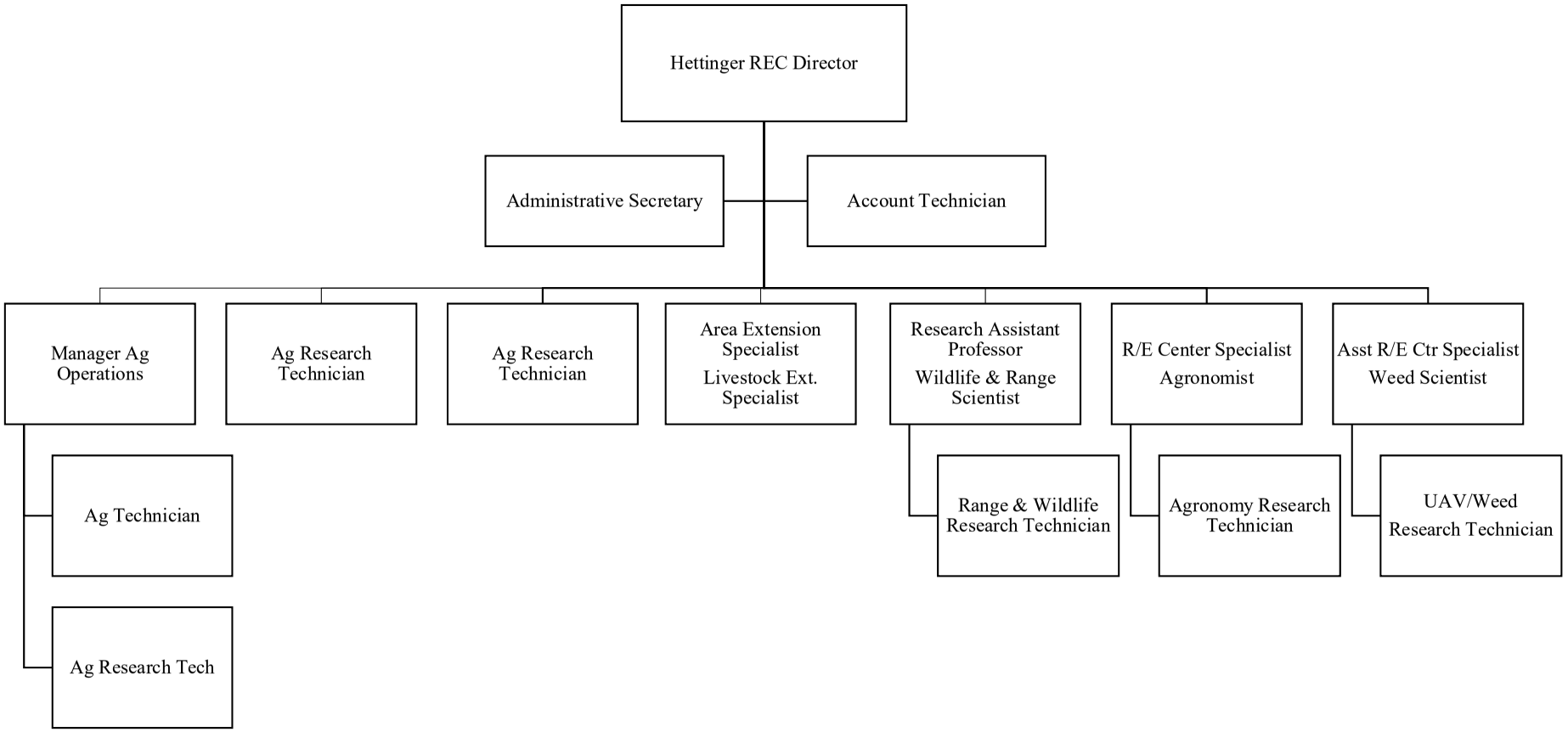
2023 NDSU Central Grasslands REC Organizational Chart



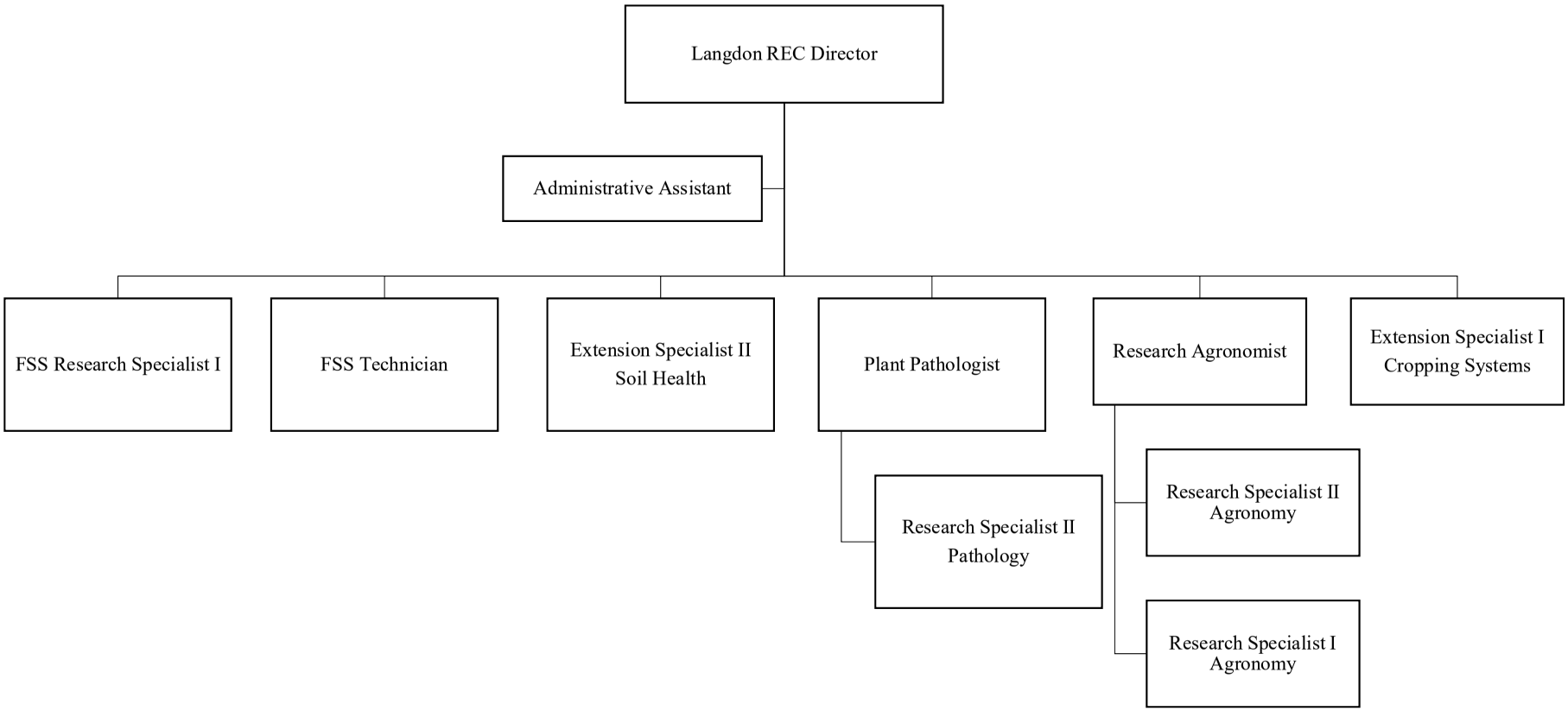
2023 NDSU Dickinson REC Organizational Chart



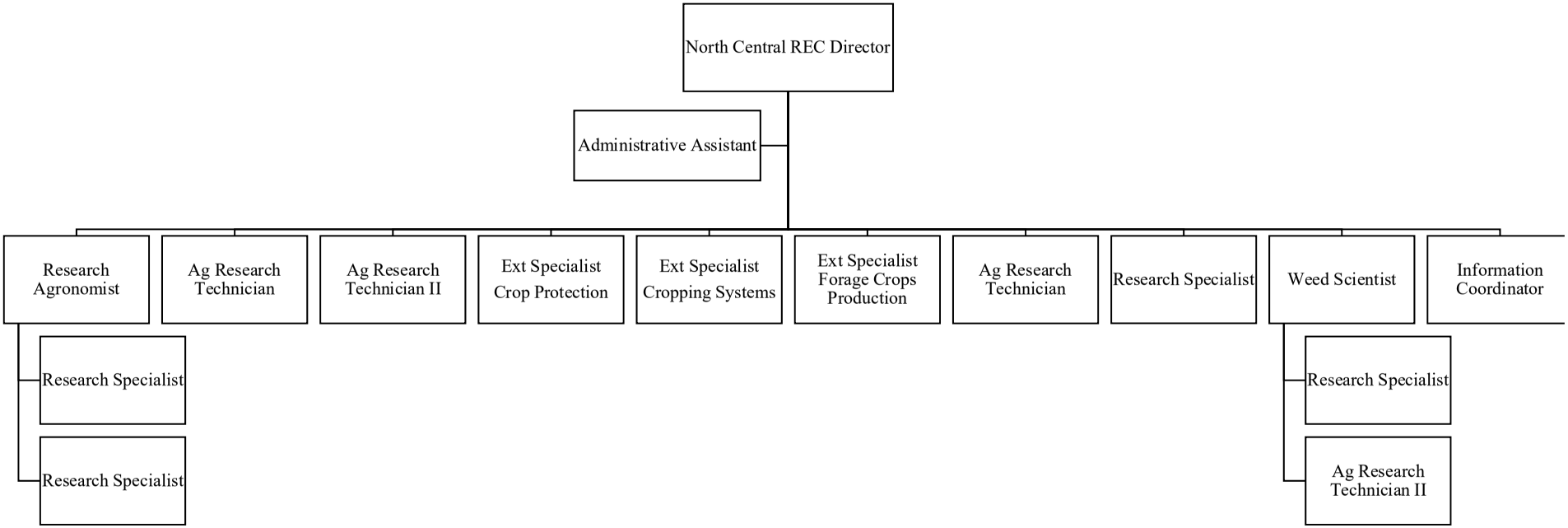
2023 NDSU Hettinger REC Organizational Chart



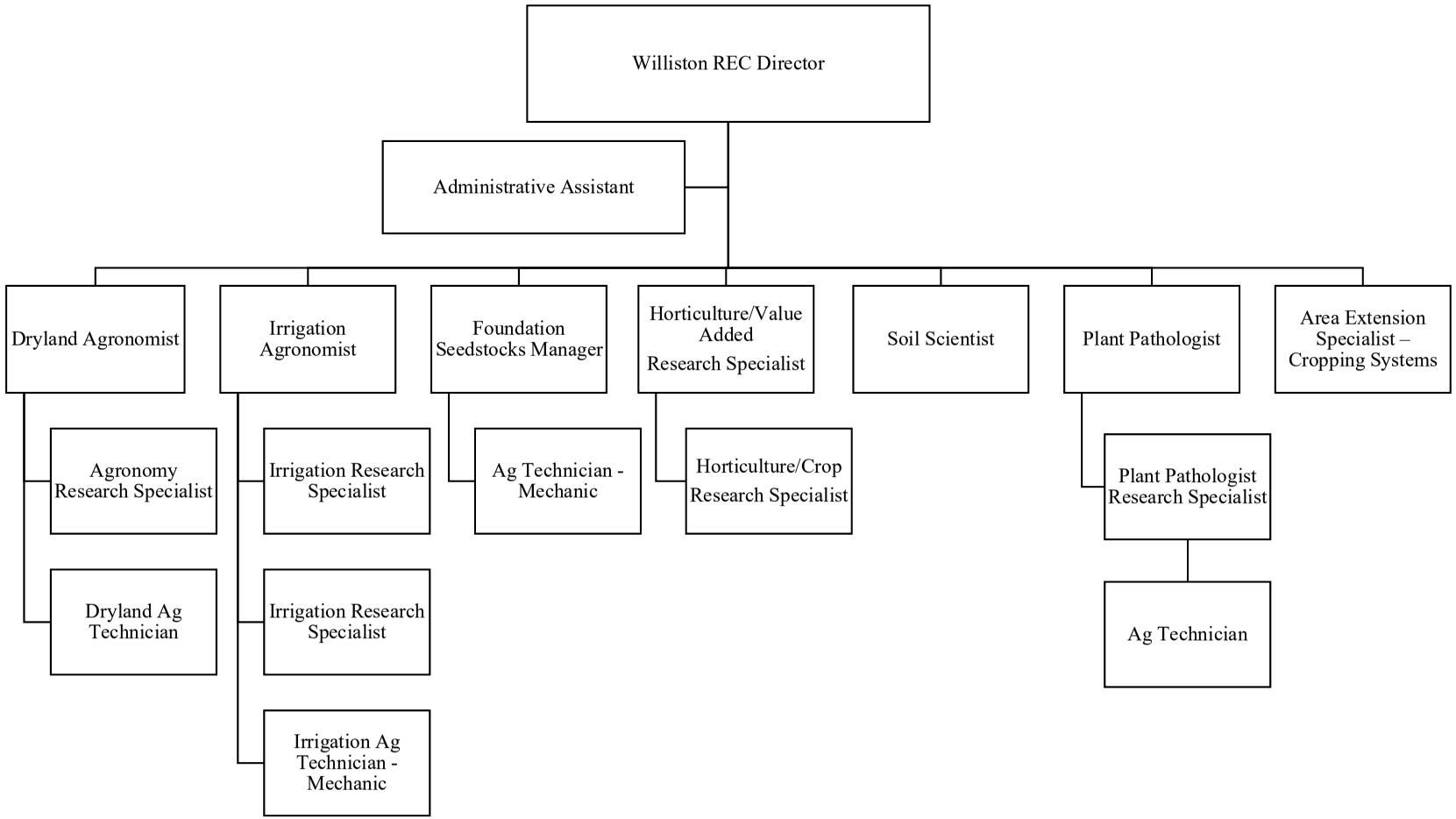
2023 NDSU Langdon REC Organizational Chart



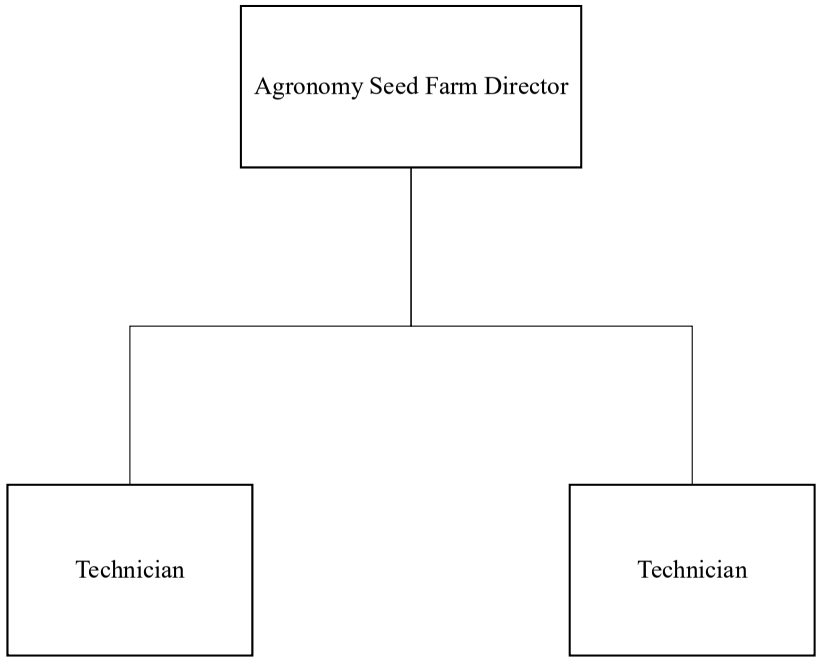
2023 NDSU North Central REC Organizational Chart



2023 NDSU Williston REC Organizational Chart



2023 NDSU Agronomy Seed Farm Organizational Chart



North Dakota Agricultural Experiment Station

NDSU Extension

2023-2025
Biennial Budget Request

House Bill 1020

Government Operations Division

Representative David Monson, Chair

January 16, 2023

NDSU NORTH DAKOTA STATE UNIVERSITY