AGENCY OVERVIEW

628 Branch Research Centers

Date: 12/07/2012
Time: 13:59:11

Statutory Authority
North Dakota Century Code Chapter 4-05.1.

Agency Description
Dickinson Research Extension Center (DREC)

The NDSU Dickinson Research Extension Center has an established record of service to the people in the 13-county region south and west of the Missouri River. The DREC operates 4,916 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. Currently, the DREC assists agricultural producers in solving production problems with agronomy, animal science and range science, while integrating new developments. Five major areas are served: agronomy, beef management, bio-security, range management, 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.

Central Grasslands Research Extension Center (CGREC)

The 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. CGREC is located between two counties which rank in the top 10 counties for the production of livestock and forages. The area served by CGREC contains 5.0 million acres (44 percent) of the state's rangeland where 42 percent of the state's livestock is raised on 38 percent of the state's farms.

Research objectives must increase the range-carrying capacity of native range emphasizing conservation and preservation, stabilize grass production to compensate for the vagaries of the weather and precipitation as it influences forage production in the dryland agriculture, identify the impact of different management systems upon beef production in the central region and explore the increased use of crop residues and byproducts for the maintenance of the cow herd. CGREC’s primary focus is management of grassland acreage which occupies about one-third of the agricultural land in the state and aims to improve production and increase returns to cattle producers.

Hettinger Research Extension Center (HREC)

The 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. 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.

Langdon Research Extension Center (LREC)

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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 389 owned acres and an additional 320 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 creates high levels of 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. 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 proven cultural practices and advances in chemical applications that minimize disease and insect pressures in all regions of North Dakota.

Since 2001, the LREC has significantly enhanced its overall agricultural research programming with the addition of a crop protection scientist, a director that also serves the region with an emphasis in rural economic/community development, increased foundation seed stocks program and a farm business management instructor. Finally, additional programming has been created that is working to employ LREC resources as an engine for rural community and economic development in partnership with the region's economic developers.

North Central Research Extension Center (NCREC)

The NCREC was established in 1945 and is located one mile south of Minot on Highway 83. The 1,200-acre center specializes in crop research and extension education activities and foundation seed production. Approximately 1,500 owned, rented, and contracted acres are planted for foundation seed production each year. The NCREC evaluates conventional and new crops for production in the region and explores weed management and cropping systems to improve the economic potential of crop production in the north central region. The NCREC is a leader in North Dakota on production and disease research of canola, pea, lentil, and chickpea crops, in addition to the conventional crops of hard red spring and durum wheat, barley, flax, sunflower, and oats. The NCREC works closely with business and economic development leaders in the region to improve the economic vitality of north central North Dakota.

Williston Research Extension Center (WREC)

The Williston Research Extension Center, established in 1907 and relocated to the present site in 1954, is an 800-acre rain-fed farm located in northwest North Dakota. 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 and on western malting barley programs are conducted. WREC also conducts variety development research on safflower, winter wheat, and durum and variety evaluations in cooperation with NDSU Main Station scientists. WREC produces and supplies foundation seed to area farmers of new and old varieties adapted to the region.

Carrington Research Extension Center (CREC)

The Carrington Research Extension Center was established in 1960. CREC operates on a land base of around 1,700 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.

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The research effort at CREC focuses on these general program areas: traditional crop variety evaluation, crop production and management, plant disease management, alternative crop development, cropping systems, irrigation, integration of crop and livestock production, intensive cow/calf production, beef cattle feeding, feedlot management, livestock waste and nutrient management, foundation seedstocks production, and development of new agricultural enterprises. Through these efforts, the CREC research program has gained a national reputation for its involvement in agriculturally-based economic development and study of a wide range of crops and cropping systems.

CREC maintains a strong Extension program as five extension specialists base their educational programming from the center. The extension program emphasis areas addressed by these specialists include: agronomy, plant pathology, irrigation, livestock, and livestock waste - nutrient management.

Agency Mission Statement

Dickinson Research Extension Center (DREC): 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.

Central Grasslands Research Extension Center (CGREC):

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.

Hettinger Research Extension Center (HREC): 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.

Langdon Research Extension Center (LREC): The Langdon Research Extension Center will conduct applied agricultural research that enhances the quality of life for the regions 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 regions natural resources.

North Central Research Extension Center (NCREC): 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.

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Williston Research Extension Center (WREC): 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.

Carrington Research Extension Center (CREC): 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 4-05.1-19 the State Board of Agricultural Research and Extension (SBARE) presents a status report to the budget section of the legislative council. SBARE's most recent presentation to the budget section was on March 13, 2012. The report they gave and provided in written form included the status of the North Dakota Agricultural Experiment Station and the NDSU Extension Service. A copy of the information is on file in the legislative council office.

Major Accomplishments

Dickinson Research Extension Center (DREC)

1. Continued work in agronomy, beef and range management, and sustainable agricultural practices.
2. Reported conventional and organic agronomic research and extension information regarding various management techniques.
3. Investigated tillage systems, cropping systems, pest control systems, variety development and cover crops.
4. Studied various management techniques involving grass cultivars, ornamental xeriscape, soil mineral nitrogen, prairie ecosystems, drought, grassland restoration, grazing systems, burning and the integration of beef cattle.
5. Reported beef research and extension information regarding various management practices.

Central Grasslands Research Extension Center (CGREC)

1. Conducted studies on plant respiration and photosynthesis in response to grazing.
2. Continued projects on control of invasive grass species through grazing.
3. Collaborated with multiple on-campus faculty and scientists at other REC's on livestock projects evaluating breeding systems, range supplementation, and meat quality.
4. Conducted research projects evaluating a multitude of forage species for use in the northern plains. Additionally, continued forage based biofuels research at sites across the state.
5. Obtained funding to develop management practices allowing for increased use of distillers dried grains with solubles in range settings.

Hettinger Research Extension Center (HREC)

1. Distributed foundation seed produced at NDSU research centers to southwest North Dakota producers.
2. Conducted crop trials and pesticide trials on site as well as at six off-station locations.
3. Evaluated new varieties and technologies to grow drought tolerant crops, wheat stem sawfly resistance, and new and emerging bio-fuels.
4. Conducted multiple land use research evaluating sharp-tailed grouse habitat, reclamation of low-quality farmland, and grazing systems.

5. Collaborated with Sitting Bull College on the Standing Rock Sioux Reservation, USDA-ARS, NDSU, and SDSU on a new multi-agency project evaluating the reclamation of lands degraded by prairie dogs.

Langdon Research Extension Center (LREC)

1. Fostered strong research partnerships with agricultural input companies, commodity groups and others to give producers better information regarding which inputs to employ and which crops to grow in their operation.
2. Produced the high quality foundation grade seed of the major crops grown in our region.
3. Pursued value-added agricultural opportunities that may lead to new high value cropping system opportunities for producers and economic enhancement for rural communities.
4. Provided dependable support for main station breeding programs and other cropping system research.
5. Added two new Extension outreach programs in agronomy and soil health that bring a strong outreach program to address critical needs to the regions producers.

North Central Research Extension Center (NCREC)

1. Produced, conditioned, and distributed foundation seed of 15 varieties of five crops grown in the region.
2. Researched new crop protection products for eight minor crops grown in ND.
3. Researched new products for controlling noxious weeds in non-cropland areas.
4. Conducted residue trials with the USDA IR-4 that will lead to registration of new pesticides for controlling weeds and insects in minor crops.
5. Conducted studies in several crops to identify weed control alternatives in response to development of weed resistance.

Williston Research Extension Center (WREC)

1. Evaluated the performance and adaptation of new and established crop cultivars and crop cultural practices to improve productivity of agricultural products.
2. Conducted research and demonstration projects on potatoes, malting barley, safflower, spring wheat, and winter wheat variety developments, safflower disease control, pulse crop production and variety selection, horticultural crops, sprinkler irrigation, water and crop management.
3. Conducted bioenergy crop research on barley and sugar beets for ethanol and biomass production from switchgrass and other perennial herbaceous crops.
4. Developed a 160-acre irrigated site in the Nesson Valley as an irrigated research and development station on sustainable cropping systems for western ND.
5. Collaborated with NDSU researchers and seed companies to evaluate grapes, floral and vegetable crops.

Carrington Research Extension Center (CREC)

1. Investigated practices to optimize corn fertilizer management with intensive management, in-furrow, top-dress and secondary fertilizer research projects.
2. Assessed response and economics of soybean production strategies that utilize combinations of cultural practices and crop production inputs.
3. Established grain and forage crops across a soil salinity gradient to assess tolerance based on plant survival and performance.
4. Provided training for over 50 private and cooperative crop consultants during the 2011 CREC Crop Management Field School.
5. Determined that self-feeding is a viable option for smaller-scale cattle producers who want to finish cattle in a collaborative project with the HREC.

Future Critical Issues

Dickinson Research Extension Center (DREC)

- SBARE $800,000 Operating, Dickinson REC - Permanent funds to offset reduced oil revenue - Oil revenues have declined due to decreased production in the last several years. Past legislative sessions have made efforts to offset this reduced revenue, but these efforts were temporary. Last session, a request was granted to provide $800,000 to offset reduced oil revenues, but SBARE was tasked by the Legislature with determining and suggesting a permanent solution to

this issue. The DREC needs to continue to resolve lost income dollars from oil revenue. This funding was available for defraying the costs of operations for the biennium beginning July 1, 2010, and ending June 30, 2013. Permanent funding is needed.

- SBARE Crops Initiative - Enhancing Crop Development and Protection Efforts – DREC improved operating funds - The DREC Advisory Board has placed dry land corn research as a very high priority. Improved breeding and management will add diversity and stability in production opportunities for western North Dakota agricultural business. While yields are promising, optimal management techniques need to be developed for the West. Additional operating support is needed for enhancing corn production and no-till cropping systems with improved crop varieties and protection from diseases, insects and weeds.
- SBARE Initiative - Enhancing Research Capacity at the RECs - DREC improved operating and technician support- The Center's involvement in important regional and state research activities has expanded, and encouraged by the DREC Advisory Board. The ability of the scientists located at the Center to address important and emerging crop, range and beef issues requires improved operating and technical (technician) assistance.
- The Center would be appreciative of enhancing funding that supports the efforts of SBARE through the North Dakota Agricultural Experiment Station and NDSU Extension Service.

Central Grasslands Research Extension Center (CGREC):

- Laboratory space, in the form of an agronomy lab, is needed to allow scientists the opportunity to expand current research and develop and implement new research projects.
- Current livestock facilities are deficient for a fully implemented animal science program. Improvements to livestock handling and feeding facilities including replicated drylot pens, feed storage, and a new working barn are needed to allow for growth of the animal science research program.
- Technical support is a critical issue. In order to strengthen current research programs, research specialists are needed for the animal science and range science programs and a full-time technician is needed to support the farming and livestock needs of the center.
- The addition of a regional extension specialist has been encouraged by our advisory board. The specialty of this individual could relate to range nutrition, forage/ hay production, or sustainable agriculture.
- Significant improvements are also needed at the director's residence as the current residence has water and possible mold issues in the basement.
- Other facilities are in need of deferred maintenance funding. Specifically, roof work on the technician residence, updates to existing barns to increase usefulness and safety, replacement of antiquated fences, as well as general maintenance at all residence, barn, and office buildings.

Hettinger Research Extension Center (HREC)

- A modern agronomy and range lab is needed to recruit and maintain quality scientists and graduate students, as well as meet the requirements set forth in today's competitive granting environment.
- A new livestock processing and educational facility is need to provide the facilities necessary to conduct research, train graduate students, and educate producers.
- Extension and Research staffing, both professionals and technical support, for weed science and livestock production continue to be a priority to meet the educational and research needs of producers in SW North Dakota.

Langdon Research Extension Center (LREC)

- Langdon is not able to begin cleaning its foundation seed production until January as the seed storage warehouse and adjacent rooms to the seed cleaning plant double as the agronomy lab plot processing area. These two functions cannot be done simultaneously as grain dust created with cleaning seed make it unhealthy and unsafe for the researchers and support staff associated with processing thousands of research plot materials. In addition, Langdon's strong plant pathology applied research program is being limited to what it can do as the pathology lab triples as an office, pathology lab and storage area. A new agronomy and pathology lab would add efficiencies to the utilization of labor and other areas as well as significantly improving safety issues associated with the outdated facility. Additional operating dollars are also needed to support day to day operations of a new lab.

- In 1962, a seed cleaning plant was constructed at Langdon to provide local seedsmen and producers the ability to purchase and grow the highest quality seed available (foundation grade seed). The regions seedsmen and producers have come to depend on this program to supply them with foundation grade seed. Langdon still uses the the same facility and equipment that was employed in 1962. The inefficiencies associated with the plant forces Langdon's seed cleaners to run individual lots of dirty seed through the plant two and sometimes three times to achieve the best result. Because of this and the ability to only clean 20 to 30 bushels of seed per hour, Langdon does not complete its seed cleaning operation until the start of the growing season beyond the prime time for producers to acquire seed. In addition, numerous safety violations have been identified that can only be resolved with a mobile seed cleaning mill.

North Central Research Extension Center (NCREC)

- A mobile seed conditioning mill adequate to handle peas, lentils, beans, and chickpeas (in addition to small grains and oilseeds) for the expanding pulse crop industry and new NDSU breeding program is needed.
- Base funding for personnel to address the research and extension needs for pulse crops, canola, and cereal grains to meet the needs of growers and the increase of processing plants in the Minot area.
- Technical support.
- Increased operational costs.
- Removal of old seedhouse.
- Tile drain yard.
- Encroachment from City of Minot/re-location of center (land and facilities).
- Horticulturist needed to serve growing urban population and projects.
- Affordable housing/competitive salaries.

Williston Research Extension Center (WREC)

- Pea and lentil acreage has dramatically increased over the past 15 years and there has also been a significant increase in production of other broadleaf alternative crops. The switch from a strict small grain fallow rotation to a more intensive and diversified cropping system has resulted in a reduction of one million summer fallow acres in northwest North Dakota to significantly increase annual return per acre in our region.
- Farmers in the MonDak region grow more than 20 different crops. There is an urgent need for additional technical support for WREC and off-station variety testing in each of the crops in dryland and irrigated cropping systems. There is a critical need for a plant pathologist to evaluate and research crop disease impacts due to the more intensive cropping systems used in Western North Dakota.
- A new seed plant at the WREC is needed to condition Foundation seed to replace the aging seed conditioning plant built in 1954. Seed conditioning efficiency of all crops would be significantly enhanced with a new mobile seed conditioning mill.
- Retention and recruitment of staff is a critical issue for WREC due to the huge impact of oil and gas development in the Williston area. The energy explosion has significantly increased the cost of living and created a severe housing shortage in the region.
- The Williston area is projected increase in population to 40-50,000 people; there is an increased need for landscape materials and requests for adapted plant species for this climate by landscapers, homeowners, architects and local nurseries. The collaboration between NDSU researchers and the staff at WREC will become even more important for the emerging wine industry, truck farms and Community Supported Agriculture.

Carrington Research Extension Center (CREC)

- An Agronomy Laboratory is a critical facility need for a primary program of the Carrington Center. The Agronomy Laboratory is required to support what is considered one of the largest and most diverse agronomy field research programs in the upper Midwest. The Carrington Center conducts more than 350 field research experiments annually including trials on all crops (> 30) representing the diversity of agriculture in North Dakota. The seeds, plants, soils, and other samples associated with these experiments are all processed in a repurposed 1962 potato warehouse representing a total space of 2,400 square feet. This

laboratory has limited space for current experiment preparation and processing, sample cleaning, dryers, field sample storage, and lacks appropriate environmental controls for seed storage. Additionally, the present facility does not meet worker protection standards as dust handling, air exchange, and a chemical handling area are not a fit for the building's design. The innovative and proactive research efforts of the CREC agronomists, plant pathologist and soil scientist are severely compromised as the current facility has zero laboratory space for plant pathology equipment, detailed soils evaluations, or the adaptation of new technologies for seed, soil, and plant research processes. An Agronomy Laboratory is a critical need since North Dakota producers will not realize the scope and depth of new knowledge that the CREC scientists are capable of generating with modern laboratory facilities.

- 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 and broad based programs of the CREC operate on a relatively small land base. For many years, the Carrington REC has operated on a land base of around 1,700 acres with the state owning around 840 acres. The remaining land base of more than 850 acres must be secured from annual rental agreements with multiple landlords. This heavy reliance upon a willing group of land owners to annually rent a significant portion of the minimum amount of acres the CREC requires is risky at best. If any one parcel of rented land were not made available in a given year, the CREC would be forced to greatly reduce or eliminate program contributions that are depended upon by North Dakota producers and are basic to our department mission.
- Additional primary program facilities are further issues that need to be addressed to sustain the viability of the diverse programs at Carrington. The beef research unit desperately needs a multi-use 'feedlot research support facility'. This facility would improve feedlot research operational capacity, assist in sustaining IAUAC compliance, attain worker protection standards, and reduce maintenance costs for equipment.
- The CREC's foundation seedstocks program is an important part of NDSU's seedstocks program that is challenged to process the diversity of crops and varieties the center annually produces. The CREC seed conditioning plant is in need of replacement since the current facility has very limited capacity and structurally is too small to accommodate needed upgrades. A mobile seed conditioning mill is needed.

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REQUEST SUMMARY

628 Branch Research Centers **Bill#: SB2020**

Biennium: 2013-2015

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Description	Expenditures 2009-2011 Biennium	Present Budget 2011-2013	Budget Request Change	Requested Budget 2013-2015 Biennium	Optional Budget Request
By Major Program					
Dickinson Research Center	5,081,008	6,388,562	16,437	6,404,999	0
Central Grasslands Research Center	2,217,891	2,865,847	537,891	3,403,738	0
Hettinger Research Center	2,866,340	3,373,175	1,447,444	4,820,619	0
Langdon Research Center	1,891,791	2,378,807	560,997	2,939,804	0
North Central Research Center	3,328,225	4,399,821	113,748	4,513,569	0
Williston Research Center	2,735,001	3,410,089	629,300	4,039,389	0
Carrington Research Center	6,103,933	7,126,488	852,706	7,979,194	0
Total Major Program	**24,224,189**	**29,942,789**	**4,158,523**	**34,101,312**	**0**
By Line Item					
Dickinson Research Center	5,081,008	6,388,562	16,437	6,404,999	0
Central Grasslands Research Center	2,217,891	2,865,847	537,891	3,403,738	0
Hettinger Research Center	2,866,340	3,373,175	1,447,444	4,820,619	0
Langdon Research Center	1,891,791	2,378,807	560,997	2,939,804	0
North Central Research Center	3,328,225	4,399,821	113,748	4,513,569	0
Williston Research Center	2,735,001	3,410,089	629,300	4,039,389	0
Carrington Research Center	6,103,933	7,126,488	852,706	7,979,194	0
Total Line Items	**24,224,189**	**29,942,789**	**4,158,523**	**34,101,312**	**0**
By Funding Source					
General Fund	12,367,190	14,945,208	3,356,366	18,301,574	0
Federal Funds					
Special Funds	11,856,999	14,997,581	802,157	15,799,738	0
Total Funding Source	**24,224,189**	**29,942,789**	**4,158,523**	**34,101,312**	**0**
Total FTE	**95.49**	**103.04**	**12.00**	**115.04**	**0.00**

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Description	Expenditures 2009-2011 Biennium	Present Budget 2011-2013	Budget Request Change	Requested Budget 2013-2015 Biennium	Optional Budget Request
Dickinson Research Center					
Salaries - Permanent	1,850,221	2,086,541	(31,735)	2,054,806	0
Temporary Salaries	243,238	309,851	377,943	687,794	0
Overtime	62,373	55,934	(55,934)	0	0
Fringe Benefits	742,081	857,749	51,091	908,840	0
Travel	181,706	216,740	29,000	245,740	0
Supplies - IT Software	22,098	18,204	0	18,204	0
Supply/Material-Professional	7,520	16,886	58,000	74,886	0
Food and Clothing	19,417	14,597	0	14,597	0
Bldg, Ground, Maintenance	109,467	185,777	0	185,777	0
Miscellaneous Supplies	445,674	807,539	(101,666)	705,873	0
Office Supplies	19,406	17,855	0	17,855	0
Postage	7,483	5,183	5,800	10,983	0
Printing	22,090	16,650	8,700	25,350	0
IT Equip Under $5,000	22,585	14,706	0	14,706	0
Other Equip Under $5,000	59,564	92,020	23,200	115,220	0
Utilities	135,493	182,644	0	182,644	0
Insurance	32,115	34,473	0	34,473	0
Rentals/Leases-Equip & Other	54,078	38,918	0	38,918	0
Rentals/Leases - Bldg/Land	46,511	9,270	0	9,270	0
Repairs	99,785	131,507	0	131,507	0
Salary Increase	0	0	0	0	0
Benefit Increase	0	0	0	0	0
IT - Communications	40,474	48,035	0	48,035	0
Professional Development	2,792	2,480	0	2,480	0
Operating Fees and Services	346,678	534,051	52,200	586,251	0
Fees - Professional Services	42,395	33,395	8,700	42,095	0
Medical, Dental and Optical	2,683	4,988	0	4,988	0
Interest Expense	156	207	0	207	0
Land and Buildings	296,106	0	0	0	0
Equipment Over $5000	166,819	652,362	(408,862)	243,500	0
Total	**5,081,008**	**6,388,562**	**16,437**	**6,404,999**	**0**
Dickinson Research Center					
General Fund	2,353,771	3,158,759	746,240	3,904,999	0
Federal Funds	0	0	0	0	0
Special Funds	2,727,237	3,229,803	(729,803)	2,500,000	0
Total	**5,081,008**	**6,388,562**	**16,437**	**6,404,999**	**0**

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Biennium: 2013-2015

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Description	Expenditures 2009-2011 Biennium	Present Budget 2011-2013	Budget Request Change	Requested Budget 2013-2015 Biennium	Optional Budget Request
Salaries - Permanent	899,619	918,663	296,577	1,215,240	0
Salaries - Other	9,738	15,201	(15,201)	0	0
Temporary Salaries	128,908	138,986	29,160	168,146	0
Overtime	61,840	66,061	(66,061)	0	0
Fringe Benefits	345,847	372,554	132,136	504,690	0
Travel	96,325	162,252	17,000	179,252	0
Supplies - IT Software	5,639	5,922	0	5,922	0
Supply/Material-Professional	1,466	3,381	34,000	37,381	0
Food and Clothing	3,386	6,246	0	6,246	0
Bldg, Ground, Maintenance	60,239	134,733	0	134,733	0
Miscellaneous Supplies	236,225	331,620	81,200	412,820	0
Office Supplies	5,922	11,117	0	11,117	0
Postage	3,153	4,167	3,400	7,567	0
Printing	14,097	16,194	5,100	21,294	0
IT Equip Under $5,000	7,279	20,833	0	20,833	0
Other Equip Under $5,000	2,060	8,098	13,600	21,698	0
Utilities	52,700	69,925	0	69,925	0
Insurance	16,921	26,554	0	26,554	0
Rentals/Leases-Equip & Other	21,975	28,946	0	28,946	0
Repairs	82,869	67,509	0	67,509	0
Salary Increase	0	0	0	0	0
Benefit Increase	0	0	0	0	0
IT - Communications	18,620	28,389	0	28,389	0
Operating Fees and Services	49,193	116,529	49,869	166,398	0
Fees - Professional Services	26,972	20,072	5,100	25,172	0
Other Capital Payments	56,299	56,895	11	56,906	0
Equipment Over $5000	10,599	235,000	(48,000)	187,000	0
Total	**2,217,891**	**2,865,847**	**537,891**	**3,403,738**	**0**
Central Grasslands Research Center					
General Fund	1,486,428	1,789,789	360,712	2,150,501	0
Federal Funds	0	0	0	0	0
Special Funds	731,463	1,076,058	177,179	1,253,237	0
Total	**2,217,891**	**2,865,847**	**537,891**	**3,403,738**	**0**
Hettinger Research Center					
Salaries - Permanent	941,302	1,300,799	222,945	1,523,744	0
Salaries - Other	142,438	134,591	(134,591)	0	0
Temporary Salaries	85,656	103,689	(39,969)	63,720	0
Overtime	39,226	45,772	(41,616)	4,156	0

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REQUEST DETAIL

628 Branch Research Centers **Bill#: SB2020**

Biennium: 2013-2015

Date: 12/07/2012
Time: 13:59:11

Description	Expenditures 2009-2011 Biennium	Present Budget 2011-2013	Budget Request Change	Requested Budget 2013-2015 Biennium	Optional Budget Request
Fringe Benefits	409,746	567,334	51,328	618,662	0
Travel	153,603	95,467	57,000	152,467	0
Supplies - IT Software	3,508	1,594	0	1,594	0
Supply/Material-Professional	18,202	4,708	134,000	138,708	0
Food and Clothing	8,594	5,633	0	5,633	0
Bldg, Ground, Maintenance	38,086	26,046	0	26,046	0
Miscellaneous Supplies	445,862	536,081	603,118	1,139,199	0
Office Supplies	1,534	543	0	543	0
Postage	2,848	1,109	3,400	4,509	0
Printing	5,054	1,803	5,100	6,903	0
IT Equip Under $5,000	6,608	2,784	0	2,784	0
Other Equip Under $5,000	22,103	13,635	143,600	157,235	0
Utilities	58,267	27,717	0	27,717	0
Insurance	20,140	8,090	0	8,090	0
Rentals/Leases-Equip & Other	28,066	18,651	0	18,651	0
Rentals/Leases - Bldg/Land	72,434	109,320	20,000	129,320	0
Repairs	69,008	72,597	200,000	272,597	0
Salary Increase	0	0	0	0	0
Benefit Increase	0	0	0	0	0
IT - Communications	17,550	9,357	0	9,357	0
Professional Development	2,459	55	0	55	0
Operating Fees and Services	84,862	73,857	200,600	274,457	0
Fees - Professional Services	58,457	21,943	5,100	27,043	0
Equipment Over $5000	130,727	190,000	17,429	207,429	0
Total	**2,866,340**	**3,373,175**	**1,447,444**	**4,820,619**	**0**
Hettinger Research Center					
General Fund	1,349,649	1,659,018	661,601	2,320,619	0
Federal Funds	0	0	0	0	0
Special Funds	1,516,691	1,714,157	785,843	2,500,000	0
Total	**2,866,340**	**3,373,175**	**1,447,444**	**4,820,619**	**0**
Langdon Research Center					
Salaries - Permanent	808,824	1,013,685	(46,479)	967,206	0
Temporary Salaries	75,808	73,054	(40,608)	32,446	0
Overtime	10,671	13,346	(13,346)	0	0
Fringe Benefits	331,117	431,323	(24,798)	406,525	0
Travel	44,803	44,908	20,000	64,908	0
Supplies - IT Software	1,444	2,115	0	2,115	0
Supply/Material-Professional	1,390	294	40,000	40,294	0

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628 Branch Research Centers **Bill#: SB2020** **Date:** 12/07/2012
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Description	Expenditures 2009-2011 Biennium	Present Budget 2011-2013	Budget Request Change	Requested Budget 2013-2015 Biennium	Optional Budget Request
Food and Clothing	4,546	2,932	0	2,932	0
Bldg, Ground, Maintenance	54,304	66,370	0	66,370	0
Miscellaneous Supplies	149,734	174,717	361,000	535,717	0
Office Supplies	3,336	3,251	0	3,251	0
Postage	1,111	1,207	4,000	5,207	0
Printing	5,042	4,366	6,000	10,366	0
IT Equip Under $5,000	2,247	11,935	0	11,935	0
Other Equip Under $5,000	29,867	32,064	16,000	48,064	0
Utilities	50,627	41,814	0	41,814	0
Insurance	14,438	15,365	0	15,365	0
Rentals/Leases-Equip & Other	3,633	4,391	0	4,391	0
Rentals/Leases - Bldg/Land	80,884	31,362	0	31,362	0
Repairs	58,413	123,431	0	123,431	0
Salary Increase	0	0	0	0	0
Benefit Increase	0	0	0	0	0
IT - Communications	30,445	27,767	0	27,767	0
Professional Development	420	367	0	367	0
Operating Fees and Services	32,165	55,853	188,228	244,081	0
Fees - Professional Services	9,652	7,890	6,000	13,890	0
Equipment Over $5000	86,870	195,000	45,000	240,000	0
Total	**1,891,791**	**2,378,807**	**560,997**	**2,939,804**	**0**
Langdon Research Center					
General Fund	1,217,179	1,395,564	244,749	1,640,313	0
Federal Funds	0	0	0	0	0
Special Funds	674,612	983,243	316,248	1,299,491	0
Total	**1,891,791**	**2,378,807**	**560,997**	**2,939,804**	**0**
North Central Research Center					
Salaries - Permanent	1,166,183	1,337,971	83,447	1,421,418	0
Temporary Salaries	186,514	278,103	(42,505)	235,598	0
Overtime	17,213	17,419	(17,419)	0	0
Fringe Benefits	415,560	540,288	54,266	594,554	0
Travel	148,896	141,354	8,000	149,354	0
Supplies - IT Software	7,887	7,824	0	7,824	0
Supply/Material-Professional	19,833	17,576	16,000	33,576	0
Food and Clothing	5,673	4,383	0	4,383	0
Bldg, Ground, Maintenance	76,410	120,213	0	120,213	0
Miscellaneous Supplies	343,230	627,675	199,741	827,416	0
Office Supplies	10,557	5,612	0	5,612	0

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628 Branch Research Centers **Bill#: SB2020** **Date:** 12/07/2012
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Description	Expenditures 2009-2011 Biennium	Present Budget 2011-2013	Budget Request Change	Requested Budget 2013-2015 Biennium	Optional Budget Request
Postage	2,161	0	1,600	1,600	0
Printing	7,016	7,182	2,400	9,582	0
IT Equip Under $5,000	46,665	9,161	0	9,161	0
Other Equip Under $5,000	45,615	40,895	96,400	137,295	0
Utilities	96,607	109,918	0	109,918	0
Insurance	60,416	48,966	0	48,966	0
Rentals/Leases-Equip & Other	4,595	9,560	0	9,560	0
Rentals/Leases - Bldg/Land	38,615	43,213	0	43,213	0
Repairs	107,321	107,762	0	107,762	0
Salary Increase	0	0	0	0	0
Benefit Increase	0	0	0	0	0
IT - Communications	20,656	25,644	0	25,644	0
Professional Development	1,864	2,542	0	2,542	0
Operating Fees and Services	168,079	173,831	114,400	288,231	0
Fees - Professional Services	5,982	5,024	2,400	7,424	0
Interest Expense	56	0	0	0	0
Land and Buildings	91,812	0	0	0	0
Other Capital Payments	91,735	92,705	18	92,723	0
Equipment Over $5000	141,074	625,000	(405,000)	220,000	0
Total	**3,328,225**	**4,399,821**	**113,748**	**4,513,569**	**0**
North Central Research Center					
General Fund	1,486,111	1,670,255	254,524	1,924,779	0
Federal Funds	0	0	0	0	0
Special Funds	1,842,114	2,729,566	(140,776)	2,588,790	0
Total	**3,328,225**	**4,399,821**	**113,748**	**4,513,569**	**0**
Williston Research Center					
Salaries - Permanent	979,920	1,410,148	432,617	1,842,765	0
Temporary Salaries	216,434	137,464	134,108	271,572	0
Overtime	12,383	6,698	10,102	16,800	0
Fringe Benefits	395,043	568,207	157,267	725,474	0
Travel	99,142	126,896	410	127,306	0
Supplies - IT Software	1,111	2,533	0	2,533	0
Supply/Material-Professional	2,444	948	16,000	16,948	0
Food and Clothing	14,968	10,969	0	10,969	0
Bldg, Ground, Maintenance	112,544	214,308	0	214,308	0
Miscellaneous Supplies	178,597	271,967	(101,404)	170,563	0
Office Supplies	3,342	7,944	0	7,944	0
Postage	259	0	1,600	1,600	0

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REQUEST DETAIL

628 Branch Research Centers **Bill#: SB2020**

Biennium: 2013-2015

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Description	Expenditures 2009-2011 Biennium	Present Budget 2011-2013	Budget Request Change	Requested Budget 2013-2015 Biennium	Optional Budget Request
Printing	4,172	4,821	2,400	7,221	0
IT Equip Under $5,000	4,364	15,747	0	15,747	0
Other Equip Under $5,000	21,386	33,394	(8,600)	24,794	0
Utilities	77,461	95,678	0	95,678	0
Insurance	26,493	30,485	0	30,485	0
Rentals/Leases-Equip & Other	13,746	8,324	0	8,324	0
Rentals/Leases - Bldg/Land	9,101	3,334	0	3,334	0
Repairs	31,485	64,662	0	64,662	0
Salary Increase	0	0	0	0	0
Benefit Increase	0	0	0	0	0
IT - Communications	27,378	28,309	0	28,309	0
Professional Development	8,425	541	0	541	0
Operating Fees and Services	222,581	140,107	(27,600)	112,507	0
Fees - Professional Services	51,409	60,132	2,400	62,532	0
Medical, Dental and Optical	335	1,473	0	1,473	0
Equipment Over $5000	220,478	165,000	10,000	175,000	0
Total	**2,735,001**	**3,410,089**	**629,300**	**4,039,389**	**0**
Williston Research Center					
General Fund	1,922,183	2,358,157	334,340	2,692,497	0
Federal Funds	0	0	0	0	0
Special Funds	812,818	1,051,932	294,960	1,346,892	0
Total	**2,735,001**	**3,410,089**	**629,300**	**4,039,389**	**0**
Carrington Research Center					
Salaries - Permanent	2,029,184	2,122,501	791,548	2,914,049	0
Temporary Salaries	264,785	282,957	(215,403)	67,554	0
Overtime	166,341	180,125	(180,125)	0	0
Fringe Benefits	892,271	948,338	300,080	1,248,418	0
Travel	186,394	269,530	9,000	278,530	0
Supplies - IT Software	13,340	15,724	0	15,724	0
Supply/Material-Professional	125,302	148,070	58,000	206,070	0
Food and Clothing	10,017	10,012	0	10,012	0
Bldg, Ground, Maintenance	192,112	233,111	0	233,111	0
Miscellaneous Supplies	786,349	931,435	39,400	970,835	0
Office Supplies	11,722	12,626	0	12,626	0
Postage	7,100	3,747	5,800	9,547	0
Printing	10,810	20,140	8,700	28,840	0
IT Equip Under $5,000	13,720	14,403	0	14,403	0
Other Equip Under $5,000	102,310	110,766	13,973	124,739	0

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628 Branch Research Centers **Bill#: SB2020** **Date:** 12/07/2012
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Description	Expenditures 2009-2011 Biennium	Present Budget 2011-2013	Budget Request Change	Requested Budget 2013-2015 Biennium	Optional Budget Request
Utilities	117,889	122,696	0	122,696	0
Insurance	53,038	52,683	0	52,683	0
Rentals/Leases-Equip & Other	40,768	82,297	0	82,297	0
Rentals/Leases - Bldg/Land	85,270	134,815	0	134,815	0
Repairs	359,767	546,851	0	546,851	0
Salary Increase	0	0	0	0	0
Benefit Increase	0	0	0	0	0
IT - Communications	26,795	31,498	0	31,498	0
Professional Development	3,220	639	0	639	0
Operating Fees and Services	123,665	28,082	24,200	52,282	0
Fees - Professional Services	159,012	145,724	1,700	147,424	0
Medical, Dental and Optical	50	51	0	51	0
Equipment Over $5000	322,702	677,667	(4,167)	673,500	0
Total	**6,103,933**	**7,126,488**	**852,706**	**7,979,194**	**0**
Carrington Research Center					
General Fund	2,551,869	2,913,666	754,200	3,667,866	0
Federal Funds	0	0	0	0	0
Special Funds	3,552,064	4,212,822	98,506	4,311,328	0
Total	**6,103,933**	**7,126,488**	**852,706**	**7,979,194**	**0**
Funding Sources					
General Fund	12,367,190	14,945,208	3,356,366	18,301,574	0
Federal Funds	0	0	0	0	0
Special Funds	11,856,999	14,997,581	802,157	15,799,738	0
Total Funding Sources	**24,224,189**	**29,942,789**	**4,158,523**	**34,101,312**	**0**

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CHANGE PACKAGE SUMMARY

628 Branch Research Centers **Bill#: SB2020**

Biennium: 2013-2015

Date: 12/07/2012
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Description	Priority	FTE	General Fund	Federal Funds	Special Funds	Total Funds
Base Budget Changes						
One Time Budget Changes						
A-E 1 Remove One Time Funding		0.00	(800,000)	0	0	(800,000)
Total One Time Budget Changes		**0.00**	**(800,000)**	**0**	**0**	**(800,000)**
Ongoing Budget Changes						
A-A 1 SBARE Priorities		12.00	3,140,000	0	0	3,140,000
A-A 3 Base Funding for Equipment over $5,000		0.00	500,000	0	1,446,429	1,946,429
A-A 4 Other Revenue Change		0.00	(221,967)	0	1,735,236	1,513,269
A-A 5 Unranked SBARE Initiative		0.00	800,000	0	0	800,000
A-A 6 Capital Bond Payments		0.00	149,629	0	0	149,629
A-F 3 Remove Base Funding Equip over $5,000		0.00	(500,000)	0	(2,240,029)	(2,740,029)
A-F 4 Remove Funding Cap Bond Pmts		0.00	(149,600)	0	0	(149,600)
Base Payroll Change		0.00	438,304	0	(139,479)	298,825
Total Ongoing Budget Changes		**12.00**	**4,156,366**	**0**	**802,157**	**4,958,523**
Total Base Budget Changes		**12.00**	**3,356,366**	**0**	**802,157**	**4,158,523**

BUDGET CHANGES NARRATIVE

628 Branch Research Centers **Bill#: SB2020** **Date:** 12/07/2012 **Time:** 13:59:11

Change Group: A	**Change Type:** A	**Change No:** 1	**Priority:** 1

SBARE Priorities

An increase of $6,430,000 over the 2011-13 general fund base, would provide funds to address the following priorities of the State Board of Agricultural Research and Education and related needs of North Dakota agriculture. Of the total, $3,290,000 is included in the request for the Main Station, and $3,140,000 is included in the request for the Branch Stations.

SBARE ranked all of the projects for Main Station and Branch Stations together since a lot of the projects are joint efforts. Please refer to the ranked projects by reviewing the narrative in all of the agencies.

SBARE Ranking: Agriculture Experiment Station

In addition to Cost to continue FY 13 salary increases plus 2013-15 salary and health insurance increases *[2013-15 salary and health insurance increases to be determined]*, SBARE identified the following priorities:

1. Crops Initiative- Enhancing Crop Development and Protection Efforts [$2,110,000 Main; 6.0 FTE; $360,000 REC, 0.0 FTE]
$2,470,000 Total General Fund Increase

- $1,160,000 Increased operating support for the following programs: barley, corn, dry bean, pulse, soybean, HRS wheat, winter wheat, canola, cereal diseases, dry bean and pulse diseases (Main Station-$800,000), crop pathology (CREC-$120,000), variety testing (LREC-$120,000) , and dryland crop improvement (DREC-$120,000)
- $355,000 salary and fringe benefits, 2.0 FTE- Main Station, one nematologist and technician
- $300,000 Increased funding for operating($80,000), software and hardware ($100,000), and technical support (1.0 FTE, Main Station- $120,000) for NDAWN
- $300,000 salary and fringe benefit, 1.0 FTE, Main Station -one bioinformaticist
- $355,000 salary and fringe benefit, 2.0 FTE Main Station, one statistical genomicist and technical support

Agriculture is the leading sector of the state's economy. Cash "farm-gate" receipts of crop and livestock commodities account for 25% of the state's economy. Further, additional agricultural activities including, but not limited to, sale of products, manufacturing, transportation of commodities, professional services, and processing increases the percentage of this important component to more than 40%.

Developing improved crop varieties is fundamental to continued competitive success and profitability of farmers in the state. North Dakota has an extremely diverse crop mix; farmers grow more than 42 different crops in the state, and lead the nation in the production of more than 14 crop commodities. To accommodate the demand, the NDAES has developed over 13 plant breeding programs, with additional research programs that significantly aid in the development of improved varieties. When new varieties are released, they provide an immediate level of new wealth to farmers in the state. In general, $1 invested in variety development generates over $200 in return to the state.

Research to protect yield of all of the commodities is critical in reducing production costs. One area of crop protection that needs to be addressed is nematology. Several species of nematodes infest the roots of many of our important commodities; of these, the Soybean Cyst Nematode (SCN) perhaps causes the greatest economic impact. While the organism does not travel far on its own, mechanical transportation by humans enhance its movement within a region. This organism has recently been identified in 12 counties in the state, as far north as the Canadian border and west to the Missouri River.

The population is expected to increase rapidly. Yield losses in soybean and in other susceptible hosts of the pathogen, such as dry bean, are expected to increase as the population increases. In addition to SCN, other nematode species likely or confirmed in NO can infect sugarbeet, canola, potato, wheat, corn, and others.

Efforts to monitor disease development using NDAWN saved more than $30 million annually (either protecting the crop using timely application or not needing to spray). However, the NDAWN network is in need of upgrades, both in software and hardware. Of the 73 sites operated by NDAWN, only eight stations are capable of near-real-time data delivery using Wireless Data communication. Also, large spatial gaps exist, with 15 western NO counties not having an NDAWN station.

Fundamental research is research that creates new knowledge of science. Also described as basic research, it is the basis of all applied research that is carried out. Unlike applied research, where we can typically identify an immediate "payback", basic research generally has a more long-term payback. Having a combination of basic and applied research in agriculture allows our scientists to be at the forefront of identifying new knowledge, new technology, and new products. It also enhances our ability

as an experiment station to partner with industry, to increase our success in garnering competitive grants

from a number of organizations and solving tomorrow's problems today.

Research in areas, such as bioinformatics and statistical genomics, has future payoff, but also will provide our scientists with cutting edge tools with which to work more efficiently. Modern genetic and genomic technologies are providing a wealth of new data that are rapidly accelerating the pace of new applied discoveries. Understanding these data and interpreting them in a manner that supports breeding and other investigative research areas is essential for rapid advancement and the efficient development of new crop cultivars. Statistical genetics defines the new experimental approaches necessary to take advantage of large genomics data sets. Bioinformatics is the analytical tool necessary to analyze these data. Together, researchers in these fields analyze the data and provide applied researchers with interpretations that allow for timely and efficient decisions.

Crop development efforts can be enhanced by additional support to a number of breeding and affiliated research programs in quality evaluation, disease reaction, and agronomics.

2. Enhancing Research Capacity at the REC's [$0 Main; $1,860,000 REC, 8.0 FTE]
$1,860,000 Total General Fund Increase

• $400,000 salary and fringe benefits, 2.0 FTE (HREC and WREC at $200,000 each) are needed to focus on chemical and cultural control of weeds and plant pathogens in farming and grazing enterprises in western North Dakota.

• $900,000 salary and fringe benefit (1.0 FTE, LREC; 1.0 FTE, CGREC; 1.0 FTE, NCREC; 1.0FTE, DREC; 1.0 FTE, WREC; and 1.0 FTE, CREC), technical support ($150,000 each)

- $560,000 Operating support - $80,000 each (LREC, CGREC, NCREC, WREC, HREC, CREC, DREC)

The Research Extension Centers play a very important role in carrying out applied research in the Agricultural Experiment Station. Since evolving from branch stations/research farms, their involvement in important regional and state research activities has expanded, and there is strong support for these activities from farmers and ranchers in the state. Each REC has a unique mission to serve their respective region of the state; therefore, their needs also are unique. The ability of the scientists stationed at the RECs to address important and emerging problems will increase as the technical sophistication of farming and ranching practices continues to occur. Additional technical support staff to assist scientists on their research efforts and operating funds to help carry out the research are needed. Approximately 50% of each REC total budget is from gifts, grants (to support research), and sale of product.

A few scientists throughout the state carry out weed control research. Often, the mix of weed species affecting crop production in western North Dakota, and the cost of herbicides relative to potential productivity in the western part of the state, requires identifying different options better suited to this unique environment. A number of factors differentiate this region from other regions of the state, including extensive grazing lands, widespread adoption of no-till for moisture conservation, and the crops mix used in the region. Additionally, soil fertility, C-N ratios that exist in the region, and the identification of invasive species into this region all indicate that more expansive weed control activities be carried out in the region. Environmental conditions, including extended growing seasons and frequent drought create unique populations of tough-to-control weeds like downy brome, Persian darnel, and cleavers. Many weeds are directly responsible for reduced productivity of grazing lands, reduced palatability of livestock feeds, and some can be toxic to livestock.

There is an increasing level of crop disease problems occurring in western North Dakota due to the switch from a strict wheat-fallow rotation to intensive no-till cropping systems and irrigation development. Wheat and barley fields infected with leaf diseases, viruses, and even Fusarium head blight have been observed, while fields of pulse crops and other alternate crops have been infected with a number of diseases. A plant pathologist is needed to conduct timely disease surveys on the incidence and severity of crop diseases and to develop and recommend disease management control measures to no-till and irrigated producers. The plant pathologist will work with NDSU plant breeders on screening and identifying germplasm having resistance to the prevalent diseases occurring under no-till and irrigated production in western North Dakota.

3. Livestock Initiative - Improving Livestock Productivity and Protection [$1,180,000 Main REC, 6.0 FTE; $920,000 REC, 4.0 FTE]

BUDGET CHANGES NARRATIVE

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$2,100,000 Total General Fund Increase

- $700,000 salary and fringe benefit, 5.0 FTE at HREC, CREC, CGREC, DREC, and Main Station), technical support. ($140,000 each)
- $480,000 Operating support ($120,000 at Main Station, and $90,000 each at HREC, CGREC, CREC and DREC)
- $225,000 salary and fringe benefit, 1.0 FTE, Main Station, one scientist in forage nutrition and management
- $340,000 salary and fringe benefit 2.0 FTE, Main Station, support staff
- $355,000 salary and fringe benefit, 2.0 FTE, Main Station, one scientist in epigenetics and one technician

North Dakota livestock producers are committed to producing the safest, highest quality food products. Increasing demand for our meat products nationally and internationally will require additional emphasis on productivity and also will present additional opportunities for specialty markets and improved profitability. Through research, we can identify sustainable, profitable opportunities to improve livestock productivity in North Dakota.

Forage and Forage Nutrition Research. Forages are the backbone of North Dakota's livestock industry. The cow-calf, sheep, and dairy industries in the state rely on forages (grazed and harvested) for profitable and sustainable production. Additional investments in forage and forage nutrition research will pay dividends for North Dakota's livestock industry by enhancing productivity through a systems approach.

Expanded Beef Cattle Finishing Research. The resources are in place to grow beef feedlot enterprises in North Dakota. Opportunities for new market outlets and international trade, as well as the large variety of available feedstuffs, should enhance the opportunity for expansion. Systems that provide a stable, year-round finished cattle supply for processors and enhanced carcass quality for specialty markets, along with mitigating environmental stress, improving environmental sustainability, and improved animal care and husbandry are priorities for research.

Bison research. North Dakota is the third largest bison producer in the nation. The North Dakota bison industry identified several emerging needs areas at their recent testimony (Jan. 6, 2012), the most important of which is information on mineral nutrition of bison. Also, included in their testimony was research on feeding and nutrition of bison, grazing management, basic nutrient requirements, and animal health.

Epigenetics. Epigenetics is the study of factors such as diet, stress and other regulators that influence genetic expression. Our research capabilities can be enhanced by adequately funding efforts such as those made in the Advanced Imaging and Microscopy Lab and the Center for Nutrition and Pregnancy.

Identifying and preventing disease outbreaks in the animal herds in the state is the responsibility of the Veterinary Diagnostic Lab (VOL). The expanding oilfield presents challenges to livestock producers in western North Dakota. Pipeline breaks, semi-truck chemical spills, and down-hole accidents can contaminate ground and surface water sources. The proximity of livestock to drilling sites can result in poisoning from ingestion of water/feedstuffs contaminated with crude oil, condensate, salt water, heavy metals and/or caustic chemicals. Diagnosis of these cases requires sophisticated equipment.

The ability of the VOL to carry out enhanced testing of livestock feeds for mycotoxins, molds and phytoestrogens. Liquid chromatography with mass spectrometry capability (LC/MS/MS) can be used to test animal feeds for natural contamination by field and storage molds. Phytoestrogens are natural toxins commonly found in alfalfa and clover forages used for dairy and beef cattle. Elevated phytoestrogens in animal feeds create the potential for transfer to milk and milk products, and constitutes a public health risk. To identify low levels of phytoestrogens in milk, a more specific and sensitive method is required.

Currently, testing for *Listeria, Salmonella* and *E. coli* in ready to eat and raw meat products for the North Dakota Meat Inspection Service is being conducted at South Dakota State University. The NDSU-VDL is in the process of developing the capacity for surveillance of these bacteria. Instrumentation has been purchased to screen for the three above-mentioned bacteria with temporary laboratory space assigned to conduct the testing. Additional instrumentation is required. There are 21 federally inspected and 14 state inspected establishments in North Dakota that would immediately benefit from this testing.

Through cooperative agreements and collections income, the laboratory has been responsible for the funding of positions considered essential by our accrediting organization, the American Association of Veterinary Laboratory Diagnosticians. Uncertainly about the year to year availability of these monies places these critical positions in jeopardy. Without accreditation, the laboratory would lose reputation, status, and clientele. Permanent funding is needed to give stability to these positions.

Change Group: A	**Change Type:** A	**Change No:** 3	**Priority:** 2

BUDGET CHANGES NARRATIVE

628 Branch Research Centers **Bill#: SB2020** **Date:** 12/07/2012 **Time:** 13:59:11

Base Funding for Equipment over $5,000

The Research Extension Centers have identified equipment needs (costing > $5000) that total $1,946,429 for the 2011-13 biennium. This consists of $1,446,429 special funds (AA3), $500,000 general fund revolving equipment (AA3). Totals for the RECs are as follows;

Dickinson $243,500
Central Grasslands $187,000
Hettinger $207,429
Langdon $240,000
North Central $220,000
Williston $175,000
Carrington $673,500

The Research Extension Centers have a total of $500,000 in a revolving equipment pool, that is allocated to different Centers each biennium. The change in this allocation is reflected in the following schedule, that lists the amount allocated to the different Centers in 2011-13 and 2013-15:

In 2011-13, the following REC's received funds from the revolving equipment pool: Central Grasslands - $125,000, Langdon - $125,000, North Central - $125,000, Williston - $125,000
The adjustment (-$500,000), to remove these allocations from the base, are included in "remove capital" budget change code AF3.

In 2013-15, the following REC's will receive funds from the revolving equipment pool, and the $500,000 allocation is included in "base changes" budget change code AA3. Dickinson - $125,000, Hettinger - $125,000, North Central - $125,000, Carrington - $125,000.

Change Group: A	**Change Type:** A	**Change No:** 4	**Priority:** 3

Other Revenue Change

Hettinger: Increase in other revenue due to large Tribal project increasing both Grant and Collection activities (livestock sales)

Langdon: Increase other funds due to increased seed sales

Change Group: A	**Change Type:** A	**Change No:** 5	**Priority:** 4

Unranked SBARE Initiative

Unranked Response to Legislative Request – Addressing oil revenue shortfall at DREC
$800,000 Operating, Dickinson REC - Permanent funds to offset reduced oil revenue - Oil revenues have declined due to decreased production in the last several years. Past legislative sessions have made efforts to offset this reduced revenue, but these efforts were temporary. Last session, a request was granted to provide $800,000 to offset reduced oil revenues, but SBARE was tasked by the Legislature with determining and suggesting a permanent solution to this issue.

Change Group: A	**Change Type:** A	**Change No:** 6	**Priority:** 5

Capital Bond Payments

BUDGET CHANGES NARRATIVE

628 Branch Research Centers **Bill#: SB2020** **Date:** 12/07/2012 **Time:** 13:59:11

This request is based on 2013-15 estimates provided by the Industrial Commission for state general fund obligation bonds issued through the Industrial Commission: Central Grasslands REC **$56,906** and North Central REC **$92,723.** The 2011-13 appropriation for bond payments was removed in change code **AF4.**

Change Group: A	**Change Type:** E	**Change No:** 1	**Priority:** 1

Remove One Time Funding

To remove $800,000 (GF) one-time funding for operations at the Dickinson REC (SB2015, Section 18).

Change Group: A	**Change Type:** F	**Change No:** 3	**Priority:** 1

Remove Base Funding Equip over $5,000

To remove $2,740,029 base funding for equipment > $5,000 ($500,000 General Fund, $2,240,029 Special)

The following amounts represent the removal of base funding for equipment > $5,000
Dickinson $652,362
Central Grasslands $235,000
Hettinger $190,000
Langdon $195,000
North Central $625,000
Williston $165,000
Carrington $677,667

The Research Extension Centers have a total of $500,000 in a revolving equipment pool, that is allocated to different Centers each biennium. The change in this allocation is reflected in the following schedule, that lists the amount allocated to the different Centers in 2011-13 and 2013-15:

In 2011-13, the following REC's received funds from the revolving equipment pool: Central Grasslands - $125,000, Langdon - $125,000, North Central - $125,000, Williston - $125,000
The adjustment (-$500,000), to remove these allocations from the base, are included in "remove capital" budget change code AF3.

In 2013-15, the following REC's will receive funds from the revolving equipment pool, and the $500,000 allocation is included in "base changes" budget change code AA3. Dickinson - $125,000, Hettinger - $125,000, North Central - $125,000, Carrington - $125,000.

Change Group: A	**Change Type:** F	**Change No:** 4	**Priority:** 2

Remove Funding Cap Bond Pmts

To remove for bond payments for state general fund obligation bonds issued through the Industrial Commission at the Central Grasslands REC **$56,895** and North Central REC **$92,705.**

Change Group: R	**Change Type:** A	**Change No:** 1	**Priority:**

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BUDGET CHANGES NARRATIVE

628 Branch Research Centers **Bill#: SB2020** **Date:** 12/07/2012 **Time:** 13:59:11

Reduce SBARE Intiative to Recommended Level

This change package adjusts funding for SBARE initiatives in change package AA1 to the Executive Recommendation:

Enhancing Crop Development and Protection Efforts

- $360,000 for increased operating support at the Carrington, Langdon, and Dickinson Research Extension Centers.

Enhancing Research Capacity at the REC's

- Adds $200,000 from the general fund and 1.00 FTE for a weed scientist at the Hettinger Research Extension Center to focus on control of weeds and plant pathogens. This is $200,000 and 1.00 FTE less than requested.
- Provides $450,000 from the general fund and 3.00 FTE for new research technicians at the Central Grasslands, North Central and Carrington Research Extension Centers. This is $450,000 and 3.00 FTE less than requested.
- Approves $560,000 from the general fund, or $80,000 at each of the research extension centers, for added operational support.

Livestock Initiative

- Did not fund $920,000 and 4.0 FTE requested for this initiative.

Change Group: R	**Change Type:** A	**Change No:** 100	**Priority:**

Executive Compensation Package Adjustment

This budget change provides funding for recommended 2013-15 compensation adjustments.