

# SB2020 - Government Operations Appropriations

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# 1. ND Agricultural Experiment Station and NDSU Extension Impacts

## Impact & Value of NDAES Research

The North Dakota Agricultural Experiment Station (NDAES) drives agricultural innovation, economic growth, and long-term sustainability. Research investments enhance crop productivity, resilience, and profitability, strengthening North Dakota's \$41 billion agricultural economy.

### High Return on Investment

- Every \$1 invested in agricultural research yields \$37 in economic returns.
- 24.9% ROI (1960-2011)—exceeding the U.S. average.
- Direct contributions to farm income, agribusiness, and rural communities.

### Productivity & Innovation

- Advances in genomics, AI-driven analytics, and precision breeding are accelerating the development of high-yield, resilient crop varieties. In the past two years, these innovations have led to the release of two grape varieties, three hard red spring wheat varieties, one white spring wheat, one winter wheat, two bean varieties, and two oat varieties—each uniquely adapted to North Dakota's climate, ensuring the competitiveness of our farmers.
- Cutting-edge precision agriculture improves efficiency, crop protection, and sustainability.
- Spring Wheat: NDSU varieties cover 11% of ND acreage, economic impact \$69M-\$284M. In the last two years, three hard red spring wheat varieties were released including, ND Stampede, a particularly strong performer.
- Durum Wheat: 90% of ND acreage from NDSU varieties, adding \$276.6M annually.
- Soybeans: NDSU glyphosate-resistant varieties save \$30/acre, reducing input costs.
- Dry Beans: 30% of ND/MN acreage, \$790 ROI per \$1 invested. In the last two years, a pink bean and black bean, ND Galaxy, were released.
- Potatoes: 38% of ND and 21% of MN-certified seed from NDSU, Dakota Russet among top U.S. cultivars.

***Additional NDAES impacts can be found on pages 7-8 of the budget book.***

## Impact and Value of NDSU Extension Education

NDSU Extension provides science-based education that improves the economic, health and community conditions for North Dakotans. We emphasize strengthening agriculture, stimulating communities, developing youths' potential, building strong families and protecting the natural resources.

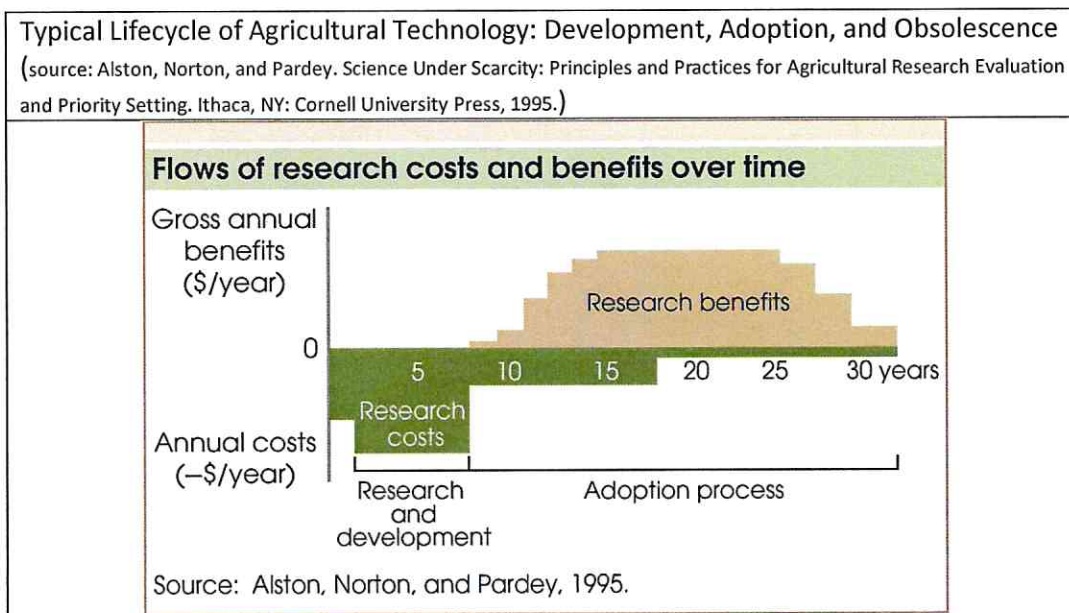
### Increasing Profits, Saving Money and Building the Workforce

- Cattle Producer Support: In 2023-2024, feedout project participants saw an average increase of \$200 per head in profit, generating \$35,008 in additional revenue. The backgrounding cattle management video series reached 1,839 viewers, and Feedlot School participants reported a 33% knowledge increase, improving cattle feeding profitability.
- Pesticide Safety Program: Trained 7,208 individuals on proper pesticide use, reducing environmental risks and supporting food security.
- Fusarium Head Blight Management: NDSU Extension's guidance saved wheat producers \$500,000 to \$2 million in input costs and helped achieve a new state average yield record of 56.9 bushels per acre.
- Livestock Risk Protection Insurance: Extension educated producers about USDA Livestock Risk Protection insurance, leading to 169,398 head of cattle being insured in 2024, with over \$4.5 million in indemnity payments to manage market volatility.

- NDSU Extension Master Gardeners (EMGs): Since 2014, EMGs have donated 202,322 pounds of fresh produce, providing 809,288 servings to those in need. They also distribute free vegetable seeds and offer gardening education, helping communities address food insecurity and grow their own healthy food.
- 4-H Youth Development: Reached 40,188 youth—1 in 5 North Dakota youth—through 4-H programs in 2024, promoting leadership, community involvement, and positive development.
  - Impact of 4-H Participation: Tufts University’s study shows 4-H youth are 4x more likely to contribute to their communities, 2x more likely to engage in science programs, and 3x more likely to feel competent and make healthier choices.
  - Volunteer Contribution: 1,458 volunteers contribute an average of 9 hours per month, providing \$5.24 million in volunteer value, with 98% helping youth prepare for future careers.
- Aging in Community: In 2024, 4,270 community members were reached, with 85% feeling more connected to local resources and 84% gaining valuable knowledge.
  - Cost Savings: For every \$1 spent in 2024, North Dakota potentially saved \$308 in Medicaid costs by helping individuals remain in their homes.

**Additional NDSU Extension Impacts can be found on pages 67-68 of the budget book.**

Agricultural research and Extension efforts often take time to produce measurable impacts due to the long-term nature of the work involved. Unlike other disciplines that may yield quicker results, agricultural research addresses complex systems that evolve over years or even decades. For instance, studies on crop yields, soil health, pest management, and weather adaptation require multiple growing seasons to be assessed and understood fully. Additionally, implementing new farming practices or technologies takes time, as farmers must adopt, experiment with, and see the benefits over time. Extension services, vital for sharing research findings with farmers, also require time to train and support producers effectively. These elements combined mean that the effects of agricultural research and Extension programs develop gradually, relying on the accumulation of knowledge, changes in farmer behavior, and environmental responses. This long-term perspective is essential for fostering sustainable improvements in agricultural practices.



a. NDAES and NDSU Extension funded Initiatives from 2019-2020 to present and their progress and impacts

**NDAES: Major initiatives and FTEs funded in the last three bienniums and the impacts of each.**

2019-2020				
Initiative	Funding	FTEs	Location of FTEs	Impacts and what has been accomplished
Scientist and technician (microbe-livestock)	\$ 355,000	2	NDSU Campus	<p><b>Progress</b></p> <ul style="list-style-type: none"> <li>Established an interdisciplinary agri biome research program.</li> <li>Hired two research scientists specializing in livestock (Dr Samat Amat) and crop (Dr Barney Geddes) microbiomes.</li> <li>Added two research technicians to support laboratory and fieldwork.</li> </ul> <p><b>Impacts - Livestock Microbiome</b></p> <ul style="list-style-type: none"> <li>Optimizing Feed Efficiency: Investigating maternal microbiome influence on calf growth.</li> <li>New Pinkeye Prevention: Identified beneficial bacteria as a potential antibiotic-free solution.</li> <li>Enhancing Fertility: Studying microbiome-driven improvements in cattle reproduction.</li> </ul> <p><b>Impacts - Crop Microbiome</b></p> <ul style="list-style-type: none"> <li>Improving Nodulation in Legumes: Enhancing rhizobia performance for better nitrogen fixation.</li> <li>Strengthening Disease Resistance: Investigating microbial solutions for root rot and iron deficiency chlorosis.</li> <li>Fusarium Head Blight Mitigation: Developing microbial consortia to reduce disease prevalence.</li> <li>Commercializing Microbial Inoculants: Bringing scientific breakthroughs into farmers' hands.</li> </ul>
Scientist and technician (organismal-plant)	\$ 355,000	2	NDSU Campus	

2021-2023					<p><b>Progress</b></p> <ul style="list-style-type: none"> <li>• NDawn Modernization: Hired two programmers to upgrade outdated technology, improving data processing, cybersecurity, and system stability. Developed new weather-based decision tools and enhanced website functionality for farmers.</li> <li>• Agricultural Data Analytics Expansion: Hired two experts in database management and predictive modeling to improve data utilization. Developed advanced data pipelines and predictive models, creating tools that support plant breeders and agronomists in precision agriculture.</li> </ul> <p><b>Impacts</b></p> <ul style="list-style-type: none"> <li>• Developed the Nexus Data Hub to centralize agricultural applications and data, AgSkySight for AI-driven drone image analysis, and PredictPro to integrate genetic and phenotypic data in breeding programs. Improved database tools such as ExLibris for advanced crop data analysis and an Admin Panel for easier database management.</li> <li>• Broad Recognition: Increased collaboration with industry, government, and research institutions at national and global levels, positioning NDSU Agriculture as a leader in agricultural data science.</li> </ul>
2023-2025					<p><b>Progress</b></p> <ul style="list-style-type: none"> <li>• Dr. Krishna Katuwal began his role as Research Agronomist in February 2024.</li> <li>• Led three research projects in 2024 focused on crop yield and soil health.</li> <li>• Authored two research reports on sulfur fertilizer impacts.</li> <li>• Participated in four outreach events, engaging with farmers and industry professionals.</li> <li>• Secured over \$300,000 in external funding for ongoing and future research.</li> <li>• Developed six research projects for 2025, in collaboration with multiple stakeholders.</li> </ul> <p><b>Impacts</b></p> <ul style="list-style-type: none"> <li>• Advancing Agricultural Research: Enhanced understanding of sulfur fertilization in wheat and canola.</li> <li>• Enhancing Farmer Education &amp; Outreach: Provided practical guidance to farmers through events and publications.</li> <li>• Strengthening Agricultural Innovation: Supported UAV-guided precision agriculture research.</li> <li>• Expanding Research Capacity: Built collaborative research initiatives within NDSU and with external agencies.</li> </ul>
Technician for clubroot fungus	\$ 176,000	1	LREC		<p><b>Progress</b></p> <ul style="list-style-type: none"> <li>• Larissa Jennings hired in August 2023 to support research on clubroot disease in canola.</li> <li>• Conducted a statewide survey mapping clubroot pathogen distribution.</li> </ul> <p><b>Impacts</b></p> <ul style="list-style-type: none"> <li>• Understanding Disease Spread: Established baseline data on clubroot occurrence in North Dakota.</li> <li>• Targeting Research in High-Risk Areas: Positioned for future studies in identified hot spots.</li> </ul>

NDAWN position	\$ 220,000	1	NDSU Campus	<p><b>Progress</b></p> <ul style="list-style-type: none"> <li>• Hired one computer programmer to support NDAWN modernization.</li> <li>• Continued efforts initiated in the 2021-2023 legislative session.</li> </ul> <p><b>Impacts</b></p> <ul style="list-style-type: none"> <li>• Cattle Comfort Index: Launched to assist ranchers in managing livestock during extreme weather.</li> <li>• Soybean White Mold Index: Scheduled for release in 2025, addressing a major crop disease.</li> <li>• New NDAWN Website: Mobile-friendly platform under testing.</li> <li>• Website Enhancements: Improved data access and usability for farmers.</li> <li>• National Weather Forecast Integration: Upgrading NDAWN from reactive to predictive forecasting.</li> <li>• Camera Integration: Over 100 NDAWN stations now provide real-time images for transportation management.</li> </ul>
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**NDSU Extension: Major initiatives and FTEs funded in the last three bienniums and the impacts of each.**

2019-2020	Funding	FTEs	Location of FTE	Impacts and what has been accomplished
Extension operating support	\$ 870,000		County programs	These funds provided to NDSU Extension were utilized to sustain and enhance the local delivery of Extension programs and services across North Dakota. This additional funding enabled continued partnerships with counties to support Extension agents, ensuring that local communities had direct access to valuable resources and expertise. Furthermore, the increased operating support was crucial for maintaining high-quality services from Extension specialists, allowing for the ongoing development and delivery of impactful programs statewide. As a result, NDSU Extension has successfully maintained at least one agent in every county, ensuring that residents across North Dakota can easily access the knowledge and assistance they need from NDSU, fostering individual and community growth and resilience.
Extension Web and Digital Delivery (one time funding)	\$ 345,000		Campus - web overhaul	Web contractors completed a significant redesign of the NDSU Extension website to improve technological use and better engage younger audiences, enhancing the effectiveness and efficiency of service delivery. Extension received funding to develop a new web strategy and refresh content offerings to align with future opportunities and evolving user needs. One of the key features is the Ag Hub, a centralized platform for accessing all agricultural research, publications, and extension programs.
<b>2021-2023</b>				
Livestock - Forage Specialist	\$ 200,000	1	NCREC	Dr. James Rogers was hired as the Forage Specialist for NDSU Extension in 2022. Dr. Rogers has focused on helping producers grow high-quality forages, such as sorghum-sudangrass. Using field results, he advises producers to harvest forages at the boot stage to maximize cost efficiency. At this stage, the forage meets the nutritional needs of a 1,300 lb, post-partum cow without requiring expensive supplements, keeping bale costs around \$40. He has advised that harvesting at later stages increases yield but lowers quality, necessitating added supplements and raising costs to over \$60 per bale.
Livestock Development Specialist	\$ 225,000	1	NDSU Campus	Dr. Jon Biermacher was hired as the Extension Livestock Development Specialist in 2022. Dr. Biermacher assessed the feed requirements for two large dairies planned for North Dakota in 2027: a 25,000-cow operation near Hillsboro and a 12,500-cow operation near Abercrombie. These dairies will require \$86 million in feed annually, including corn silage, alfalfa hay, soybean meal, DDGS, and minerals. Co-product feeds from corn ethanol and soybean crush plants will provide \$4.3 million. He highlighted the potential market opportunity for local farmers to supply these dairies and encouraged them to assess the economic feasibility of participation.

<p>Angie Johnson was hired as the NDSU Extension Farm and Ranch Safety Coordinator in 2022. She has implemented multiple safety programs and collaborates on farm safety research with Sanford Health. Program examples include:</p> <p><b>Youth Farm Safety Camp 2024</b> - 46 youth, ages 14-16, participated in three farm safety camps across North Dakota. 45 youth passed the US Dept. of Labor Hazardous Occupational Order in Agriculture (HOOA) certification program, meaning they can legally work on a farm or ranch beyond their family's farm/ranch operation.</p> <p>Combined evaluation data from all three farm safety camps in 2024 include:</p> <ul style="list-style-type: none"> <li>• 53% increase in confidence in using a tourniquet</li> <li>• 36% increase in confidence in conducting a per-operation and maintenance check before operating farm equipment</li> <li>• 32% increase in confidence in safely working with a PTO shaft</li> <li>• 32% increase in confidence in using a fire extinguisher</li> </ul> <p><b>Stop the Bleed 2024</b></p> <p>353 individuals in 25 North Dakota communities participated in an STB program</p> <p>Combined evaluation data from 25 STB sessions include:</p> <ul style="list-style-type: none"> <li>• 60% increase in how prepared participants felt applying a tourniquet when needed in an emergency</li> <li>• 49% increase in how confident participants felt packing a wound</li> <li>• 39% increase in their comfort controlling a life-threatening bleed injury due to the STB program.</li> </ul>				<p>NDSU Campus</p>
<p>Agricultural Health and Safety</p>	<p>\$ 240,000</p>			
<p>Big Data specialist</p>	<p>\$ 220,000</p>			<p>NDSU Campus</p>
<p><b>2023-2025</b></p>				
<p>Soybean pathologist</p>	<p>\$ 200,000</p>	<p>1</p>		<p>NDSU Campus</p>
<p>Swine specialist</p>	<p>\$ 200,000</p>	<p>1</p>		<p>NDSU Campus</p>



Farm and Ranch Safety operating	\$ 125,000		Farm and Ranch Safety program	curriculum for a swine, sheep, and cattle 'Skillathon' for youth, which will feature a camp in Washburn and a workshop at the state fair.  These operating funds offer extra support for the Extension Farm and Ranch Safety program, helping fund farmer mental health education initiatives and purchasing a tractor simulator for youth safety training. Significant operating resources are also needed to run Farm Safety camps and the Stop the Bleed Program.
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## 2. Review of Past Funding Requests

### NDAES

Over the past four biennia, NDAES has proposed initiatives to advance agricultural technologies, including **precision agriculture**, **big data**, and the **digital transformation of agriculture**. Detailed explanations of these initiatives are provided below:

- **Precision Agriculture 2019-2021:** ND legislative body appropriated \$600,000 in operating funding for precision agriculture. This funding was allocated through a competitive request-for-proposal process to support research initiatives spanning the full range of NDAES disciplines, including economics, microbiology, animal sciences, and plant pathology. Additionally, these funds facilitated advanced agricultural technology research, fostering collaboration between the REC network and main station researchers.
- **Big Data Initiative 2021-2023:** Legislators appropriated \$1,140,000 for the Big Data Initiative, with a request for six FTEs—three for NDAWN and three for data analytics, curation, and breeding data management. Received funding for three total FTEs: 1.5 for NDAWN and 1.5 for the Big Data Pipeline team focused on breeding. Additional funds were requested for operations and equipment.
- **Big Data Initiative 2023-2025:** \$638,000 was appropriated for the Big Data Initiative. Re-submitted a request for the remaining three FTEs from the original initiative and received funding for one additional FTE, which was used to hire a position in NDAWN.
- **Digital Transformation of Agriculture 2025-2027:** We are requesting the legislative body to help us build upon previous data initiatives focused on breeding and NDAWN, this phase expands support for data analytics across all agricultural disciplines. The need spans data ingestion, curation, transfer, security, analysis, and the development of research tools for applications such as IoT, drones, and genomics. This requires investment in personnel, hardware, and software.

### NDSU Extension

**Livestock Initiative:** In 2021, SBARE elevated a livestock initiative for Extension, which included a request for four positions. Two positions were funded during that session: a forage specialist and a livestock development specialist. The initiative returned in 2023, with Extension receiving funding for a swine specialist. In 2025, the final position from the original 2021 request—a veterinary epidemiologist—has been requested once again, completing the four positions initially sought. A new position for a precision agriculture specialist has been added to the 2025 livestock initiative, aimed at advancing cutting-edge technologies to support livestock health, nutrition, and reproduction.

All other requests by NDSU Extension in 2025 are new initiatives.

b. SBARE Priorities that were and were not funded from 2019-2021 to present

**2019-21 Budget Request**

2019-21 SBARE FTE		HB1020	FTE
Priority List		Authorization	
<b>North Dakota Agricultural Experiment Station</b>			
<b>SBARE #1: Agri biome</b>	\$1,160,000	\$1,160,000	
Scientist and technician (microbe-livestock)	\$355,000 2.0	\$355,000	2.0
Scientist and technician (organismal-plant)	\$355,000 2.0	\$355,000	2.0
Operating	\$450,000	\$450,000	
<b>SBARE #2 Precision Agriculture: Operating</b>	\$800,000	-	
<b>SBARE #3: Enhancing Research Capacity</b>	\$690,000	\$200,000	
Increased Support for Operations- RECs	\$280,000	\$0	
Increased Support for Operations- Main	\$210,000	\$0	
Increased Support for Operations- Oakes site	\$200,000	\$200,000	
Funding for salaries -DREC NCREC	\$125,000	125,000	
<b>ONE-TIME &amp; CAPITAL FUNDING</b>			
Deferred maintenance	\$1,440,465	940,465	
Carrington REC Land Base – (\$TBD)			
Williston Research Center greenhouse (OF)	\$0	500,000	
<b>Capital:</b>			
SBARE #1 Capital: Agronomic, Pathology, and Soils Field Lab facility	\$65,000,000		
SBARE #2 Capital: Seed cleaning facility WREC	\$750,000	750,000	
SBARE #3 Capital: Equipment Storage Sheds (8)	\$2,400,000		
SBARE #4 Capital: Precision Ag/ ABEN Facility	\$6,000,000		
<b>NDSU Extension</b>			
<b>SBARE #1: Operational Support</b>	\$870,000	\$870,000	
Additional Operating Support		100,000	
<b>ONE-TIME FUNDING</b>			
Extension Web and Digital Delivery	\$345,000	345,000	

**2021-23 Budget Request**

	2021-23 SBARE Priority List	FTE	SB2020 Authorization	FTE	SB2325 Special Session Authorization
<b>North Dakota Agricultural Experiment Station</b>					
<b>SBARE #1: Big Data</b>	<b>\$1,660,000</b>		<b>\$835,000</b>		
NDAWN-3 FTEs (Main Station)	\$570,000	3.0	\$0	-	
Data analytics, management, and curation-3 FTEs (Main Station)	\$570,000	3.0	\$0	-	
Big Data-Senate			\$800,000	3.0	
Big Data-House addn'l increase			\$35,000		
Operating	\$320,000		\$0		
Equipment	\$200,000		\$0		
<b>ONE-TIME &amp; CAPITAL FUNDING</b>					
Deferred maintenance	\$1,440,465		500,000		
<b>Capital:</b>					
<b>SBARE #1 Capital: Agronomic, Pathology, and Soils Field Lab facility</b>	<b>\$65,000,000</b>				
<b>SBARE #2 Capital: Livestock Facilities</b>	<b>\$6,372,000</b>		<b>\$975,000</b>		<b>\$8,029,000</b>
HREC Livestock Processing and Research Support Facility	\$1,415,880				1,529,000
CREC Livestock Facilities	\$1,188,000		775,000		446,000
CGREC Livestock Facilities	\$2,017,440		200,000		1,963,000
HREC Sheep Feed Efficiency Research Facility	\$1,750,680				1,891,000
DREC Agricultural Lab and Shop Facility					2,200,000
<b>SBARE #3 Capital: Greenhouse-LREC</b>	<b>\$473,000</b>		<b>473,000</b>		
<b>SBARE #4 Capital: Storage (Main Station and REC's)</b>	<b>\$2,400,000</b>		<b>300,000</b>		
<b>SBARE #5 Capital: CGREC Housing</b>	<b>\$325,000</b>		<b>325,000</b>		
<b>NDSU Extension</b>					
<b>SBARE #1: Livestock Initiative</b>	<b>\$1,010,000</b>		<b>\$500,000</b>		
4.0 FTE	\$850,000	4.0	\$425,000	2.0	
Operating	\$160,000		\$75,000		
<b>SBARE #2: Agricultural Health and Safety</b>	<b>\$720,000</b>		<b>\$240,000</b>	<b>1.0</b>	
3.0 FTE	\$600,000	3.0	\$0	-	
Operating	\$120,000		\$240,000		
<b>SBARE #3: Big Data</b>	<b>\$280,000</b>		<b>\$280,000</b>		
1.0 FTE	\$220,000	1.0	\$220,000	1.0	
Operating	\$60,000		\$60,000		

**2023-25 Budget Request  
North Dakota Agricultural Experiment Station**

	2023-25 SBARE Priority List	FTE	HB1020 Authorization	FTE
<b>Main Research Center</b>				
<b>SBARE #1: Plant Production and Protection Initiative</b>	<b>\$1,580,000</b>		<b>\$426,000</b>	
Agronomist (DREC)	252,000	1.0	\$210,000	1.0
Plant bacteriologist	252,000	1.0		
Plant bacteriologist technician	176,000	1.0		
Plant virologist	252,000	1.0		
Plant virologist technician	176,000	1.0		
Pulse breeding technician	176,000	1.0		
Technician for clubroot fungus (LREC)	176,000	1.0	176,000	1.0
Operating	120,000		40,000	
<i>Unranked</i>				
Fast track potato breeding research operating	-		\$250,000	
<b>SBARE #2: Operating Support</b>	<b>\$2,194,000</b>		<b>\$400,000</b>	
Grant development positions	594,000	3.0		
Graduate research assistantships	720,000			
Main Station and RECs-operating	480,000			
Oakes Irrigation Research Site-operating	400,000		400,000	
<b>SBARE #3: Big Data Initiative</b>	<b>\$838,000</b>		<b>\$300,000</b>	
Data analytics, management and curation position	319,000	1.5		
NDAWN position	319,000	1.5	220,000	1.0
Operating	200,000		80,000	
<b>SBARE #4: Climate Smart Agriculture</b>	<b>\$458,200</b>		<b>\$0</b>	
Climate smart agricultural scientist	242,200	1.0		
Climate smart agricultural technician	176,000	1.0		
Operating	40,000			
<b>SBARE #5 (Tie): Bee and Apiary Research</b>	<b>\$458,200</b>		<b>\$0</b>	
Bee and apiary scientist (HREC)	242,200	1.0		
Bee and apiary research technician (HREC)	176,000	1.0		
Operating	40,000			
<b>SBARE #5 (Tie): Precision Agriculture</b>				
Operating	\$600,000			
<b>SBARE - Base Increase - Main Research Station</b>	<b>\$6,128,400</b>	<b>17.0</b>	<b>\$1,376,000</b>	<b>3.0</b>
<b>ONE-TIME &amp; CAPITAL FUNDING</b>				
Deferred maintenance	1,440,465		500,000	SIIF
Equipment for an ag biotech innovation core	1,000,000		-	
Land purchase HREC <i>unranked</i>	1,038,000		1,038,000	ARPA
<b>Capital:</b>				
SBARE #1 Field lab facility	97,000,000		*97,000,000	SIIF/Other
SBARE #2 AES Equipment storage sheds (7 sheds)	3,325,000		1,900,000	SIIF
SBARE #3 Nesson Valley facility	1,700,000		1,700,000	General
SBARE #4 Precision agriculture facility	55,000,000		-	
SBARE #5 Dairy barn	1,700,000		-	
<i>Unranked</i>				
Swine Unit Renovation <i>*added to request after House session (fundraising request)</i>	6,000,000		-	
<b>Total One-time &amp; capital funding-North Dakota Agricultural Experiment Station</b>	<b>\$168,203,465</b>		<b>\$5,138,000</b>	
<b>2021-23 CAPITAL CARRYOVER- ADDITIONAL FUNDING REQUEST</b>				
<b>General Fund:</b>				
CREC Feedlot Research Support Facility	640,000		640,000	
CREC Feedlot Pen Expansion with Waste Containment	95,000		95,000	
CREC Covered Feeding (Hoop barn or Mono-slope)	464,400		464,400	

**2023-25 Budget Request  
North Dakota Agricultural Experiment Station**

	2023-25 SBARE Priority List	FTE	HB1020 Authorization	FTE
<b>Main Research Center</b>				
CREC Bulk Feed Commodity Storage Structure	157,400		157,400	
CGREC Livestock Facility	400,000		400,000	
LREC Greenhouse	251,430		251,430	
<b>Special Fund:</b>				
CGREC Housing	175,000		175,000	
WREC Greenhouse	750,000		750,000	
<b>Total 2021-23 Capital carryover -additional funding request</b>	<b>\$2,933,230</b>		<b>\$2,933,230</b>	

**2023-25 Budget Request  
NDSU Extension**

	2023-25 SBARE Priority List	FTE	HB1020 Authorization	FTE
<b>NDSU Extension</b>				
<b>SBARE #1 Cropping Systems Initiative</b>	<b>\$1,400,000</b>		<b>\$240,000</b>	
Western ND crop production specialist	200,000	1.0		
Soybean pathologist (campus)	200,000	1.0	200,000	1.0
Weed specialist	200,000	1.0		
Carbon credit specialist	200,000	1.0		
Operating	200,000		40,000	
On-farm research coordinator	200,000	1.0		
On-farm Operating	200,000			
<b>SBARE #2 Livestock Development Initiative</b>	<b>\$770,000</b>		<b>\$250,000</b>	
Veterinary epidemiologist	250,000	1.0		
Swine specialist	200,000	1.0	200,000	1.0
Off-campus livestock development specialist	200,000	1.0		
Operating	120,000		50,000	
<b>SBARE #3 Farm and Ranch Health and Safety Initiative</b>				
Farm and ranch health and safety resources operating	\$250,000		\$125,000	
<b>SBARE #4 Program Support for 4-H Initiative</b>	<b>\$320,000</b>		<b>\$80,000</b>	
4-H entrepreneurship specialist	200,000	1.0		
4-H program operating support - including camping, clubs, after-school	120,000		80,000	
<b>SBARE #5</b>				
Extension and State Soil Conservation Committee Operating Support	\$600,000		\$370,000	
Extension program operating support	300,000		220,000	
SSCC operating support	300,000		150,000	
<b>SBARE #6 Increased Food Security Initiative</b>	<b>\$400,000</b>		<b>\$0</b>	
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			
<b>SBARE - Base Increase - NDSU Extension Service</b>	<b>\$3,740,000</b>	<b>10.0</b>	<b>\$1,065,000</b>	<b>2.0</b>

### 3. Federal Funding Breakdown

**NDAES Federal Capacity Funding:** The NDAES receives federal capacity funds, which are apportioned annually and are based on a formula that considers the farming and rural populations of the state. These funds are administered by the USDA National Institute of Food and Agriculture. At NDSU, these funds are used for salaries on main and branch stations and must be matched dollar-for-dollar by state funds.

<b>NDAES</b>	<b>Federal Capacity Funding - Annual</b>
Hatch	\$3,723,490
McIntire-Stennis	\$197,855
Animal Health	\$18,802
<b>Total Federal Capacity (must be matched 1:1 by state)</b>	<b>\$3,940,147</b>

**NDAES Federal Grant Funds:** Researchers in the NDAES also seek competitive grants from federal agencies (e.g., USDA, NSF, USFWS, NIH, DOD) to fund their research program. These extramural funds are competitive, meaning only those grants judged to have merit will receive funding. The grants typically fund salaries for staff, graduate students, equipment, research travel, publication fees, and facilities and administrative costs.

Currently, for both branch and main stations, there are \$67,941,670 of federal grants funded. Federal grants account for 18% of our salary funding for the NDAES.

<b>NDAES</b>	<b>Current Federal Grants*</b>
Main Station	\$66,199,479
Branch Stations	\$1,742,191
<b>Total Federal Grants</b>	<b>\$67,941,670</b>

\* The duration of federal grants is typically 4 to 5 years.

**NDSU Extension Federal Capacity Funding:** NDSU Extension also receives federal capacity funds, which are apportioned annually. Federal capacity funds are administered by the USDA National Institute of Food and Agriculture. At NDSU, these funds are used for salaries and need to be matched dollar-for-dollar by state funds.

<b>NDSU Extension</b>	<b>Federal Capacity Funding - Annual</b>
Smith-Lever	\$3,942,351
Renewable Resources	\$46,409
Expanded Food and Nutrition Education Program	\$423,723
<b>Total Federal Capacity (must be matched 1:1 by state)</b>	<b>\$4,412,483</b>

**NDSU Extension Federal Grant Funds:** Extension staff also seek competitive grants from federal agencies (e.g., USDA, NSF, USFWS, NIH, DOD) to fund their program. These extramural funds are competitive, meaning only those grants judged to have merit will receive funding. The grants typically fund salaries for staff, graduate students, equipment, travel, publication fees, and facilities and administrative costs. Duration of federal grants is typically 4 to 5 years.

Currently, Extension has \$8,835,234 of federal grants that account for 10% of our salary funding.

<b>NDSU Extension</b>	<b>Current Federal Grants*</b>
	\$8,835,234
<b>Total Federal Grants</b>	<b>\$8,835,234</b>

\* The duration of federal grants is typically 4 to 5 years.

## 4. Updates on Williston Research Extension Center and Nesson Valley

### Recent research activities at Nesson Valley:

#### Water Source Project

This project evaluates the impact of different water sources (well water vs. surface water) on agricultural sustainability. By monitoring soil properties and comparing the effects of groundwater and Missouri River water, this research aims to identify the long-term implications of water source selection on soil health, crop productivity, and environmental sustainability.

#### Water Use Efficiency

This research is focused on improving water use efficiency in agriculture by optimizing irrigation practices across various crops. Researchers analyze irrigation timing and rates to identify strategies that reduce water waste while maximizing crop yield. Over the last three years, in collaboration with the ND Soybean Council, work has involved improving irrigation practices specifically for soybean production, helping farmers achieve greater water conservation and enhanced resource management.

#### Integrated Pest Management (IPM) Studies

Through extensive IPM research, the goal is to develop sustainable solutions for managing weeds and diseases in a wide range of crops, including corn, wheat, soybeans, dry beans, and pulses. With its ability to promote disease through supplemental irrigation, the Nesson site provides valuable insights into disease pressures that affect irrigated and non-irrigated acres. This research contributes to more resilient and efficient pest management strategies that benefit agricultural systems on a broader scale.

#### Fundraising and Bids for the Nesson Valley Project:

The project at Nesson Valley received two bids as noted below.

	Base Bid	Alternates							
		Addn Rooms & Lay ceiling	Cabinets break room	Addn area to shop	Shop Windows	Overhead Door	Exterior Paving	Gravel Paving	Removal of poor soil & replace with good soil
Contractor A	\$2,091,646	\$116,726	\$23,231	\$31,480	\$4,000	\$11,900	\$34,205	\$118,000	\$73,148
Contractor B	\$1,887,000	\$97,500	\$41,500	\$125,000	\$5,000	\$15,000	\$40,000	\$15,000	\$85/CUYD

#### Expenses to date for Nesson Valley project:

Advertising Services - Print	110.70
Architect Fees Capitalized	103,440.37
Engineering Fees Capitalized	8,626.00
<b>Grand Total</b>	<b>112,177.07</b>

#### Clarification on WREC Greenhouse fundraising

\$500,000 has been raised for the WREC Greenhouse project.

## 5. Clarification of Livestock Toxicologist FTE Request

Two separate positions were requested on the 2025-27 SBARE initiative list. One position – a Livestock Toxicologist – is on the AES list and the other – a Livestock Epidemiologist – is on the extension list.

**AES Livestock Toxicologist: Animal Health: SBARE Initiative #3:** North Dakota faces a significant risk of having no veterinary toxicologist available. A position is requested to fund a toxicology resident to address this critical need. A toxicologist plays a vital role in supporting the state's livestock industry by developing assays for detecting mycotoxins, ergot, blister beetle toxin, bromethalin in feed, and other



industry challenges. **Request:** One FTE - Veterinary toxicology resident to support critical needs in the Veterinary Diagnostic Laboratory – \$275,000. \$50,000 in operating. **Senate Version:** Included \$275,000 for the livestock toxicologist position, \$0 in operating.

**EXTENSION Livestock Epidemiologist: Precision Management and Animal Health: SBARE Initiative #3**  
 Extension serves as a technical and educational resource and focuses on safeguarding livestock health in the state. Central to this mission is the elevation of monitoring and surveillance of zoonotic diseases, which threaten both animal and human populations. **Request:** One FTE - Extension Veterinary Epidemiologist - \$440,000, \$50,000 in operating. Efforts will focus on safeguarding the health of North Dakotans and their livestock by elevating the monitoring of zoonotic diseases shared between animals and humans and providing education for the public. **Senate Version:** The Extension Veterinary Epidemiologist position was not funded in the Senate version.

## 6. NDSU Agriculture Responses to Bird Flu – Highly Pathogenic Avian Influenza

The NDSU Veterinary Diagnostic Lab (VDL) has completed 272 tests (or reactions). However, this equates out to over 640 individual animals as individual samples (from the same species & premises) can be pooled in a single test.

Year	# of tests	# non-negative
2022	97	46
2023	35	8
2024	121	7
2025	19	1
<b>TOTALS:</b>	<b>272</b>	<b>62</b>

“Non-negative” is the term that must be reported to USDA-APHIS using the PCR assays as part of the National Animal Laboratory Health Network (NAHLN). It is essentially the same as “positive” or “detected”. The VDL must pass proficiency tests to run these PCR assays.

Around 60 cases (but multiple samples and animals) have been Foreign Animal Disease Investigations (FADIs) initiated by the ND Board of Animal Health. There are only a few commercial poultry facilities, so much of the avian testing has been on backyard flocks. Scientists at the VDL have been able to provide results for FADIs mostly the same day or the next day at the latest (24-36hrs).

Most of the 2024 (starting April) and 2025 testing has been on cattle. The VDL did 94 tests that included over 340 animals. All have been “Not Detected” (i.e., “negative”). This does include animals from neighboring states.

Besides poultry and cattle, the VDL has tested numerous species of wild birds (passerines, waterfowl, and raptors), a few wild mammals (mostly canines submitted by wildlife officials), multiple zoo animals, and a few cats. Some foxes and cats (out of state) have been “non-negative”.

As part of the USDA National Animal Health Laboratory Network (NAHLN), the VDL continues to test for HPAI when requested by the Board of Animal Health and Game and Fish veterinarians. Samples include tissues and swabs from sick or deceased animals and milk from dairy cattle. In addition, they might test for HPAI in animals with clinical signs (specifically neurologic signs and/or respiratory signs) and corresponding gross or microscopic lesions for possible HPAI infection.

As part of the FDA Veterinary Laboratory Investigation and Response Network (Vet-LIRN), they are prepared to test animal feed for HPAI if requested.

Pathologists/diagnosticians are working with researchers on influenza A virus receptor distribution in cats and cattle to determine risk of infection in these species. The NYT highlighted one of their publications last year.

In partnership with researchers, the NDSU VDL has provided samples to test for exposure to influenza A virus in beef cattle. We await those data.

Besides research and testing at the VDL, NDSU Extension provides education and technical assistance to local farmers, ranchers, flock owners and communities across the state. Efforts include:

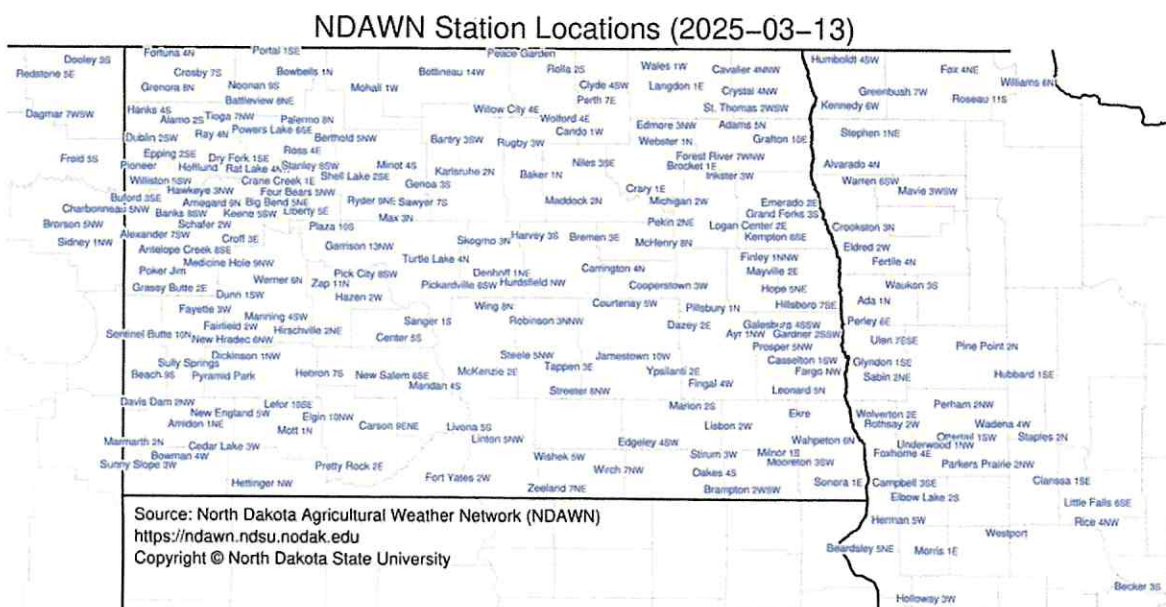
#### Extension Educational Efforts:

- A total of 31 HPAI-related posts were shared on social media, reaching **17,131 people** with **513 engagements**.
- Issued **6 news releases** and **2 media interviews** regarding HPAI, with distribution mainly during migratory bird seasons to raise awareness.
- Provided multiple online resources and materials during educational events to support public and industry understanding:
  - **Extension Bulletin AS2239: Highly Pathogenic Avian Influenza (HPAI)**
  - **"Protect Your Flock from HPAI"** fact sheet
  - **Handling Wild Bird Carcasses: Guidance for HPAI outbreaks**
  - **HPAI Response Process Poster** (available through USDA)
  - **USDA Guide on Improving Biosecurity: Prevent Avian Influenza with Simple Wildlife Management Practices**

#### Additional Resources:

- Provided **Public Notice templates** for staff in the event of a local HPAI case, along with guidelines on who to contact.
- Shared regular, comprehensive talking points for Extension Agents and specialists across the state to ensure a coordinated and informed response.
- Extension personnel work closely on **biosecurity** issues in collaboration with the **ND State Board of Animal Health** and **local veterinarians** to enhance awareness and preventative measures.

## 7. NDAWN Updates



NDAWN is one of the most comprehensive state agriculture weather mesonets in the nation. It operates over 200 weather stations across North Dakota and nearby areas. Each station represents local weather conditions within a 20-mile (32 km) radius, except for rainfall, which varies more locally. Stations are named after the nearest city or town, with a number and direction indicating their location (e.g., Leonard 5N is 5 miles north of Leonard).

NDAWN received an additional 2.5 FTEs over the past two bienniums, enhancing its data analytics and model development capacity. The total personnel dedicated to NDAWN now includes 11 members: the director, five computer programmers, one mesonet technician, and four research specialists.

NDAWN delivers crop tools that enhance precision pest and disease management for barley, canola, corn, potatoes, soybeans, sugarbeets, sunflowers, wheat, and other small grains. This system helps farmers mitigate risk and save millions of dollars annually.

NDAWN stations record weather data every five minutes, including:

- Real-time and hourly averages for all variables
- Daily summaries (temperature, wind speed, and other key data)
- Data Transmission & Quality Control
- Data is sent every five minutes via wireless modem.
- Hourly and daily data are checked automatically for errors.

Since 1989, NDAWN has been funded by state general fund appropriations, federal and state agencies, commodity groups, businesses, and individuals. A federal grant helped upgrade its database and website to improve data access.

## 8. REC Operating Expenses

Energy and inputs (seed, feed and fertilizer) and comparing them to pre-COVID prices.

### Breakdown of Percent Change in Energy (Electricity/ oil/gas/propane) and Inputs (seed, feed & fertilizer) at each REC.

All costs are compared to pre-COVID FY2020

REC	2021	2022	2023	2024
DREC	0%	27%	39%	-6%
CGREC	-11%	29%	26%	27%
HREC	-2%	37%	55%	52%
LREC	-37%	12%	42%	-18%
NCREC	53%	99%	103%	110%
WREC	-13%	29%	74%	32%
CREC	6%	45%	28%	8%
Avg. % change from pre-COVID	-1%	40%	53%	29%

## 9. Research Technician for Grapes

\$200,000 is the total salary and benefits requested for 1 research technician at the NCREC in Minot. This position is found within the AES SBARE Initiative list - #6. (pg. 10).

## 10.Oil Revenue from Williston REC and Dickinson REC

<b>Fiscal Year</b>	<b>Williston REC</b>	<b>Dickinson REC</b>
2014	488,530.00	0.00
2015	0.00	0.00
2016	0.00	28,798.55
2017	149,029.21	86,938.09
2018	16,488.04	73,634.19
2019	15,065.90	86,024.75
2020	10,959.94	72,840.02
2021	5,465.68	61,968.05
2022	715,164.68	98,402.47
2023	31,949.13	125,151.95
2024	48,884.62	86,561.61