

2009 SENATE APPROPRIATIONS

SB 2020

2009 SENATE STANDING COMMITTEE MINUTES

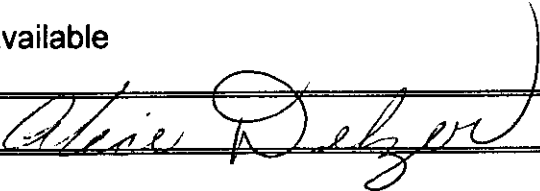
Bill/Resolution No. 2020

Senate Appropriations Committee

Check here for Conference Committee

Hearing Date: 01-14-2009

Recorder Job Number: Audio Unavailable

Committee Clerk Signature 

Minutes:

Chairman Holmberg called the committee hearing to order at 1:30 pm regarding SB 2020 on the Northern Crops Institute.

Dr. Joseph Chapman, NCC Member and President, NDSU, testified in support of SB 2020. There was no written testimony. He indicated the agencies that would be testifying including the agriculture experiment station, the main station in Fargo, Williston, Minot, Carrington, Dickinson, Streeter, and the Agron Seed at Casselton, Dr. Ken Grafton, and NDSU Extension Service. In short, the funds were used for exactly what you said they should be used for. The committee will be getting the accountability. Just to remind you this was created in the late 1990's by the legislature who worked with us to come forward with initiatives that were important to the people of ND. It was unanimously endorsed and started from the Northern Crops Institute.

Brian Sorenson, NCI Director, testified in support of SB 2020 providing written testimony #1, page 5, Update on NCI initiatives Budgeted in 2007-09. On page 6, the 2009-11 Needs Based Budget was discussed. The initiative not included in the Executive Recommendation is the Pulse and Oilseed Technologist. There is no trained miller at NDSU; having someone on staff would help with education and promotion of wheatland crop sales. The budgeton page 7 was then discussed.

The remainder of the handout discusses the impact we have. The back of the handout is the annual update which includes all activities during the past year. The offered are on page 18.

Senator Mathern congratulated him on his position. He questioned the Pulse specialist position as Senator Mathern thought that was added. The response was that an assistant pulse specialist was added but there is a need for technical help.

Vice Chairman Bowman questioned where the milling specialist comes from and whether there are any classes that put out milling specialists today.

Brian Sorenson indicated the only place is Kansas State University. Mr. Sorenson indicated NDSU has a good relationship with KSU faculty and staff and it would be nice if we could have a program like that at NDSU but it does take a specialist.

Vice Chairman Bowman stated that specialist has to be a major component to the success of this program.

David Clough, Northern Crops Council (NCC) Member and ND Wheat Commission, testified in support of SB 2020. He has written testimony, but it was not turned in. will try to get. He stressed that they are asking for a milling specialist position.

No further questions were asked.

Chairman Holmberg closed the hearing.

2009 SENATE STANDING COMMITTEE MINUTES

Bill/Resolution No. 2020

Senate Appropriations Committee

Check here for Conference Committee

Hearing Date: 01-14-09

Recorder Job Number: 7032

Committee Clerk Signature

Rose Lanning

Minutes:

Chairman Holmberg called the committee hearing to order at 2:16 pm in reference to SB 2020 on the NDSU Extension Service.

Chairman Holmberg commented that all the material that was handed out fits in the binder.

He announced that 5 bills would be amended on the floor and then the engrossed bill would be put into binders. There will be a subcommittee at a later date.

D.C. Costan, VP of NDSU introduced **Rodney Howe, Vice-chair, SBARE**

Rodney Howe, Vice-chair, SBARE introduced past SBARE members. He also shared about the process of SBARE, stressing to the committee that with the impact of agriculture, it's very important they continue to invest in ND.

(Reading from ND Agricultural Experiment Station and NDSU Extension Service tab in 2009 Legislator's Guide to NDUS)

(13:52)

Senator Krebsbach asked about their program for checking soil conditions and wondered if they were going to be affiliating with UND and their new satellite that's going to give climate and soil conditions and was informed that the infrastructure is already in place and they are looking to maintain it.

V. Chair Bowman asked if everyone had a chance to express every need they have so that no one was left out.

Rodney Howe said they've had a lot of input and believe this is a solid list.

Ken Grafton, Dean & Director, ND Agriculture Research and Education.

(Reading from page 27 in ND Agricultural Experiment Station and NDSU Extension Service)

Chairman Holmberg asked about salary raises.

(Continuing on page 40)

(37:00)

Jerry Bergman, Director, Williston, Research Extension Center (REC)

(Reading from page 73 in ND Agricultural Experiment Station and NDSU Extension Service)

Jay Fischer, Director, North Central REC near Minot

(Reading from page 71 in ND Agricultural Experiment Station and NDSU Extension Service)

(Handed out Building addition drawing attachment #1)

Randy Mehlhoff, Director, Langdon REC

(Reading from page 65 in ND Agricultural Experiment Station and NDSU Extension Service)

(Additional information - attached # 2)

Referred to Capital Construction Project on page 82, section C)

48:30

V. Chair Bowman: Where are we at with SCAB research and how long take?

Randy Mehlhoff: Research has been very effective in eliminating scab, but not quite 100%.

V. Chair Bowman asked with research, at what point in time when you find that you're not gaining anything, do you stop project and go into something else that you might be able to find an answer that would have greater impact on agriculture?

Randy Mehlhoff replied that we need at least 3 years research and if no impact, then drop and find other projects.

Senator Mathern: How many square feet are you planning to heat and cool with this geo-system?

Randy Mehlhoff: We have about 7500 sq. feet at the headquarters. We also have a house on the station as well as an older headquarters building. We're hoping; based on the dollar figure, possibly make LREC 100% geo-thermal heating.

Discussion continued on the costs of geo-thermal heating.

52 03

Paul Nyren, Director of Central Grasslands REC

(Reading from page 53 in ND Agricultural Experiment Station and NDSU Extension Service)

He also thanked the committee their past support.

(54:55)

V. Chair Bowman asked about the beef research program and how the research affects the center.

(57:20)

Kris Ringwall, Director, Dickinson REC

(Referenced page 82 and then Reading from page 57 in ND Agricultural Experiment Station and NDSU Extension Service)

V. Chair Bowman questioned money being spent to remodel an old office and why invest in an old building.

Kris Ringwall replied that the particular building is the white house built in 1905 and in all fairness to the homesteaders, they built them good. He stated that they are out of space. It's

very structurally sound and will be incorporate into the main floor and offices on top floor. It has 5000 square feet.

Senator Krauter: Is the funding source the same as the last biennium?

Kris Ringwall: This is a general fund appropriation.

1 02 08

Blaine Schatz, Director Carrington, REC

(Reading from page 49 in ND Agricultural Experiment Station and NDSU Extension Service)

Thanked the legislators for the research center.

Chris Schauer, Director, Hettinger REC

(Reading from page 61 in ND Agricultural Experiment Station and NDSU Extension Service)

Thanked for remodeling and additional staffing.

Tom Teigen, Director, Agronomy Seed Farm

(Reading from page 77 in ND Agricultural Experiment Station and NDSU Extension Service)

They purchased a combine and he thanked the committee for their past support.

78:22

Duane Hauck, Director of NDSU Extension Service

Introduced staff who help citizens in the state to improve people's lives and opportunities.

(Reading from pages 3, 5-8 in ND Agricultural Experiment Station and NDSU Extension Service)

Senator Mathern asked about the Leadership Training Program and **Duane Hauck** expanded

on the 4-H program and stated that youth involved in 4-H for one year are less likely to

participate in risky behavior. Almost commented on the Parenting Education Program listed on page 7.

Senator Robinson: How many extension agents do we have in state and how many home economists?

Duane Hauck: We have approx. 98 FTEs, but have around 125 people because some of them are part time. Of that number, about one half are agriculture and half are family and consumer science.

Leslie Lubenow, Agriculture Extension Agent, Pembina County

Testified in favor of SB 2020. (Written attached testimony # 3).

Ted Hanson, Slope County

Testified in favor of SB 2020. (No written testimony.)

Randy Schneider, President, Ethanol Producers Association

Testified in favor of SB 2020. (No written testimony.)

Jim Teigen, Pierce County, President, ND Association of Soil Conservation Districts

Testified in favor of SB 2020 (Written attached testimony #4 and #5 – soil salinity.)

Chairman Holmberg commented that a few years ago, there was a huge difference between the salaries of people working for soil conservation districts around the state and wondered if it had changed. **Jim Teigen** has no facts with him, but suspects that is still the situation since the funding for districts varies greatly.

Chairman Holmberg asked about the tree plantings and the snow fence initiative and discussion centered on rejuvenating the tree breaks, replacement of wind breaks and shelter belts.

(116:30)

Jerry Doan, rancher from McKenzie, ND, Chairman, Central Grasslands Research Center Advisory Board, Streeter.

Testified in favor of SB 2020. (No written testimony.)

1 58 23

Chairman Holmberg asked about the synergy of soil salinity and the Grasslands Council and hoped there was collaboration between them and the university.

Ryan Brooks, farmer rancher, Bowman, Director, Northern Pulse Growers Association.

Testified in favor of SB 2020. (No written testimony) Thanked the committee for the Pulse Growers program.

Mike Beltz, Chairman of ND Ag Coalition

Testified in favor of SB 2020. (Written attached testimony # 6)

Neal Fisher, Administrator, ND Wheat commission

Testified in favor of SB 2020. (No written testimony)

Julie Ellingson, ND Stockmen's Association

Testified in favor of SB 2020. (Written attached testimony # 7)

Brian Kramer, ND Farm Bureau

Testified in favor of SB 2020. (No written testimony.)

Dan Wogsland, Director ND Grain Growers Assoc.

Testified in favor of SB 2020. (No written testimony.)

Richard Schlosser, ND Farmers Union

Testified in favor of SB 2020. (No written testimony.)

Jerry Knutson, Director, ND Agricultural Association

Testified in favor of SB 2020. (No written testimony.) 135:28

Senator Krauter questioned the discrepancy on the initiative for the greenhouse utilities.

Tammy Dolan, OMB Fiscal Analyst: We increased that amount from the request in the governors' budget.

Chairman Holmberg closed the hearing on SB 2020.

General Discussion

(Check appropriate box)

Committee on Committees

Rules Committee

Confirmation Hearings

Delayed Bills Committee

House Appropriations

Senate Appropriations

Other *Sub Committee*

Date of meeting/discussion: 01-28-09 NDSU Research Center *SB 2020*

Recorder Job Number: 8041

Committee Clerk Signature

Rose Jaring

Minutes:

V. Chair Bowman called the subcommittee hearing to order.

Those present were:

V. Chair Bowman, Chairman Holmberg, Senator Wardner, Senator Lindaas, Ken Grafton, Duane Hauck and Bruce Bollinger from the NDSU agriculture department, Jerry Effertz (SBARE chair), Brian Kramer Farm Bureau, Tammy Dolan, Fiscal Analyst, and Sheila Sandness, Legislative Council.

V. Chair Bowman commented that all the dollars that we are investing in infrastructure is taking away a lot of what would be invested in research. We could have funded every request in both extension and the main farm if we wouldn't have done all these buildings. We also know the importance of having the buildings for research. Our decision has to be do we start adding people that weren't included in the original budget

NB 2026

and then turn around and have to exclude somebody if we stay within budget? This is a big budget. There are a lot of good things in this budget, but it is sort of cutting our research department for doing the work. After we get the green house done, and all the other buildings in all of the campuses, as well as the research centers, then we won't have to spend a lot of money for awhile on more buildings and we will be able to fund more research. Once this system works its way through, and the buildings are up and running, then we're going to be full bore ahead with research projects and everyone that has a concern, you should be able to facilitate somewhere in the budget.

Ken Grafton: The greenhouse project is a costly project. In 1999, we estimated the cost of this project to be \$ 34 M estimate. When this was first brought forward to the legislature as an idea in 2003, it was still estimated to be \$34-35 M project. We were willing to build in phases and were funded partially in 2005 and also in 2007. We appreciate the support in both sessions. It's extremely critical to rely on very talented scientists to do the research that would benefit the state of ND.

V. Chair Bowman: If we're going to have top notch researchers here, we have to have the facilities that allow the latest and the best. One other question dealing with that. We haven't yet received what it's going to cost for electricity for the new one. What is in that green house that costs so terribly much money to put on the lights and heat it?

Ken Grafton: Utility costs are for phase I that should be completed by December of 2009 and also a portion of phase 2 assuming we get funding. This is a large facility and the footprint is extremely large. It will have 45,000 square feet of space under glass.

(Proceeds to describe the construction)

AB 2026

V. Chair Bowman: You say the completion date is December of 2009? What will be the total bill after the 2nd phase is done? As a rough estimate.

Bruce Bollinger: The architect that put together the estimate for \$430,000 included phase 1 & phase 2. Phase 1 included both years. For phase 2 it only included one year. There is one year for utilities in phase 2 included in this number.

Bruce Bollinger gave rough estimates for utility costs for phase 1 & 2.

V. Chair Bowman clarified its location on campus, and said it's on the west side of the road. It's not student orientated, but a research facility. If we hire students to do the research along with educated researchers, isn't that an education process in itself? How do you justify separating that from the rest of the campuses? I've tried to figure out why it was done that way other than it's a nice little request.

Ken Grafton: I believe this came to us in April of 2008 as a requirement. My understanding is that it was a guideline that was developed in the state board of higher education offices. The buildings that were not academic or administrative would not be included in the overall utilities budget request.

Bruce Bollinger: The greenhouse project is a large complex project. The experiment station hasn't had a project like this since those old greenhouses were constructed back in the 1940 and 1950s. There isn't any large complex project probably for another 60-70 years. We talked with OMB and where to put it on the list, maybe next time put it in a different category. But this is a unique situation due to the size of the complex.

V. Chair Bowman: The thing that bothered me is that I went and toured the greenhouses and they are outdated. They really have no use. To me that's simple. You build a new one, get it built, and tear the old ones down. There is an extremely

9/8 2020

high cost to running all these. In order to keep the budget somewhere in line, you have to look at the business side of it too. We're willing to sacrifice those old ones and get rid of them. But save that money so when the next budget comes in, you'll have something to look at. If you're going to keep them, then how long before you have to remodel the old ones and we haven't solved any problems as far as the long term benefits of this big greenhouse.

Ken Grafton: We're always looking at our facilities and trying to make sure if they need to be renovated, remodeled or destroyed.

The committee looked at a map of NDSU seeing where the greenhouses are.

Ken Grafton: Right now there is no greenhouse space left on campus.

V. Chair Bowman: Hopefully when we are done with building projects, we will be able to get to research work done.

Senator Lindaas asked about the soybean breeding and the Monsanto wing and wondered if anything new was being developed.

Ken Grafton replied that they don't have soybean breeding technician but it was included in the main station request.

Jerry Effertz shared on assistance he has received from all the research done at NDSU.

Duane Hauck thanked V. Chair Bowman for his interest in the project.

Senator Lindaas questioned certain areas on the map and asked for clarification on the insulated glass and the practicalities.

Chairman Holmberg was curious about the workings of SBARE and putting together the priority list. I noticed that on budgets of a larger nature, this budget, the medical school, and career & tech education all have separate boards that give advice to them.

5/3 2020

The agency gets the advice and then puts together the recommendations for the budget. Is there a limit to how long your list can be for SBARE?

Jerry Effertz: The state board of agriculture research comes under the board of higher education. We are in process of collecting data. This was made by guideline set by state board of higher education. We have the authority to put forth a budget that provides 24 %. We prioritize that list. When we start prioritizing, we deal with programs, not dollars.

Chairman Holmberg: Then the governor decides on this list what we're going to spend and draws the line.

V. Chair Bowman: After you put this together and looked at the whole budget itself, are you satisfied that you have it the way you want it before we start to demolish it.

Ken Grafton: If I was to prioritize the multiple requests, it would probably be different for what is there for SBARE. This is a group of individuals who have given their time and collected different data in 2007 and we finally prioritize in 2008.

Duane Hauck: We're satisfied with ranking that SBARE gave.

Discussion continued on SBARE, soil salinity, millers at NDSU, and various other research project needs.

V. Chair Bowman said he didn't think there would be drastic changes to this budget in committee, but it may change on the floor

V. Chair Bowman asked them to help find places in the budget they can reduce costs. He thanked everyone for coming and closed the hearing.

2009 SENATE STANDING COMMITTEE MINUTES

Bill/Resolution No. SB 2020

Senate Appropriations Committee

Check here for Conference Committee

Hearing Date: February 12, 2009

Recorder Job Number: 9369

Committee Clerk Signature



Minutes

Chairman Holmberg opened the hearing on SB 2020

V. Chair Bowman moved Do Pass on amendments .0102, .0104, .0105, .0106, .0107.

Senator Fischer seconded.

.0105 added \$100,000 to budget for soil conservation grants.

.0106 Upper great plains transportation is in this budget. They're building a new building.

.0102 Munson amendment for hemp – adds \$200,000 special funds to the hemp research.

Three other needs include a plant pathologist at Carrington, a swine specialist at the main research center, and a grasslands specialist at Streeter. These are the three SBARE prioritized.

These are the amendments in nutshell. This budget is an 18% increase, but does not include any onetime funding.

Senator Seymour asked him to define SBARE and Senator Bowman explained that it is made up of various organizations and legislators. They take the list of all the suggestions and prioritize them. It's a cross section of the state and the state's needs.

Chairman Holmberg said there's a lot of money in this budget that's included as onetime funding for construction. The committee wondered if we should hold back on construction, but decided to get the construction done and then focus on programs and research.

V. Chair Bowman added 145,000 to initiative . Need to balance budget, Senator Krauter concerned about the reduction in 3 FTEs. We praise SBARE and they prioritized the FTEs, so I fail to hear why we are reducing 3 FTEs.

V. Chair Bowman said when we discussed total reduction of new FTEs, he asked them to give their highest priority. They talked by phone with NDSU before so they are ok with it, for now.

Senator Mathern: asked if they could take the amendments one at time. On .0102, we're adding \$20,000. Where is the language?

V. Chair Bowman said the info is on last page. This is special funding.

.0102 amendment - Voice vote – passed.

V. Chair Bowman moved Do Pass on amendment .0104 which is the removal of 3 FTEs.

Senator Fischer seconded.

Senator Christmann felt they should fund the SBARE priorities and V. Chair Bowman said he agrees but we need to respect the legislative process and if it gets voted out, it's out.

Senator Krauter commenting on the swine research, we are going against the whole philosophy of SBARE.

.0104 amendment – Voice vote – failed.

.0105 amendment – soil conservation.

V. Chair Bowman moved Do Pass.

Senator Robinson seconded.

Voice vote - Motion carried.

.0106 amendment - failed for lack of motion.

.0107 –spending authority in the building clause. No general fund money.

V. Chair Bowman moved Do Pass.

Senator Krauter seconded.

Voice vote – Motion carried.

Senator Krauter MOVED DO PASS AS AMENDED

Senator Robinson SECONDED.

A Roll Call vote was taken. Yea: 14 Nay: 0 Absent: 0

V. Chair Bowman will carry the bill on the floor.

PROPOSED AMENDMENTS TO SENATE BILL NO. 2020

Page 2, line 23, replace "25,923,544" with "26,123,544" and replace "104,502,142" with "104,702,142"

Page 2, line 25, replace "26,423,544" with "26,623,544" and replace "105,002,142" with "105,202,142"

Page 2, line 26, replace "2,462,503" with "2,662,503" and replace "44,813,267" with "45,013,267"

Page 3, line 25, replace "6,819,165" with "7,019,165" and replace "109,619,662" with "109,819,662"

Page 3, line 26, replace "35,854,717" with "36,054,717" and replace "206,214,821" with "206,414,821"

Page 5, line 28, after "for" insert "industrial hemp research of \$200,000 of special funds and the appropriation for"

ReNUMBER accordingly

A copy of the statement of purpose of amendment is attached.

STATEMENT OF PURPOSE OF AMENDMENT:

Senate Bill No. 2020 - Summary of Senate Action

	Executive Budget	Senate Changes	Senate Version
Transportation Institute			
Total all funds	\$23,326,992	\$0	\$23,326,992
Less estimated income	21,737,199	0	21,737,199
General fund	<u>\$1,589,793</u>	<u>\$0</u>	<u>\$1,589,793</u>
Branch Research Centers			
Total all funds	\$26,169,006	\$0	\$26,169,006
Less estimated income	14,266,816	0	14,266,816
General fund	<u>\$11,902,190</u>	<u>\$0</u>	<u>\$11,902,190</u>
NDSU - Extension Service			
Total all funds	\$47,403,957	\$0	\$47,403,957
Less estimated income	25,928,877	0	25,928,877
General fund	<u>\$21,475,080</u>	<u>\$0</u>	<u>\$21,475,080</u>
Northern Crops Institute			
Total all funds	\$3,037,486	\$0	\$3,037,486
Less estimated income	1,598,265	0	1,598,265
General fund	<u>\$1,439,221</u>	<u>\$0</u>	<u>\$1,439,221</u>
Main Research Center			
Total all funds	\$105,002,142	\$200,000	\$105,202,142
Less estimated income	44,813,267	200,000	45,013,267
General fund	<u>\$60,188,875</u>	<u>\$0</u>	<u>\$60,188,875</u>
Agronomy Seed Farm			
Total all funds	\$1,275,238	\$0	\$1,275,238
Less estimated income	1,275,238	0	1,275,238
General fund	<u>\$0</u>	<u>\$0</u>	<u>\$0</u>
Bill total			
Total all funds	\$206,214,821	\$200,000	\$206,414,821
Less estimated income	109,619,662	200,000	109,819,662
General fund	<u>\$96,595,159</u>	<u>\$0</u>	<u>\$96,595,159</u>

Senate Bill No. 2020 - Main Research Center - Senate Action

	Executive Budget	Senate Changes	Senate Version
Main research center	\$104,502,142	\$200,000	\$104,702,142
Deferred maintenance	500,000		500,000
Total all funds	\$105,002,142	\$200,000	\$105,202,142
Less estimated income	44,813,267	200,000	45,013,267
General fund	\$60,188,875	\$0	\$60,188,875
FTE	353.39	0.00	353.39

Department No. 640 - Main Research Center - Detail of Senate Changes

	Adds Funding for Industrial Hemp Research ¹	Total Senate Changes
Main research center	\$200,000	\$200,000
Deferred maintenance		
Total all funds	\$200,000	\$200,000
Less estimated income	200,000	200,000
General fund	\$0	\$0
FTE	0.00	0.00

¹ This amendment adds \$200,000 of special funds for industrial hemp research and includes the industrial hemp research funding in the emergency clause of the bill.

Date: 2-12-09
Roll Call Vote #: 1

2009 SENATE STANDING COMMITTEE ROLL CALL VOTES
BILL/RESOLUTION NO. 2020

Senate _____ Committee _____

Check here for Conference Committee

Legislative Council Amendment Number 0102 Amendment

Action Taken Do Pass Do Not Pass Amended

Motion Made By Sen. Bowman Seconded By Sen. Fischer

Representatives	Yes	No	Representatives	Yes	No
Senator Wardner			Senator Robinson		
Senator Fischer			Senator Lindaas		
V. Chair Bowman			Senator Warner		
Senator Krebsbach			Senator Krauter		
Senator Christmann			Senator Seymour		
Chairman Holmberg			Senator Mathern		
Senator Kilzer					
V. Chair Grindberg					

Total Yes _____ No _____

Absent _____

Floor Assignment _____

If the vote is on an amendment, briefly indicate intent:

voice vote passed

PROPOSED AMENDMENTS TO SENATE BILL NO. 2020

Page 2, line 23, replace "25,923,544" with "25,435,846" and replace "104,502,142" with "104,014,444"

Page 2, line 25, replace "26,423,544" with "25,935,846" and replace "105,002,142" with "104,514,444"

Page 2, line 27, replace "23,961,041" with "23,473,343" and replace "60,188,875" with "59,701,177"

Page 2, line 28, replace "6.00" with "3.00" and replace "353.39" with "350.39"

Page 3, line 24, replace "29,035,552" with "28,547,854" and replace "96,595,159" with "96,107,461"

Page 3, line 26, replace "35,854,717" with "35,367,019" and replace "206,214,821" with "205,727,123"

Renumber accordingly

A copy of the statement of purpose of amendment is attached.

failed

STATEMENT OF PURPOSE OF AMENDMENT:

Senate Bill No. 2020 - Summary of Senate Action

	Executive Budget	Senate Changes	Senate Version
Transportation Institute			
Total all funds	\$23,326,992	\$0	\$23,326,992
Less estimated income	21,737,199	0	21,737,199
General fund	\$1,589,793	\$0	\$1,589,793
Branch Research Centers			
Total all funds	\$26,169,006	\$0	\$26,169,006
Less estimated income	14,266,816	0	14,266,816
General fund	\$11,902,190	\$0	\$11,902,190
NDSU Extension Service			
Total all funds	\$47,403,957	\$0	\$47,403,957
Less estimated income	25,928,877	0	25,928,877
General fund	\$21,475,080	\$0	\$21,475,080
Northern Crops Institute			
Total all funds	\$3,037,486	\$0	\$3,037,486
Less estimated income	1,598,265	0	1,598,265
General fund	\$1,439,221	\$0	\$1,439,221
Main Research Center			
Total all funds	\$105,002,142	(\$487,698)	\$104,514,444
Less estimated income	44,813,267	0	44,813,267
General fund	\$60,188,875	(\$487,698)	\$59,701,177
Agronomy Seed Farm			
Total all funds	\$1,275,238	\$0	\$1,275,238
Less estimated income	1,275,238	0	1,275,238
General fund	\$0	\$0	\$0
Bill total			
Total all funds	\$206,214,821	(\$487,698)	\$205,727,123
Less estimated income	109,619,662	0	109,619,662
General fund	\$96,595,159	(\$487,698)	\$96,107,461

Senate Bill No. 2020 - Main Research Center - Senate Action

	Executive Budget	Senate Changes	Senate Version
Main Research Center			
Deferred maintenance	\$104,502,142	(\$487,698)	\$104,014,444
	500,000		500,000
Total all funds	\$105,002,142	(\$487,698)	\$104,514,444
Less estimated income	44,813,267	0	44,813,267
General fund	\$60,188,875	(\$487,698)	\$59,701,177
FTE	353.39	(3.00)	350.39

Department No. 640 - Main Research Center - Detail of Senate Changes

	Removes New FTE Positions ¹	Total Senate Changes
Main Research Center Deferred maintenance	(\$487,698)	(\$487,698)
Total all funds	(\$487,698)	(\$487,698)
Less estimated income	0	0
General fund	(\$487,698)	(\$487,698)
FTE	(3.00)	(3.00)

¹ Removes the following 3 FTE pulse, oilseed, and wheat evaluation positions added in the executive budget:

	FTE	General Fund	Special Funds	Total
Academic staff position	(1.00)	(\$223,750)		(\$223,750)
Academic staff position	(1.00)	(131,974)		(131,974)
Academic staff position	<u>(1.00)</u>	<u>(131,974)</u>		<u>(131,974)</u>
Total	(3.00)	(\$487,698)		(\$487,698)

Date: 2-12-09
Roll Call Vote #: 2

2009 SENATE STANDING COMMITTEE ROLL CALL VOTES
BILL/RESOLUTION NO. 2020

Senate Senate Appropriations Committee

Check here for Conference Committee

Legislative Council Amendment Number ,0104 amendment

Action Taken Do Pass Do Not Pass Amended

Motion Made By Sen Bowman Seconded By Sen Fischer

Representatives	Yes	No	Representatives	Yes	No
Senator Krebsbach			Senator Seymour		
Senator Fischer			Senator Lindaas		
Senator Wardner			Senator Robinson		
Senator Kilzer			Senator Warner		
V. Chair Bowman			Senator Krauter		
Senator Christmann			Senator Mathern		
V. Chair Grindberg					
Chairman Holmberg					

Total Yes _____ No _____

Absent _____

Floor Assignment _____

If the vote is on an amendment, briefly indicate intent:

voice vote - failed

PROPOSED AMENDMENTS TO SENATE BILL NO. 2020

Page 1, line 20, replace "5,138,122" with "5,088,122" and replace "46,666,157" with "46,616,157"

Page 1, line 21, replace "0" with "100,000" and replace "737,800" with "837,800"

Page 1, line 22, replace "5,138,122" with "5,188,122" and replace "47,403,957" with "47,453,957"

Page 2, line 1, replace "3,072,967" with "3,122,967" and replace "21,475,080" with "21,525,080"

Page 2, line 24, replace "500,000" with "450,000" and replace "500,000" with "450,000"

Page 2, line 25, replace "26,423,544" with "26,373,544" and replace "105,002,142" with "104,952,142"

Page 2, line 27, replace "23,961,041" with "23,911,041" and replace "60,188,875" with "60,138,875"

Page 4, line 4, replace "500,000" with "450,000"

Page 4, line 13, replace "132,000" with "82,000"

Page 4, line 17, replace "17,982,000" with "17,882,000"

Page 4, line 19, replace "17,632,000" with "17,532,000"

Renumber accordingly

A copy of the statement of purpose of amendment is attached.

STATEMENT OF PURPOSE OF AMENDMENT:

Senate Bill No. 2020 - Summary of Senate Action

	Executive Budget	Senate Changes	Senate Version
Transportation Institute			
Total all funds	\$23,326,992	\$0	\$23,326,992
Less estimated income	21,737,199	0	21,737,199
General fund	\$1,589,793	\$0	\$1,589,793
Branch Research Centers			
Total all funds	\$26,169,006	\$0	\$26,169,006
Less estimated income	14,266,816	0	14,266,816
General fund	\$11,902,190	\$0	\$11,902,190
NDSU Extension Service			
Total all funds	\$47,403,957	\$50,000	\$47,453,957
Less estimated income	25,928,877	0	25,928,877
General fund	\$21,475,080	\$50,000	\$21,525,080
Northern Crops Institute			
Total all funds	\$3,037,486	\$0	\$3,037,486
Less estimated income	1,598,265	0	1,598,265
General fund	\$1,439,221	\$0	\$1,439,221
Main Research Center			
Total all funds	\$105,002,142	(\$50,000)	\$104,952,142
Less estimated income	44,813,267	0	44,813,267
General fund	\$60,188,875	(\$50,000)	\$60,138,875
Agronomy Seed Farm			
Total all funds	\$1,275,238	\$0	\$1,275,238
Less estimated income	1,275,238	0	1,275,238
General fund	\$0	\$0	\$0
Bill total			
Total all funds	\$206,214,821	\$0	\$206,214,821
Less estimated income	109,619,662	0	109,619,662
General fund	\$96,595,159	\$0	\$96,595,159

Senate Bill No. 2020 - NDSU Extension Service - Senate Action

	Executive Budget	Senate Changes	Senate Version
Extension Service	\$46,666,157	(\$50,000)	\$46,616,157
Soil Conservation Committee	737,800	100,000	837,800
Total all funds	\$47,403,957	\$50,000	\$47,453,957
Less estimated income	25,928,877	0	25,928,877
General fund	\$21,475,080	\$50,000	\$21,525,080
FTE	267.33	0.00	267.33

Department No. 630 - NDSU Extension Service - Detail of Senate Changes

	Reduces Funding for Interactive Video Equipment Upgrade ¹	Adds Funding for the Soil Conservation Committee ²	Total Senate Changes
Extension Service Soil Conservation Committee	(\$50,000)	100,000	(\$50,000) 100,000
Total all funds	(\$50,000)	\$100,000	\$50,000
Less estimated income	0	0	0
General fund	(\$50,000)	\$100,000	\$50,000
FTE	0.00	0.00	0.00

¹ This amendment reduces funding for the one-time interactive video equipment upgrade.

² This amendment adds funding for the Soil Conservation Committee.

Senate Bill No. 2020 - Main Research Center - Senate Action

	Executive Budget	Senate Changes	Senate Version
Main Research Center Deferred maintenance	\$104,502,142 500,000	(50,000)	\$104,502,142 450,000
Total all funds	\$105,002,142	(\$50,000)	\$104,952,142
Less estimated income	44,813,267	0	44,813,267
General fund	\$60,188,875	(\$50,000)	\$60,138,875
FTE	353.39	0.00	353.39

Department No. 640 - Main Research Center - Detail of Senate Changes

	Reduces Funding for Deferred Maintenance ¹	Total Senate Changes
Main Research Center Deferred maintenance	(50,000)	(50,000)
Total all funds	(\$50,000)	(\$50,000)
Less estimated income	0	0
General fund	(\$50,000)	(\$50,000)
FTE	0.00	0.00

¹ This amendment reduces funding for one-time deferred maintenance to provide a total of \$450,000.

Date: 2-12-09

Roll Call Vote # 3

2009 SENATE STANDING COMMITTEE ROLL CALL VOTES
BILL/RESOLUTION NO. 2020

Senate _____ **Senate Appropriations** _____ Committee

Check here for Conference Committee

Legislative Council Amendment Number .0105 amendment

Action Taken Do Pass Do Not Pass Amended

Motion Made By Sen Bowman Seconded By Sen Robinson

Senators	Yes	No	Senators	Yes	No
Sen. Ray Holmberg, Ch			Sen. Tim Mather		
Sen. Tony S. Grindberg, VCh			Sen. Aaron Krauter		
Sen. Bill Bowman, VCh			Sen. Larry J. Robinson		
Sen. Randel Christmann			Sen. John Warner		
Sen. Rich Wardner			Sen. Elroy N. Lindaas		
Sen. Ralph L. Kilzer			Sen. Tom Seymour		
Sen. Tom Fischer					
Sen. Karen K. Krebsbach					

Total Yes _____ No _____

Absent _____

Floor Assignment _____

If the vote is on an amendment, briefly indicate intent:

*Roll Call Vote
Passed*

PROPOSED AMENDMENTS TO SENATE BILL NO. 2020

Page 2, line 15, replace "1,255,471" with "4,255,471" and replace "23,326,992" with
"26,326,992"

Page 2, line 16, replace "875,518" with "3,875,518" and replace "21,737,199" with "24,737,199"

Page 3, line 25, replace "6,819,165" with "9,819,165" and replace "109,619,662" with
"112,619,662"

Page 3, line 26, replace "35,854,717" with "38,854,717" and replace "206,214,821" with
"209,214,821"

Page 4, line 10, replace "0" with "3,000,000"

Page 4, line 17, replace "17,982,000" with "20,982,000"

Page 4, line 18, replace "350,000" with "3,350,000"

Page 5, line 28, replace "for deferred maintenance," with "of \$3,000,000 of other funds for a
capital project in subdivision 3 and the appropriation of"

Page 5, line 29, replace "extraordinary repairs, and capitol projects" with "\$500,000 from the
general fund for deferred maintenance and \$17,000,000 from the general fund and
\$350,000 of special funds for capital projects" and replace "is" with "are"

Renumber accordingly

A copy of the statement of purpose of amendment is attached.

STATEMENT OF PURPOSE OF AMENDMENT:

Senate Bill No. 2020 - Summary of Senate Action

	Executive Budget	Senate Changes	Senate Version
Transportation Institute			
Total all funds	\$23,326,992	\$3,000,000	\$26,326,992
Less estimated income	21,737,199	3,000,000	24,737,199
General fund	\$1,589,793	\$0	\$1,589,793
Branch Research Centers			
Total all funds	\$26,169,006	\$0	\$26,169,006
Less estimated income	14,266,816	0	14,266,816
General fund	\$11,902,190	\$0	\$11,902,190
NDSU Extension Service			
Total all funds	\$47,403,957	\$0	\$47,403,957
Less estimated income	25,928,877	0	25,928,877
General fund	\$21,475,080	\$0	\$21,475,080
Northern Crops Institute			
Total all funds	\$3,037,486	\$0	\$3,037,486
Less estimated income	1,598,265	0	1,598,265
General fund	\$1,439,221	\$0	\$1,439,221
Main Research Center			
Total all funds	\$105,002,142	\$0	\$105,002,142
Less estimated income	44,813,267	0	44,813,267
General fund	\$60,188,875	\$0	\$60,188,875
Agronomy Seed Farm			
Total all funds	\$1,275,238	\$0	\$1,275,238
Less estimated income	1,275,238	0	1,275,238
General fund	\$0	\$0	\$0
Bill total			
Total all funds	\$206,214,821	\$3,000,000	\$209,214,821
Less estimated income	109,619,662	3,000,000	112,619,662
General fund	\$96,595,159	\$0	\$96,595,159

Senate Bill No. 2020 - Transportation Institute - Senate Action

	Executive Budget	Senate Changes	Senate Version
Upper Great Plains Transportation Inst.	\$23,326,992	\$3,000,000	\$26,326,992
Total all funds	\$23,326,992	\$3,000,000	\$26,326,992
Less estimated income	21,737,199	3,000,000	24,737,199
General fund	\$1,589,793	\$0	\$1,589,793
FTE	53.95	0.00	53.95

Department No. 627 - Transportation Institute - Detail of Senate Changes

	Increases Authorization for Building Project¹	Total Senate Changes
Upper Great Plains Transportation Inst.	\$3,000,000	\$3,000,000
Total all funds	\$3,000,000	\$3,000,000
Less estimated income	3,000,000	3,000,000
General fund	\$0	\$0
FTE	0.00	0.00

¹ This amendment adds, as an emergency, \$3 million of federal funds for the center for transportation study capital project authorized by the 2007 Legislative Assembly to provide total funding of \$8.5 million.

Date: 2-12-09

Roll Call Vote # 4

2009 SENATE STANDING COMMITTEE ROLL CALL VOTES
BILL/RESOLUTION NO. 2020

Senate Senate Appropriations Committee

Check here for Conference Committee

Legislative Council Amendment Number .0107

Action Taken Do Pass Do Not Pass Amended

Motion Made By BB Sen Bowman Seconded By AK Sen Krauter

Senators	Yes	No	Senators	Yes	No
Sen. Ray Holmberg, Ch			Sen. Tim Mathern		
Sen. Tony S. Grindberg, VCh			Sen. Aaron Krauter		
Sen. Bill Bowman, VCh			Sen. Larry J. Robinson		
Sen. Randel Christmann			Sen. John Warner		
Sen. Rich Wardner			Sen. Elroy N. Lindaas		
Sen. Ralph L. Kilzer			Sen. Tom Seymour		
Sen. Tom Fischer					
Sen. Karen K. Krebsbach					

Total Yes _____ No _____

Absent _____

Floor Assignment _____

If the vote is on an amendment, briefly indicate intent:

voice vote passed

PROPOSED AMENDMENTS TO SENATE BILL NO. 2020

Page 1, line 20, replace "5,138,122" with "5,088,122" and replace "46,666,157" with "46,616,157"

Page 1, line 21, replace "0" with "100,000" and replace "737,800" with "837,800"

Page 1, line 22, replace "5,138,122" with "5,188,122" and replace "47,403,957" with "47,453,957"

Page 2, line 1, replace "3,072,967" with "3,122,967" and replace "21,475,080" with "21,425,080"

Page 2, line 15, replace "1,255,471" with "4,255,471" and replace "23,326,992" with "26,326,992"

Page 2, line 16, replace "875,518" with "3,875,518" and replace "21,737,199" with "24,737,199"

Page 2, line 23, replace "25,923,544" with "26,123,544" and replace "104,502,142" with "104,702,142"

Page 2, line 24, replace the first "500,000" with "450,000" and replace the second "500,000" with "450,000"

Page 2, line 25, replace "26,423,544" with "26,573,544" and replace "105,002,142" with "105,152,142"

Page 2, line 26, replace "2,462,503" with "2,662,503" and replace "44,813,267" with "45,013,267"

Page 2, line 27, replace "23,961,041" with "23,911,041" and replace "60,188,875" with "60,138,875"

Page 3, line 9, replace "552,987" with "2,552,987"

Page 3, line 11, replace "300,682" with "1,300,682"

Page 3, line 25, replace "6,819,165" with "10,019,165" and replace "109,619,662" with "112,819,662"

Page 3, line 26, replace "35,854,717" with "39,054,717" and replace "206,214,821" with "209,414,821"

Page 4, line 4, replace "500,000" with "450,000"

Page 4, line 10, replace "0" with "3,000,000"

Page 4, line 13, replace "132,000" with "82,000"

Page 4, line 17, replace "17,982,000" with "20,882,000"

Page 4, line 18, replace "350,000" with "3,350,000"

Page 4, line 19, replace "17,632,000" with "17,532,000"

Page 5, line 28, replace "for deferred maintenance," with "for a capital project of \$3,000,000 from special funds in subdivision 3 and the appropriation for industrial hemp research of \$200,000 from special funds, for deferred maintenance of \$450,000 from the general fund, and for capital projects of \$17,000,000 from the general fund and \$350,000 from special funds"

Page 5, line 29, remove "extraordinary repairs, and capitol projects" and replace "is" with "are"

Renumber accordingly

STATEMENT OF PURPOSE OF AMENDMENT - LC 98039.0109 FN 7

A copy of the statement of purpose of amendment is attached.

STATEMENT OF PURPOSE OF AMENDMENT:

Senate Bill No. 2020 - Summary of Senate Action

	Executive Budget	Senate Changes	Senate Version
Transportation Institute			
Total all funds	\$23,326,992	\$3,000,000	\$26,326,992
Less estimated income	21,737,199	3,000,000	24,737,199
General fund	\$1,589,793	\$0	\$1,589,793
Branch Research Centers			
Total all funds	\$26,169,006	\$0	\$26,169,006
Less estimated income	14,266,816	0	14,266,816
General fund	\$11,902,190	\$0	\$11,902,190
NDSU Extension Service			
Total all funds	\$47,403,957	\$50,000	\$47,453,957
Less estimated income	25,928,877	0	25,928,877
General fund	\$21,475,080	\$50,000	\$21,525,080
Northern Crops Institute			
Total all funds	\$3,037,486	\$0	\$3,037,486
Less estimated income	1,598,265	0	1,598,265
General fund	\$1,439,221	\$0	\$1,439,221
Main Research Center			
Total all funds	\$105,002,142	\$150,000	\$105,152,142
Less estimated income	44,813,267	200,000	45,013,267
General fund	\$60,188,875	(\$50,000)	\$60,138,875
Agronomy Seed Farm			
Total all funds	\$1,275,238	\$0	\$1,275,238
Less estimated income	1,275,238	0	1,275,238
General fund	\$0	\$0	\$0
Bill total			
Total all funds	\$206,214,821	\$3,200,000	\$209,414,821
Less estimated income	109,619,662	3,200,000	112,819,662
General fund	\$96,595,159	\$0	\$96,595,159

Senate Bill No. 2020 - Transportation Institute - Senate Action

	Executive Budget	Senate Changes	Senate Version
Upper Great Plains Transportation Inst.	\$23,326,992	\$3,000,000	\$26,326,992
Total all funds	\$23,326,992	\$3,000,000	\$26,326,992
Less estimated income	21,737,199	3,000,000	24,737,199
General fund	\$1,589,793	\$0	\$1,589,793
FTE	53.95	0.00	53.95

Department No. 627 - Transportation Institute - Detail of Senate Changes

	Increases Authorization for Building Project ¹	Total Senate Changes
Upper Great Plains Transportation Inst.	\$3,000,000	\$3,000,000
Total all funds	\$3,000,000	\$3,000,000
Less estimated income	3,000,000	3,000,000
General fund	\$0	\$0
FTE	0.00	0.00

¹ This amendment adds, as an emergency, \$3 million of federal funds for the center for transportation study capital project authorized by the 2007 Legislative Assembly to provide total funding of \$8.5 million.

Senate Bill No. 2020 - NDSU Extension Service - Senate Action

	Executive Budget	Senate Changes	Senate Version
Extension Service	\$46,666,157	(\$50,000)	\$46,616,157
Soil Conservation Committee	737,800	100,000	837,800
Total all funds	\$47,403,957	\$50,000	\$47,453,957
Less estimated income	25,928,877	0	25,928,877
General fund	\$21,475,080	\$50,000	\$21,525,080
FTE	267.33	0.00	267.33

Department No. 630 - NDSU Extension Service - Detail of Senate Changes

	Reduces Funding for Interactive Video Equipment Upgrade ¹	Adds Funding for the Soil Conservation Committee ²	Total Senate Changes
Extension Service	(\$50,000)		(\$50,000)
Soil Conservation Committee		100,000	100,000
Total all funds	(\$50,000)	\$100,000	\$50,000
Less estimated income	0	0	0
General fund	(\$50,000)	\$100,000	\$50,000
FTE	0.00	0.00	0.00

¹ This amendment reduces funding for the one-time interactive video equipment upgrade.

² This amendment adds funding for the Soil Conservation Committee.

Senate Bill No. 2020 - Main Research Center - Senate Action

	Executive Budget	Senate Changes	Senate Version
Main Research Center	\$104,502,142	\$200,000	\$104,702,142
Deferred maintenance	500,000	(50,000)	450,000
Total all funds	\$105,002,142	\$150,000	\$105,152,142
Less estimated income	44,813,267	200,000	45,013,267
General fund	\$60,188,875	(\$50,000)	\$60,138,875
FTE	353.39	0.00	353.39

Department No. 640 - Main Research Center - Detail of Senate Changes

	Reduces Funding for Deferred Maintenance¹	Adds Funding for Industrial Hemp Research²	Total Senate Changes
Main Research Center		\$200,000	\$200,000
Deferred maintenance	(50,000)		(50,000)
Total all funds	(\$50,000)	\$200,000	\$150,000
Less estimated income	0	200,000	200,000
General fund	(\$50,000)	\$0	(\$50,000)
FTE	0.00	0.00	0.00

¹ This amendment reduces funding for one-time deferred maintenance to provide a total of \$450,000.

² This amendment adds, as an emergency, \$200,000 of special funds for industrial hemp research.

Date: 2-12-09
Roll Call Vote #: 5

2009 SENATE STANDING COMMITTEE ROLL CALL VOTES
BILL/RESOLUTION NO. 2020

Senate Appropriations Committee

Check here for Conference Committee

Legislative Council Amendment Number _____

Action Taken Do Pass Do Not Pass Amended ^{as}

Motion Made By Sen. Krauter Seconded By Sen. Robinson

Representatives	Yes	No	Representatives	Yes	No
Senator Krebsbach	✓		Senator Seymour	✓	
Senator Fischer	✓		Senator Lindaas	✓	
Senator Wardner	✓		Senator Robinson	✓	
Senator Kilzer	✓		Senator Warner	✓	
V. Chair Bowman	✓		Senator Krauter	✓	
Senator Christmann	✓		Senator Mathern	✓	
V. Chair Grindberg	✓				
Chairman Holmberg	✓				

Total Yes 14 No 0

Absent 0

Floor Assignment Sen. Bowman

If the vote is on an amendment, briefly indicate intent:

REPORT OF STANDING COMMITTEE

SB 2020: Appropriations Committee (Sen. Holmberg, Chairman) recommends AMENDMENTS AS FOLLOWS and when so amended, recommends **DO PASS** (14 YEAS, 0 NAYS, 0 ABSENT AND NOT VOTING). SB 2020 was placed on the Sixth order on the calendar.

Page 1, line 20, replace "5,138,122" with "5,088,122" and replace "46,666,157" with "46,616,157"

Page 1, line 21, replace "0" with "100,000" and replace "737,800" with "837,800"

Page 1, line 22, replace "5,138,122" with "5,188,122" and replace "47,403,957" with "47,453,957"

Page 2, line 1, replace "3,072,967" with "3,122,967" and replace "21,475,080" with "21,425,080"

Page 2, line 15, replace "1,255,471" with "4,255,471" and replace "23,326,992" with "26,326,992"

Page 2, line 16, replace "875,518" with "3,875,518" and replace "21,737,199" with "24,737,199"

Page 2, line 23, replace "25,923,544" with "26,123,544" and replace "104,502,142" with "104,702,142"

Page 2, line 24, replace the first "500,000" with "450,000" and replace the second "500,000" with "450,000"

Page 2, line 25, replace "26,423,544" with "26,573,544" and replace "105,002,142" with "105,152,142"

Page 2, line 26, replace "2,462,503" with "2,662,503" and replace "44,813,267" with "45,013,267"

Page 2, line 27, replace "23,961,041" with "23,911,041" and replace "60,188,875" with "60,138,875"

Page 3, line 9, replace "552,987" with "2,552,987"

Page 3, line 11, replace "300,682" with "1,300,682"

Page 3, line 25, replace "6,819,165" with "10,019,165" and replace "109,619,662" with "112,819,662"

Page 3, line 26, replace "35,854,717" with "39,054,717" and replace "206,214,821" with "209,414,821"

Page 4, line 4, replace "500,000" with "450,000"

Page 4, line 10, replace "0" with "3,000,000"

Page 4, line 13, replace "132,000" with "82,000"

Page 4, line 17, replace "17,982,000" with "20,882,000"

Page 4, line 18, replace "350,000" with "3,350,000"

Page 4, line 19, replace "17,632,000" with "17,532,000"

Page 5, line 28, replace "for deferred maintenance," with "for a capital project of \$3,000,000 from special funds in subdivision 3 and the appropriation for industrial hemp research of \$200,000 from special funds, for deferred maintenance of \$450,000 from the general fund, and for capital projects of \$17,000,000 from the general fund and \$350,000 from special funds"

Page 5, line 29, remove "extraordinary repairs, and capitol projects" and replace "is" with "are"

Renumber accordingly

STATEMENT OF PURPOSE OF AMENDMENT - LC 98039.0109 FN 7

A copy of the statement of purpose of amendment is on file in the Legislative Council Office.

2009 HOUSE APPROPRIATIONS

SB 2020

2009 HOUSE STANDING COMMITTEE MINUTES

Bill/Resolution No. 2020

House Appropriations Committee
Education and Environment Division

Check here for Conference Committee

Hearing Date: March 11, 2009

Recorder Job Number: 10678 and 10744

Committee Clerk Signature

Shirley Branning

Minutes:

Chairman Skarphol: Brought the committee to order by noting that all members are present. He announced that there will not be a committee meeting tomorrow morning but there will be meetings on Thursday afternoon and Friday morning.

He introduced **Dr. Chapman, President of North Dakota State University (NDSU)** to the lectern to begin the hearing on SB 2020.

Dr. Chapman: The Research Station was described and he made note of the projects that will be presented.

Jerry Effertz, Farmer: Provided testimony with regard to the State Board of Agricultural Research and Education (SBARE), see attachments 1 and 2. He introduced those members who are present. He supported the funding requested in SB 2020 and to the program initiatives.

Chairman Skarphol: Give me three topics that have been most significant in the past 20 years.

Effertz: First of all, the techniques used by the agriculture producers now that has increased production beyond what was possible decades ago.

Secondly, the varieties of crops. He is a livestock producer and was able to start feeding in November with corn, sunflowers, etc. and other feeds that were not available 35 years ago.

Thirdly, technology that goes along with the methods. We don't just raise crops and livestock, we raise food, fiber and energy.

Rep. Jim Kerzman, District 31: Testified in favor of SBARE.

Dr. D.C. Coston, Vice President for Agriculture and University Extension: Explained that many members are absent because of the weather and that the testimony materials will be distributed later. He also noted that the hearing will be brief. He itemized the three organizations that are included in the organization and introduced faculty, specialists, and staff who are located at the Research Station. Materials will be forthcoming and budget information is included, as well as information about where we work and what we do: Every 5 years the USDA has a census and what it says about agriculture in North Dakota. Operations tend to be very large and are serious businesses and becoming more sophisticated to remain competitive around the world. About 50% of the agricultural land in North Dakota is not owned by the producers. Changes are occurring in where crops are produced in the state, there niche markets, specialty crops that are marketed around the world. The economic impact on the state, i.e. employment in the infrastructure.

The world has to produce as much food in the next 40 years as in the past 10,000 with the same land base. This has huge potential for North Dakota. In North Dakota we out produce our in-state demand and must depend on exports. Relationships have been developed across hemispheres. Diversity and change are ongoing. We hear of such things as Add Value which is, by our definition renewable energy and bioproducts.

Off the farm employment must be continued to keep agriculture vital and moving forward.

Grow 21 is an integrated look at agriculture communities across the nation.

Chairman Skarphol: There are various levels of enthusiasm across the House for Ethanol. What is your perspective of the future, is it a transitional fuel?

Dr. Coston: It is a transitional fuel, we think there will be ways that cellulosic fuel will become viable as did oil.

Rep. Hawken: When you look at things that come out of research, do you put a dollar figure on the investment and how it makes North Dakota grow in some of the things that you do?

Dr. Coston: In some things it is easy to quantify and some not. There was an excess of \$1.5B in sales of wheat by farmers in North Dakota last year from varieties developed at NDSU. In other varieties there is in excess of \$3B.

The improved disease management is saving farmers in excess of \$1.5M a year.

Chairman Skarphol: Give me three topics that have been most significant in the past 20 years.

Dr. Coston: Production, the changing structure, driven by transitions in families.

Secondly, understanding of where our markets are if we are going to be competitive around the world. Thirdly, it is the technology that makes it possible to globalize agriculture.

Chairman Skarphol: Who is it that helps the producer to do that?

Dr. Coston: Through the Extension Service with traditional meetings, from general to specific. The centers are doing work when producers call on them. Working with elevators managers, etc. Having syntheses and interpretation that helps people to understand how to use 'em.

Chairman Skarphol: That is a pretty good transition, isn't it?

Dr. Coston: There is a lot of transition going on.

Rep. Williams: You are not a native North Dakotan.

Dr. Coston: I am here by choice. The dramatic changes that have occurred, as described by Mr. Effertz are the action I want to be involved in.

Rep. Wald: You mentioned trade and exports, to what extent do you work with the trade office in Washington?

Dr. Coston: We work closely with those in Washington and other places. Every week we have people working with the trade office.

Rep. Wald: The ag department dabbles in trade, should we have a more concentrated effort in farm products?

Dr. Coston: Our mission is providing background and knowledge, our folks are there to provide detail, and not marketing and staff go on trips to international marketing. It is coordinated and not duplicated.

Continuing with his testimony, he speaks about the Northern Crops Institute (NCI), this is on campus and is aimed at marketing, has been effective, and involved in buying from agencies around the world. There is a request for \$160,000 for a milling specialist and about \$20,000 in additional operating support.

Chairman Skarphol: It appears that ½ of the budget is special funds.

Dr. Coston: About ½ comes from appropriations from South Dakota because it is a four state effort. They do get some grants to work directly with companies, funds from US Wheat Associates, and a number of food industries.

Dr. Duane Hauk, Director of the Extension Service: Provided testimony regarding the activities of the Extension Service. Refers to the booklet that will be coming later, as it describes the educational activities of the service. Youth programs are highlighted, such as 4-H clubs where youth develop healthy living skills and leadership skills. Family and consumer

science have programs that teach nutrition, family life, etc. that have positive outcomes for youth.

It builds capital in the economy.

We hired an ag economist, Dr. Cole Gustufson, who has provided information on the effort of production of biofuels.

In waste management, two FTEs have been filled and the project now meets EPA standards. Feed lots increased from 18 to 52 and they all meet standards.

Rural leadership, funded in 2003 helped sustain and stabilize leadership growth in the state.

You funded ½ of the 4-H and youth initiative and that provided funding for an FTE.

\$125,000 was received to support parenting through the extension service, they received

\$323,000 additionally in grants, sponsorships, and .and contracts to help make that program work.

The horticulture industry is one of the most popular programs that extension has been involved in. A horticulturist has been hired and a Master Gardener is a program that was funded.

He concluded his testimony by expressing appreciation for the support and funding that has been provided.

Continuing with the initiatives that were requested, he emphasized the operating costs, FTE in the 4-H program and the Agribusiness initiative.

Rep. Klein: Research and Extension will get raises, the 1%, how does that fit in?

Dr. Coston: It is the Senate's version where the extra 1% was added in the conference committee and has been fully implemented since then. It is to bring it up to 5.

Chairman Skarphol: The ash tree, what kind of resolution will there be?

Dr. Hauk: There are efforts to try and contain it, much like Dutch elm disease. Tree planting should be diversified. Keeping it out is the plan of attack at this time.

Lesley Lubenow, Cavalier, North Dakota, Agricultural Extension Agent in Pembina

County: Provided testimony, see attachment # 3. She highlighted the extension agent's job description. She spoke in support of the agent in training program.

Rep. Onstad: With online options as an information source, how do we keep the base of the county agent viable?

Lubenow: There is information provided that is specific only to NDSU services, the questions may not be traditional.

Rep. Onstad: County agents have to be more innovative.

Lubenow: Agrees, the extensions services have changed.

Dr. Hauk: The E Extension effort that focuses on electronic information sources. The agents facilitate processes, E Extension does not replace what we do when there are specific needs related to insects, diseases, etc.

Rep. Onstad: One agent provides information on both livestock and crops. How can one agent provide all the necessary services because each of the services is so specific?

Dr. Hauk: Extension services have moved in a direction where they can specialize a bit more and work cross county.

Kathy Tweeten, Director NDSU Extension Center for Community Vitality and is a

Community Economic Development Specialist: Provided testimony in support of SB 2020, see attachment # 4.

James Teigen, Farmer from Rugby and supervisor for the Pierce County Soil Conservation District and President of the North Dakota Association of Soil

Conservation Districts: Provided testimony in support of SB 2020, see attachment # 5. He requested that the enhancement supported by the Senate in the amount of \$837,800 be sustained. The funds make a difference in the ability to provide programs to producers. The inability to offer benefit programs to the employees is one of the greatest needs.

Dr. Coston: Provided comments related to the farming bill.

The need to provide information on how the livestock producing facilities report and the coordination among the facilities and programs was requested. Another request was to report to this legislative assembly the funding that comes from the beef industry checkoff. Today \$192,000 has been received in grants from the beef commission.

What happened with one-time funding, and on that request he discussed specific projects and stated that more information is available in the book. \$400,000 was provided for finishing the agronomy lab and greenhouse at the North Central Research Extension Center, and is fully operational. \$300,000 for equipment storage at North Central and is completed and in use. \$7M was provided on the greenhouse, \$2M came from the '05 session and that we find \$5M through special funds. The first phase is under construction, we had a total authority of \$14M. the projects underway right now are just slightly more than \$11.5M.

Rep. Wald: The green house, the \$11.4M will that finish the project?

Dr. Coston: No, \$5M plus \$16.8M will complete the project. There is roughly \$5.4M needed to complete the entire complex.

Rep. Wald: The beef research center at \$2.6M, will that complete the project?.

Coston: Licenses and permits have been obtained. \$2.6M from SBARE came forward and was approved by the Senate.

Rep. Wald: Is that a center of Excellence project?

Dr. Coston: No.

Rep. Wald: The emergency project on Hemp research for \$200,000, Rep. Monson must have got to you.

Dr. Coston: The Senate chose to include that language.

Continuing with the budget itemization and progress on projects that were to be reported back to the legislature.

Capital projects include the Green House, the Beef Research facility, and a composite project for enhancements for 4 of the Extension Centers.

Rep. Klein: Utilities, why is that broken out separately?

Dr. Coston: To cover the green house, it was requested by NDUS as a line item

Rep. Klein: One time or are you going to be having this from now on?

Chairman Skarphol: Addressing Dr. Chapman, the stimulus package, are you working on your needs?

Dr. Chapman: A team of people is working on the RFPs going out

Chairman Skarphol: Will we made aware of these before we get outa here?

Dr. Chapman: Anything that we have, going deeper into an already existing process, not creating any new processes.

Chairman Skarphol: In addition to what we are being asked for?

Dr. Chapman: these would be dollars that would be expanded to existing programs, not for things like facilities, research related activities.

Chairman Skarphol: Would that be over and above the \$600M? Are you doing any work that would be eligible within the system that we have to have oversight over?

Dr. Chapman: We have provided to the Chancellor on those issues that would fall into that category.

Chairman Skarphol: Do you have thoughts on what has transpired here this morning?

Dr. Chapman: The essence of our mission is our rural communities and keeping our state vibrant. The support you give them will be appreciated.

Recess called to reconvene after Floor Session.

Continuing on Recorder # 10744

Chairman Skarphol: Called the session back to order on SB 2020 by calling on the next presenter.

Ryan Brooks, Farmer and Rancher from Bowman, North Dakota and president of the

Northern Pulse Growers Association: Provided testimony, see attachment # 6, supporting SBARE's priority list. He emphasized items 4 and 5, NDAWN and the crop disease management position.

Chairman Skarphol: You have the advantage of knowing what 4 and 5 are. This is regarding the plant pathologist.

Chairman Skarphol: Calling up the next presenter.

Chris Ringwall, NDSU Dickinson Research Center: Provided testimony, see attachment # 7 regarding the salary expenses, operating expenses and creating sustainable sensible solutions. Implementing technology and how times have changed are described on PP. 6-7. He supports the budget and encourages the Legislature to be creative.

Rep. Klein: Center of Excellence, biosecurity, how is that going?

Ringwall : It is active.

Rep. Klein: How are you doing your budget with the fluctuation of oil?

Ringwall: About 20% in program dollars that had been coming in. previously. We are waiting to see how the budget sits and then review and make necessary changes. It has a huge impact.

Rep. Wald: In July of '08 the revenue to the Dickinson Experiment Station was \$113,000 In December of '08 the price was \$28.50 contrasted to \$243.00 . I don't see that changing and that will make a major hit on your budget.

Chairman Skarphol: Your station is a bit unique in that you have a \$1.2M cut in funding, according to BARS. Give us a brief summary of what that entails?

Ringwall: It is backing out projected oil revenue and it is decreasing our income.

Chairman Skarphol: The \$1.2M is attributable to the decline in oil revenue not to any other consequential changes in your operation.

Ringwall: We tie that to grants. As you decrease revenue you actually decrease grant ability.

Chairman Skarphol: The general fund contribution is up by \$350,000, and special funds are down.

Dr. Christopher Schauer, Hettinger Research Extension Center (REC): We address the research that the center wants us to address. With a meager staff we provide programming to South West North Dakota. The livestock production research that we have been conducting and the land use initiative, management includes wildlife use, recreational use, forest service lands for multiple uses. There will be cuts on grazing rights, the weed science program, sawfly and downy brome. The staff requirements are essential to continue providing a successful program. The Centennial celebration is July 7 and an invitation is extended.

Rep. Klein: Your facility and renovation, is it complete?

Dr. Schauer: They are laying the last piece of carpet today.

Rep. Klein: Your sheep herd, how is it doing?

Dr. Schauer: It is successful because we lamb indoors.

Chairman Skarphol: Are you a recipient of the Agent in training program?

Dr. Schauer: No, there were none in my tenure.

Randy Mehlhoff, Langdon REC Director: Provided testimony, see attachment # 8.

Provided information on accountability. He offered appreciation for the work that SBARE has done and in this regard, he asks for funding for initiatives 4 and 5. He mentioned the Hemp research that will be conducted at Langdon.

Rep. Wald: When you talk about new stems, do you ever exchange research with Canada?

Mehlhoff: Mostly the collaborations with Canada are canola research. We have not talked about the rust problem. Discussions on hemp in the future.

Chairman Skarphol: What is the cost of the steel roof?

Mehlhoff: The cost of steel has gone up and it will be more than it was estimated in '05.

Chairman Skarphol: Any potential energy conservation abilities. In the stimulus dollars there is a place for geothermal and energy conservation money to put in place.

Mehlhoff: The building is 4 years old and the insulation is adequate. A program with the Department of Commerce to make state buildings more energy efficient. An energy audit was required and we weren't able to do that because the building was so new.

Chairman Skarphol: Get a quick estimate of what the cost of steel will be?

Rep. Klein: Were you involved with the Center of Excellence program out of those programs?

Mehlhoff: We are involved with the oil seeds program with NDSU. We are working with the canola plant breeders and helping them develop varieties of canola that have higher oil content.

Rep. Klein: The ground source heat pump, do you have an estimate of what it will cost?

Mehlhoff: We are working with a contractor who has put in a few and has given us preliminary estimates.

Rep. Klein: Same person that used to be a well driller and started this business?

Mehlhoff: Not aware of background information. The reference came from the local rural electric coop.

Chairman Skarphol: There's a wide variation in what the general fund increases have been through the three stations we have heard from, addressing **Tammy Dolan, OMB Analyst**, what is the logic?

Tammy Dolan, OMB Analyst: Most of the increases or changes are due to staffing levels at the agency and depending on the SBARE priorities and how they are divided amongst the RECs.

Chairman Skarphol: There was also variation in these special funds that these stations generated. If they were able to generate more special funds did they get less general funds?

Dolan: The funding was put in by SBARE priorities.

Chairman Skarphol: In the case of Langdon they were granted \$385,000 increase and given \$6000 in general funds. The balance they were able to generate in special funds should be attributable back to the station.

Dolan: I'll make sure I'm looking at the right numbers.

Jay Fischer, North Central REC Director, located south of Minot: Provided testimony, see attachments # 9 and 10. He itemized the need for new positions detailed on P. 2.

Next he detailed information found in attachment 10 and the inserts, labeled as supplements A and B.

Chairman Skarphol: In BARS you have in the equipment over \$5000 line a request for \$414,000 in this budget request and granted by the Executive budget. What is that?

Fischer: Unable to answer the question because he lacks detail.

Jerry Bergman, Williston REC: Provided testimony regarding the potential for generating revenue with irrigation project research management. Concluding with an expression of appreciation for funding. Montana provides only about 10% of the amount of funding that comes from North Dakota. We have 22 different crops so the \$1.6M facility will help us in handling the crop samples.

Rep. Onstad: The original project was a joint effort between North Dakota and Montana with the irrigation. Is that 50/50?

Chairman Skarphol: Isn't that kind of yes and no because Nesson Valley is way into North Dakota?

Bergman: Two types of irrigation in our area, one is gravity flood and the other type is overhead irrigation

Rep. Kroeber: What does it cost to put in a pivot system in that area?

Bergman: About \$120,000.

Blaine Schatz, Carrington REC: SBARE provided support for research projects related to Waste Management. The crop disease management initiative is especially important to the Carrington REC. Because of the location, the environment is especially prone to the diseases. There is one plant science research specialist, there is a need for a plant pathologist who would serve as

Rep. Onstad: The feedlot school, do we help fund that or is it self funded?

Schatz: Largely self funded by the students.

Rep. Onstad: In the livestock waste, are we looking at digesters?

Schatz: Relative to the digesters, some opportunities are being investigated.

Rep. Wald: What percentage of your income is from the sale of livestock or seed or grain?

Schatz: 50%, those are gross proceeds. The rest is from grants.

Tim Fuller, Assistant Agriculture Experiment Station Director: Mentioned those REC directors who are not present and stated that the booklet will be forthcoming.

Jerry Doan: Spoke in support of the 4-H position that will work on cellulosic ethanol. The Western Horticulture position is also a priority. He supports the SBARE process. In the Central grasslands dealing with livestock forage, a position is needed for the research aspect. We are improving profitability, soil health, livestock research, etc.

Collaboration among RECs is important.

Rep. Onstad: Along with intense rotation is there profit in irrigating what is not being grazed?

Doan: We have no irrigation in Streeter. The potential is tremendous. 400,000

Neal Fischer, North Dakota wheat Commission: He stood in support of the SBARE Process and SB 2020. He spoke about the economic impact of agriculture in the state. We sell to 100 countries every year.

Rep. Wald: There used to be foreign materials when it was sold to other countries, has that been abated?

Fischer: That occurred at the time when dockage was not well controlled.

It is called, "getting the wheat you want" North Dakota wheat has the lowest dockage content. The high performance wheats are the fastest growing market in the world.

David Kluff, Farmer from Senator Jerry Klein's home town of Fessenden and represents the North Dakota Wheat Commission: Spoke in support of NCI. The Executive request is

for a milling specialist. This position will help to mill the wheat and tell customers how to handle the varying types of wheats. Buying wheat seed is like buying machinery. You buy for price, service and quality, and every year the wheat is a little bit different.

Julie Ellingson, Stockmen's Association: Provided testimony, see attachment # 11.

Deana Wieze, Administrator for the North Dakota Ag Coalition: Provided testimony for

Mike Beltz, farmer and chairman of the North Dakota Ag Coalition, see attachment # 12.

LeAnn Harner, Legislative Chair, North Dakota Association of Soil Conservation

Districts: Provided testimony in support of 2 initiatives relating to soil salinity and soil health, and 3 positions to oversee the research, see attachment # 13.

Rep. Wald: Is there any relationship between salinity and the amount of rainfall?

Harner: Yes.

Rep. Wald: Does it make a difference in irrigated land?

Dr. Hauk: High water content of soils, cost associated with it is high. A lot is going on and that is why we bring that funding request.

Rep. Wald: Dairy, that has not been addressed.

Dr. Hauk: It is vulnerable to shrink further in this state.

Rep. Williams: More drain tile is going into Richland County. Is it effective in lesser soils, economically?

Dr. Hauk: It goes down as land values are less. It depends on productivity and return on the land.

Dan Wogsland, North Dakota grain Growers: Spoke in support of SBAR.

Effertz: Expressed regret that all members from the RECs are not present. He took notes of the questions asked and will relay those to Bruce Bollinger.

2009 HOUSE STANDING COMMITTEE MINUTES

Bill/Resolution No. 2020

House Appropriations Committee
Education and Environment Division

Check here for Conference Committee

Hearing Date: March 16, 2009

Recorder Job Number: 10979

Committee Clerk Signature

Shirley Branning

Minutes:

Chairman Skarphol: Called the third hearing with SB 2020 by calling on **Dr. D.C. Coston, Vice President for Agricultural Research and Education.**

Dr. Coston: Attachments were distributed and other members present were introduced.

Brian Sorenson, Director of Northern Crops Institute: He provided testimony, see attachment # 1. His requests for budget items are listed on PP. 5,7-8.

Rep. Klein: Some years ago you had a piece of equipment and had no place to store it, have you found a place?

Sorenson: It was sold to the North Dakota Mill and Elevator. The durum mill has been converted into a swing mill, a dual purpose mill.

Rep. Klein: This new facility houses that new swing mill.

Sorenson: Yes.

Rep. Onstad: Referring to P. 6 the Pulse and Oilseed technician, why was that not recommended?

Sorenson: The bottom of P. 6 describes the technician duties. It came down to priority. In 2005 approval was granted for a pulse and oil seed quality specialist. NCI is getting known world around and this position would provide technical support.

Rep. Wald: Do you have a breakdown from the revenue from SD, Montana and Minnesota to help sustain this effort?

Sorenson: South Dakota, \$25,000 and just signed into law by Governor Rounds. And remaining funding has been with the South Dakota wheat commission which has actually given \$25,000 a year, and \$150,000 for the swing mill project.

Montana, no state appropriated money, only from the wheat and barley, last year it was at \$60,000 and reduced this past year to \$30,000 because of crop shortfalls.

Rep. Wald: A little better than 80% of the funding.

Sorenson: Looking at all of the commodity group money, such as the Minnesota soy bean council, in the \$40,000 range.

Rep. Wald: Give this committee the sources like commodity group or general fund?

Chairman Skarphol: The new position is general funded.

Sorenson: Yes.

Rep. Onstad: Countries that have expressed interest, P. 10. Is it a trend that they want to be more specific and work more directly with individual producers because they have better knowledge of quality?

Sorenson: Many still use the bulk handling system. The trend is more specified buying by quality and area, being involved with smaller groups. The specialty crops, smaller groups that deal more with containerized shipping.

Rep. Onstad: Your container shipments, do you anticipate that part is going to grow.

Sorenson: We anticipate that to grow, based on a certain quality, we need to be flexible with both types of purchasing.

Chairman Skarphol: Addressing Dr. Coston, clarifying his position as Vice President of Agriculture. Are all of these entities in this budget under your office?

Dr. Coston: Everything except the Upper Great Plains Transportation Institute.

Chairman Skarphol: If you were given the flexibility to move FTE between these entities as you saw needed, would that be of some value?

Dr. Coston: Yes, perhaps but haven't felt too much of a need to do that.

Rep. Wald: We just heard SB 2038 which dealt with accountability and flexibility in higher ed in general, you're asking for a milling specialist, if we could move FTE around would that be of any value to you? You decide where you want to put your manpower.

Dr. Coston: We need additional manpower. Flexibility is needed to get the work done.

Agriculture in North Dakota is more complex than in most states. All staff work hard, and we don't have extra people who are looking for something to do.

Dr. Ken Grafton, Dean of Agriculture and Food Systems and Natural Resources and also

Director of the North Dakota Agricultural Experiment Station: responds further to previous questions, we are less than one deep in many of our activities with the diversity of research coupled with Agriculture and Food Systems and Natural Resources. Our people are overworked and there is little flexibility. We have the flexibility to move FTE around as they become vacant.

Chairman Skarphol: Looking at your budget, there's a request for 10 people other than the Upper Great Plains Institute. There is concern about growing FTEs and if we were to say you can have 4, 5, or 6 would that be in the best interest of all of the entities. Letting you folks make the decision, rather than us.

Dr. Grafton: Provided testimony, see attachment 2, P. 25, the beginning of the Research Station portion. On P. 27-29 there are items that were funded at the last legislative session.

Rep. Klein: Go back and talk about the equipment operating pool, that goes around and you provide money to 2 or 3.

Dr. Grafton: The Revolving Equipment Pool was created a number of years ago for the Research Extension Centers (REC) to obtain money for the big ticket items, this time we have increased it to 4 centers that would receive \$100,000 each every biennium.

Rep. Klein: Your director at Langdon, said he bought a harvester for \$160,000 is that reasonable?

Dr. Grafton: Yes, it was a fair price. Continuing with testimony on PP. 31-33, reviewing the funding needs detailed in Sections 10-15. On PP. 35-37 are found details on construction projects.

Rep. Klein: On P. 39, greenhouse utilities, was this directed by the State Board. Why are we putting utilities in instead of putting utilities in part of operating? Will this continue?

Dr. Grafton: We were told to do this.

Rep. Klein: When you get the new green house, are you going to knock down some of the old ones and reduce deferred maintenance?

Dr. Grafton: Yes, we will look at old buildings and remove some of those. Continuing with P. 39. There are a little over \$33M in infrastructure and we have \$730,000 per biennium to deal with those needs. We want to bring this to \$600,000 increase to reach \$1.3M which is below the formula provided by State government.

Chairman Skarphol: In # 2 of your priority list you're asking for another \$600,000.

Dr. Grafton: Yes, for extraordinary repairs.

Rep. Wald: Did you say that 1,2,3 are included in your budgets and 4 on are not.

Dr. Grafton: Numbers 1,2, and 3 are included in the Governor's recommendation.

Rep. Wald: The \$439,000 and the \$6 and the \$1.1M are all in the budget.

Break for 15 Minutes

Dr. Grafton: Beginning on P. 39 was in the Governor's budget and approved by the Senate.

Rep. Onstad: A lot of the NDAWN stations are already out there, is the FTE necessary to maintain that? Is there another way to continue that without the FTE?

Dr. Grafton: We have 71 NDAWN stations throughout North Dakota, Montana, Minnesota and even one in South Dakota. We have one individual to maintain all of those sites. There is sophisticated equipment, greater expertise and more hands to run the project. Other entities are indicated that there are many holes in the system. Large areas of North Dakota do not have sites. Weather activities throughout the state are not recorded.

Rep. Onstad: Is there a way to track how many hits there are on these stations?

Dr. Grafton: Referring to attachment # 6, P. 6 shows how many hits this widely used program has. In 2 months there are between 15,000 and 20,000 hits.

Rep. Klein: Addressing Dr. Coston, NDAWN was funded last time, over and above the Governor's budget.

Dr. Grafton: Yes, we did receive \$200,000 for a computer program, noted on PP. 27 and 29..

Rep. Klein: That was over and above what was in the Executive budget.

Dr. Grafton: Yes. Continuing with Rep. Onstad's question. On P. 40 of Attachment # 1, plant disease research needs are addressed, emphasizing the cost of the infiltration to the state's economy.

Rep. Onstad: Promoting a variety, are there enough plant breeders and can they be retained.

Dr. Grafton: Difficult to retain, rapidly seeking new plant breeders. Private industry is very interested in the experts, we have 10, enough for the 42 varieties that we have. Stem rust has great impact around the state, but another called UG 99 is competing and can wipe out 100% of a crop in one year.

Rep. Onstad: Is it important to recognize that one disease can cause great economic impact? NDSU provides support where private industry may not. Everyone needs to be on top of this problem.

Dr. Grafton: We try to be good stewards to the farmers. UG 99 can cause 100% loss. A plant pathologist at Carrington and at Langdon is essential to identify and locate locations of diseases around the state. These positions are joint positions with the research stations.

Chairman Skarphol: So there is a matching fund required in the Extension Service.

Dr. Grafton: It is already included. Continuing on P. 41, agronomist, to reduce the saline soil problems and take the responsibility of soil health to insure good stewardship of the soil. Regardless of what is grown on saline drenched land, grain and cow carrying yield is reduced by 20%.

Rep. Wald: Before you go on, would you go back to the greenhouse? 7 and 8 are your priorities in the unfunded items.

Dr. Grafton: Anything beyond item # 3 would be a priority

Rep. Wald: 7 and 8 supersede any other ranking.

Dr. Grafton: Verifies, following the SBARE budget guidelines. If the soil biologists can be on board, that would be huge for the state.

Also on P. 44, there is a onetime request of \$500,000 that is included in the Governor's budget for onetime deferred maintenance. The Senate reduced that by \$50,000.

Chairman Skarphol: They are onetime extraordinary repairs?

Dr. Grafton: The request was for \$2.2M, the Governor's budget included \$500,000. This is one time moneys of \$450,000.

Rep. Wald: Your emphasis is on the deferred maintenance not the extraordinary.

Dr. Grafton: That is correct, one is identified on P. 39 would be in our base budget for ongoing needs. Funding on P. 44 is onetime moneys.

Chairman Skarphol: But # 2 you said is increased from \$600,000 to \$740,000.

Dr. Grafton: No, what we currently have is \$740,465.

Chairman Skarphol: \$140,000 less than what you currently have.

Dr. Grafton: \$450,000 reduction. We would like to bring that up to \$1.3M. The \$2.2M on P. 44, is ½ of our backlog of \$4.4M. The State board of Higher Education gave us the authorization to identify 50% of our onetime deferred maintenance needs. The Governor's recommendation reduced that to \$500,000 and the Senate reduced it to \$450,000.

Continuing on P. 79, capital improvement projects, the Greenhouse project we requested \$16.8M, the Governor's recommended budget was for \$11.450M. This is needed throughout the state of North Dakota. A description is provided in Attachment # 1.

Chairman Skarphol: Could you briefly run us through the history of capital projects? Does the bonding ability still exist?

Dr. Grafton: Yes. In 2005, we received \$2M in state bonding and \$5M in authorization for other funds. In a fund raising drive we identified about \$2.5M.

In 2007 the Governor recommended \$7M in funding and now we have authorization for \$14M.

Chairman Skarphol: The \$7M was general funded.

Dr. Grafton: Yes. We received authority to proceed with moneys we had on hand, beginning construction on a \$11.575M facility on May 29th '08. This is a 13 month build up for this component. We now have authorization for \$1M we requested \$16.8M, to complete the project. The Governor budgeted \$11.450M and that was approved by the Senate. This will be about a \$30M facility and we need an additional \$54M to complete this project.

Rep. Wald: This biennium you want the \$5M.

Dr. Grafton: We would like to finish this project so we don't have to keep coming back for funding.

Chairman Skarphol: Does it increase the cost to delay it?

Dr. Grafton: It has been planned in Phases, 3 phases. The increase in cost is going to be due to inflation and increased costs of materials.

Rep. Wald: In 05-07 you were authorized you were authorized \$5M and you raised about \$2.5M.

Dr. Grafton: Yes, we have raised a little bit more than that. The NDSU development foundation identified it as a fund raising effort.

To complete the project we would need \$16.8M. We currently have \$11.575M under construction and Mr. Bollinger, Ag Budget Office Director, indicated that the exact figure would be \$5.349M.

Continuing with P 81-82, major capital projects.

Rep. Klein: At Langdon, has any approached the local Rural Electric to donate the ground source heat project?

Dr. Grafton: Remodeling of the Dickinson Headquarters for \$489,200. The total amount of these projects is \$2.937M. This is fully recommended by the Governor's budget.

Chairman Skarphol: Go back and check to see if there is an amount within these dollars foreground source heating. If the potential does exist for stimulus dollars for ground source heat expansions.

Dr. Grafton: The appropriation in the Governor's recommended budget was retained in the Senate except for the \$50,000 reduction in the Senate.

Chairman Skarphol: In BARS, a \$23M increase and \$10.7M is attributed to salary. Looking at detail for the main station, asking **Dolan** to get the numbers. Addressing Dr. Grafton, in the past, what are the three most significant changes in agriculture?

Dr. Grafton: Trans-genetic crops, has been one of the most dramatic changes in the last 25 years. Biotechnology is extremely important, such as plant breeders. Roundup ready canola is trans-genetic. About 95% of the sugar beets grown in the state will be Roundup ready. Minimum no till has made dramatic production cost reductions. It has increased disease problems.

For the third, one area would be improved technologies, from putting the seed in the ground to marketing. Such as GPS.

Rep. Wald: When you mention continuous cropping, it lends itself to disease.

Dr. Grafton: I did not indicate continuous cropping. Deep plowing does reduce disease but you end up with a lot of erosion. There's a trade off with deep plowing versus no till. But it is much more cost effective and erosion is considerably reduced.

Rep. Onstad: When we move forward on the research, with wheat and durum are we finding other uses to enhance the market?

Dr. Grafton: We value our position as a food oriented program. We are looking at other biobased products in conjunction with scientists throughout the country. Other items that are

important include: food safety, food security problems, nutraceuticals such as antioxidants, value added issues, bio foods, and bio products.

Nanotechnology from production to marketing, is not discussed much regarding quality of our products.

Chairman Skarphol: Equipment of over \$5,000 is in excess of \$414,000 at Carrington and at North Central, what is that?

Dr. Grafton: Those funds may have been used to fit out the

Rep. Klein: Was it the combine?

Chairman Skarphol: Refers to list provided by Dolan. Seed cleaning, has there been any...

Dr. Grafton: Seed cleaning, used for small grains, utilized where seed is produced, in 5 sites.

Paul Nyren, Director Central Grasslands Research and Extension Center: Provided testimony, see attachments # 4 and 4a. He spoke in support of the initiative list as prioritized by SBARE.

Rep. Klein: Are you still working with the EERC in Grand Forks on energy out of bio fuels?

Nygren: We have a small plot of switch grass that was established in about the year 2000 as part of another research project and we maintain that field. We have sent about 5 bails of switch grass.

Rep. Klein: On your building, are you 100% complete and operational?

Nygren: Yes.

Rep. Klein: You do not have a ground source heat system in that building.

Nygren: We do not.

Rep. Wald: How critical is item # 7, P. 41, the position at Streeter?

Nygren: Right now we are funding all of the bio fuels work through grants. Small pieces from the National Grasslands funding, through grant funds is being submitted to us. It will be extraordinary grant funding of about \$1M and they are scrambling as we are. We need information on soils.

Rep. Wald: Revised numbers on the impact of crop and oil production and the price.

Bruce Bollinger, Director of the Agricultural Budget Office: Provided revised numbers based on the information presented by Rep. Wald on oil revenue. We are about \$1.5M short original projections. The total '07-'09 actual mineral royalty budgeted was \$1.3M, there was a Section 11 transfer of \$750,000, the total estimated was \$2.80M. the December '08 oil revenue was \$22,441 times 24 months equals \$538,584. So the shortfall is \$1.542M based on December's oil revenue and the '07-'09 budgeted estimated revenue.

Rep. Hawken: Last time it was higher than anticipated.

Bollinger: Yes, the oil revenue has been fluctuating.

Rep. Hawken: We transferred on the thought there would be a shortfall How could there be a shortfall with increased production and cost? Is it because of what you're buying not what you're getting?

Bollinger: We actually do not know how much revenue we will be getting.

Chairman Skarphol: The Dickinson station, the funds that they get, is it basically oil revenue or other revenues, from seed?

Bollinger: There are sales of livestock, seed and grants and contract revenue, then oil income revenue

Chairman Skarphol: Give us a prospective over a longer period of time than what has happened in the last biennium because we did have \$140,00 crude at that time.

Rep. Klein: Last time we took money out of the oil trust fund and you followed it back to Dickinson. Is that over and above, how do you account for the changes.

Bollinger: It went directly to Dickinson. The Section 11 language specified to look at the budgeted oil revenue and compare that to the actual and only draw up to \$750,000.

Dr. Coston: That oil revenue is directly tied to only one oil well in Dickinson. During the last session the production on that well was declining.

Rep. Wald: Refers to data from '06, that shares production prices and revenue. If you fast forward to December of '08 that same oil was \$27.11, a \$98.00 drop. The difference in revenue went from \$113,178 to \$222, 441 at the same time production dropped from \$26,000 barrels in December to 240,000 in July. Gas dropped in half from 14.071 MCFs down to 7198 from July to December. Gas dropped in half and the revenue dropped by about \$90,000 per month.

Chairman Skarphol: Close the hearing on SB 2020.

2009 HOUSE STANDING COMMITTEE MINUTES

Bill/Resolution No. 2020

House Appropriations Committee
Education and Environment Division

Check here for Conference Committee

Hearing Date: March 25, 2009

Recorder Job Number: 11536

Committee Clerk Signature

Shuley Branning

Minutes:

Chairman Skarphol: Called the Committee to order to discuss SB 2020

Rep. Martinson: Motion to add the 6 positions.

Chairman Skarphol: Describes the positions from the presentation book PP. 9, 7,

\$180,000 salary. Operating \$40,000. Totaling \$220,000 on the 4-H. Have your book open to P. 9. Number 3 was a 4-H leadership education and camping request for an FTE, some salary support for some camping staff and some operating money. I am not sure that they need all of that money. \$180,000 salary, do we think the \$50,000 necessary? What should we put down for operating?

Rep. Hawken: That's in Minot.

Rep. Wald: Is this a seasonal type operation?

Chairman Skarphol: \$220,000 in operating. How about under # 4, we are talking about this institute for Ag enterprise and rural development. They want two and I suggest one. \$200 for salary, cut the operating in half, so that would be \$240,000. And if we are going to do the Agents in training, we will call it an intern program, no FTE associated with it, for \$200,000. A total of \$660,000 to extension.

Rep. Williams: I know what we are doing, How futile is it? When we get into the big committee, what are they going to do with it?

Chairman Skarphol: I will defend it to the best of my ability. They recognize the value of ag research.

Rep. Hawken: Second the motion.

Chairman Skarphol: Motion to add one Camping FTE at \$220,000, one in Agra Enterprises at \$240,000, and \$200,000 for agents in training program, no FTE allowed.

Vote Taken, Yes 8, No 0, Absent 0, Motion carried on the amendment.

Rep. Martinson: Motion to add \$40,000 for Junior Master Gardener

Rep. Klein: Second.

Chairman Skarphol: Move from \$20,000 to \$60,000?

Vote taken Yes 8, No 0, Absent 0, Motion carried on the amendment

Rep. Hawken: Include plant pathologist at Carrington for \$180,000. 4-H at central Grasslands agronomist for \$180,00, \$40,000 for operating = \$220,000

Rep. Klein: Works here in Mandan as well.

Rep. Klein: Second

Vote Taken Yes 8, No 0, Absent 0, Motion carried on the amendment.

Rep. Hawken: (Inaudible), discussion regarding adding plant pathologists.

Chairman Skarphol: On the plant pathologist at Carrington, that is \$200,000. Let's put it at \$180,000. The 4-H guy at Central Grasslands.

Rep. Wald: During the hearing the position for Central Grasslands, since we are dealing with a station that has livestock and sharing that with Carrington? They are about 90 miles apart.

Chairman Skarphol: If we give Central Grassland \$180,000 salary and benefit, probably \$40,000 of operating. Carrington can work with them. They have 3 other FTEs there. There is a limit to what we can expect leadership to accept. \$220,000 for the 4-H agronomist, he'll work with Carrington, you know he will. Top salary and benefit.

Rep. Klein: Mr. Nyren works with the station in Mandan and he has plots in Dickinson, Williston, Minot, etc.

Chairman Skarphol: He is extremely well thought of by his colleagues. Is there a motion to put those into the Main Research budget? Rep. Hawken made the motion.

Rep. Klein: Second.

Vote Taken Yes 8, No 0, Absent 0, Motion carried on the amendment.

Rep. Hawken: Motion to add \$125,000 to the Parenting Resource Center line. There are 8 of them.

Chairman Skarphol: Can they double the grant moneys? Total \$250,000.

Rep. Hawken: Yes. It makes money for the state.

Rep. Klein: Second.

Vote Taken Yes 8, No 0, Absent 0, Motion carried on the amendment.

Rep. Wald: Distributed copies of "Dickinson Oil Revenue, attachment # 1.

Motion Adding \$925,000 to the Dickinson Line item.

Chairman Skarphol: You are asking us to put \$925 into the Dickinson....Last time we put in \$750,000.

Rep. Wald: The shortfall in the '07-'09 biennium was \$796,000. The shortfall this biennium is \$133,000 and the shortfall, if we don'tthis would reduce the shortfall from \$1.5M to \$925,000. We are making up that \$925,000 of the \$1.5M shortfall.

Rep. Klein: Second

Rep. Hawken: How do we fund the others, you happen to have an oil well, the rest don't?

Rep. Wald: Revenue for these stations includes sales of livestock, grains, etc.

Rep. Onstad: What was used for Dollars in '07-'09? They had to use a dollar cost.

Rep. Wald: Actual performance is found on

Chairman Skarphol: Maybe something like \$40.00.

Rep. Wald: When they put the budget together they were anticipating \$2.213M in revenue.

The actual received was \$882,000 so we put in \$750,000 which still left them with \$132,888 shortfall. It has gone down by about \$10,000 per month.

Vote Taken Yes 8, No 0, Absent 0, Motion carried on the amendment.

Chairman Skarphol: \$65,000 for irrigation scientist, Williston, but is unable to hire one because of the low salary. I won't ask the committee

Rep. Martinson: Move to add \$65,000 for the irrigation scientist position at Williston Experiment Station.

Rep. Klein: Second.

Vote Taken Yes 8, No 0, Absent 0, Motion carried on the amendment.

Amendments to be reviewed on Monday.

Chairman Skarphol: Agree to have Rep. Onstad carry the bill.

2009 HOUSE STANDING COMMITTEE MINUTES

Bill/Resolution No. 2020

House Appropriations Committee
Education and Environment Division

Check here for Conference Committee

Hearing Date: March 30, 2009

Recorder Job Number: 11564

Committee Clerk Signature

Shirley Branning

Minutes:

Chairman Skarphol: Meeting to order to discuss HB 2020.

Brady Larson, Legislative Council Staff: Explained amendments to SB 2020 #98039.020 and referring to P. 2 of the Statement of Purpose and reviewing the Detail of changes for the additional positions of 1.70 FTE for an increase of \$465,000 from the General Fund.

The Extension service provide for two additional FTE authority and funding for programs at a total of \$825,000 from the General fund.

On the Main Research Center there was an additional one FTE and General Funding of \$250,000.

Chairman Skarphol: Referring to Section # 5 of the Bill asking Larson if that is new language

Larson: Will check to be sure.

Rep. Klein: Similar to what we had to do last time.

Chairman Skarphol: It says the State Board of Agricultural Research and other SBARE and appropriate Branch Research Center Directors. Reading: "On approval of SBARE and the Director of the Main Research Center may transfer appropriation authority within subdivisions 1,2,4 and 5 of Section # 1 of this act." I want to make sure this is the language from previous biennia.

Larson: Exact language was included in HB 1020 in '07.

Chairman Skarphol: Repeating the before stated reading of the Section. Number one is the Extension Service, two is Northern Crops, four is Main Research, and five is the Research Centers. It leaves out Upper Great Plains, the Agronomy Seed Farm. It has to have the approval of both SBARE and research.

Rep. Martinson: I thought that letting some of these groups, just like the Water Commission, the Water Coalition determines the projects. I don't particularly like it, I would vote in a heartbeat to take SBARE's approval outta there. They set the priorities and the project, kinda run the show.

Rep. Hawken: Why would SBARE have that power?

Chairman Skarphol: It has to be approved.

Rep. Hawken: Nice to have an advisory board but

Chairman Skarphol: Are there any of these sections that are new in any way, Brady? The Senate didn't add anything as far as that.

Rep. Wald: The last sentence in section 5, "Must be reported to OMB" I don't have problem with that and if we could remove everything but that.

Chairman Skarphol: I think "upon approval of the appropriate Branch Research Center Directors" is fine. I don't think you want Main Research to be moving money around between the research centers, necessarily. If we take it out it is a topic that can be discussed in Conference Committee. I was concerned that something new wasn't slipped in that we didn't take consideration of.

Rep. Hawken: That would be doing that after the session (inaudible).

Chairman Skarphol: I can see the logic of doing it that way if you have SBARE to begin with and you believe SBARE is doing the kind of job that should be done.

Rep. Hawken: (Inaudible)

Chairman Skarphol: Unless they need some flexibility in the event that some kind of a catastrophic event happened at one of the research centers and the rest thought they should help them out.

Rep. Klein: When we reduced the dollars for the headquarters at the Extension Centers last time. There was supposedly dollars for three, Carrington, Hettinger and Minot. When there wasn't enough money they made the decision, rather than do a halfway job to finish the two properly and leave Minot out. That is probably what they are talkin about here.

Rep. Onstad: SBARE has to a part of that because they receive some funding, and if there is going to be a decision, they might lose some funding. They have to agree.

Rep. Klein: There was a \$1.3M plus for those three projects. We reduced it to \$900,000 so we took \$200,000-\$300,000 out of it. By the time they could get going with all the delays, they couldn't fund all three of them so they decided to do two properly and to delay the third one.

Chairman Skarphol: We could leave it in and let Conference Committee decide, it could be taken out, too. Whatever the Committee wishes.

Rep. Martinson: Lt. Governor Dalrymple started ESBARE.

Rep. Kroeber: We fought to keep SBARE afloat.

Chairman Skarphol: Continues to explain Section # 5 for Rep. Kroeber. It was included last time. We are wondering about the appropriateness of having SBARE included in that.

Rep. Wald: I was involved when SBARE was born. The Mission of SBARE was to provide an agenda for research and extension. Now we give them management authority to say that they can transfer money between stations, I think this is authority that was not intended.

Chairman Skarphol: It is still advisory to the main research center.

Rep. Klein: Has it been a problem? The only thing I can relate to is the last time when we had 3 projects and there was not enough money, they got involved.

Chairman Skarphol: Senate made no changes. We could accept the amendments and pass it out the way it is, or if you want to further amend, we have to have new amendments.

Rep. Wald: Motion to Do Pass Amendment 0201 to Senate Bill 2020.

Rep. Klein: Second.

Vote taken: Yes 8, No 0, Absent 0. Motion Carried.

Chairman Skarphol: We have the amended bill in front of us.

Rep. Wald: Move to Do Pass as amended

Rep. Onstad: Second

Chairman Skarphol: Discussion, if not call the roll.

Vote taken: Yes 8, No 0, Absent 0. Motion Carried. Carrier, Rep. Onstad.

Rep. Wald: Brady, how much new money did we put in on the House side?

Larson: Total new funds put in with these amendments would be from the General Fund \$1.54M and from the Permanent Oil Tax and Trust Fund \$925,000 = \$2.465M.

Concluding discussion on SB 2020 and moving on to discuss SB 2003. (20:10)

2009 HOUSE STANDING COMMITTEE MINUTES

SB 2020

House Appropriations Committee

Check here for Conference Committee

Hearing Date: April 2, 2009

Recorder Job Number: 11642

Committee Clerk Signature



Minutes:

Chm. Svedjan turned the Committee's work to SB 2020.

Rep. Onstad: Explained the amendment (Attachment A, amendment .0201). It's a large budget and includes several factions of the NDSU Extension; Transportation Institute, Science Research Centers, NDSU Extension, Northern Crops Institute, the main research center and also the Agronomy Seed Farm. As we go through the amendments, if you look at the Statement of Purpose, if we take page 2 of the amendments, we have added an additional \$2,465,000 to the extension budget, of that \$1.5 million is general funds, and the remainder of \$925,000 which came from the Oil & Trust Fund, and that's what we'll discuss first. That \$925,000 is for lost revenue at the Dickinson Research Center. They do receive oil revenue because of their location and that makes up the difference. But with that loss of revenue last biennium, this should help make up that difference. As you know, all the other research centers receive additional revenue from seed sales, livestock and other things. The Dickinson Research Center does not have those revenue sources available to them. They rely on that oil revenue. We added \$925,000 which comes from the Permanent Oil Trust Fund. We also added a forage specialist at the Central Grassland Research Center, at Streeter. That original request was \$540,000, we've reduced it to \$220,000; \$180,000 is for salary and \$40,000 is for operating. This position will focus on cellulosic and other feed stocks for biofuels, high value

products and further advancement of our livestock industry. The third thing for the Branch Research Centers, we added \$65,000 to the Williston Research Center. This is just additional funds to help track that irrigation specialist. They've had an open position for over a year, they're not able to get anyone to apply for that. These additional dollars would be able to raise that salary and open that up. An extension that NDSU started a research park for irrigation at Nessen Valley several years ago, southeast of Williston along the Missouri River and this irrigation development is very much needed to move value-added, along with the biomass ethanol and livestock development. They also added a plant pathologist position, not a full position, it's a 7/10th FTE; that's \$180,000 with \$140,000 for salary and \$40,000 operating costs. This would be located at Carrington and they would conduct research on crop diseases grown in central ND. Carrington is a pretty ideal location; they're weather is suited and you get a mix of what occurs all over ND. We looked at it as a critical position. Expertise in plant pathology will enhance the ability of researchers stationed across the state, to further control the studies on disease management. That was the total for the Branch Research Centers. If we look at the NDSU Extension Service themselves. We added \$825,000 to that, which I'll list here. One was a 4-H position, \$220,000; \$180,000 salary and \$40,000 operating. The 4-H programs serve more than 40% of North Dakota's youth currently. The popularity is growing, not only in rural areas, but also in our cities. This position would be located at North Central Research in Minot. It would provide educational support to programs that lead youth becoming an integral part of the Governor's mission. It's also part of a program that started last biennium called SET. SET is Science Engineering and Technology, that's a trend to promote those areas and encourage youth to seek careers in those areas. That's the 4-H position. We also added an agribusiness position, total of \$240,000; the original request was for \$480,000. Of that \$240,000 is \$200,000 for salary and \$40,000 for operating. This agribusiness position

would provide potential for converting commodities in Ag. class, coal products and high value products. We also felt that development of this industry will help stimulate our rural economies as we forward. A third item for the extension service, agents-in-training. Our extension research positions have technical people and to fulfill that and keep that ongoing group there is something that we start earlier. It's \$200,000 for continuation of that project. It helps, it serves like an internship program. It keeps a pool of possible candidates to keep filling these important research positions. The other things we talked about was funding for Ag. Business specialists. We just mentioned that it helps stimulate rural economies, helps provide further ideas for converting commodities and Ag. processing in our rural areas. The third thing is the Junior Master Gardener. That Junior Master Gardener started last biennium, and we funded it at \$20,000. We looked to expand that with an additional \$40,000 to the program to bring it to a total of \$60,000. As you heard in testimony, it's been a huge success. Actually it's focused on 3rd-5th grades. It was initiated in 8 counties in 2008 and over 350 students were involved. We felt that the additional dollars can help expand that program. That program engages youth in hands-on learning, group, individual learning experiences, promotes gardening, appreciation of environment, and at that age, 3rd-5th grades, it helps develop leadership skills. It is a 6-8 week program at that point. In the last item in that section, we maintain funding for the parenting resource centers, \$125,000. Last time we made it possible to help leverage additional grants. We thought we should continue that. These funds brought programs to the three regional centers, not connected to Extension; Parent Educational Network of Professionals will be developed and that will help deliver education prevention programs for families. The last thing was with the Main Research Center was our Wheat Rust Pathologist. That's a basic plant breeder, and this position would identify, develop and improve levels of resistance to a new race of wheat leaf and stem rust. In Europe there is a strain of rust that we currently do not

have any varieties that would be resistant to this strain. Scientists feel that this will soon be found in North America and if this occurred, this would be quite devastating to not only the entire nation, but our wheat industry in North Dakota. Again, it was an increase of \$1.54 million in general funds and \$925,000 that came from the special trust fund for a total of \$2.465,000. I move the amendments.

Rep. Hawken: Second.

Rep. Meyer: Would you explain the \$925,000? I know that the Dickinson Research Center does get oil revenues. Do they turn it in to the general fund and then get it back, or how does that process work.

Rep. Onstad: That's general revenue that comes directly to the Research Center, similar to another research center might have seed sales and those dollars come back to their own research center. This is to replace lost revenue that occurred over the last biennium. They have no other access to that type of sales.

Rep. Klein: When the Dickinson Research Center made their budget about a year ago, and oil was around \$130 a barrel, they used that figure. Since then, with oil prices and production falling in that field, their numbers were way off. This gets them back into their operating budget.

Rep. Meyer: I was more or less wondering about the procedure. Do they have to account for the dollars.

Rep. Wald: In July of '08, when this budget was being put together by OMB, the revenue to the Dickinson Research Center that month was \$113,478. In December the price of oil had dropped from \$125.10 a barrel to \$27.11 a barrel. The difference in revenue went from \$113,000 to \$22,441. I had Bruce Bolinger, director of budget office at NDSU, he calculated that the revenue shortfall based on December's receipts would be \$1,542,000. The

amendment of \$925,000 reflects OMB's estimate as the biennium progresses they had increased the expected revenue and the price per barrel on oil. Using that average, we had calculated that the shortfalls of the Dickinson station because of the declining barrels and the price, they thought that \$925,000 would be a good average. A history of this is that the revenue in the previous bienniums had dropped more than they had anticipated. This is known as the stadium lodge pole well, and if you drive past Dickinson on I94 and look to your right on the north side of the interstate, you will see a couple of oil wells. Those are the oil wells that we are talking about here.

Rep. Bellew: How much is this budget over what the Governor proposed, and that includes what the Senate did too, from General Funds and Special Funds.

Rep. Onstad: The Senate added \$3 million; that came from federal funds, that was the additional study in the transportation. They had an increase of \$100,000. Basically the general fund increase of \$1.6 million and Special Funds of almost \$4 million.

Chm. Svedjan: On page 3 of the bill it shows the base level and enhancements. You can see that the base level general fund was at \$67.5 million. The Governor recommended \$96.6 million roughly. If you go back to the Statement of Purpose on page 1 of the Amendments, the General Fund share is up to \$98.1 million; the same analysis on the special funds. That appears to be approaching a 28% increase.

Rep. Hawken: Keep in mind that this budget is one of those areas that actually make us money. This is an investment. If the wheat pathologist does anything to help ND, it will more than pay for the salary. We didn't give them the full salaries that they asked for in any case. But we did give them the positions because of what it will do for the future of ND Agriculture and that is our major industry. I don't know off the top of my head the dollars, but it's in the B's that is returned to North Dakota because of what we do through the people that run these

varying places. Keep that in mind when looking at this budget, it is an increase but it is an increase that truly is an investment.

Rep. Bellew: That General Fund increase is 45.3% increase on the \$98 million of general funds.

Rep. Skarphol: The \$11,450,000 is for the greenhouse at NDSU; that one project. This is a significant increase, but with what is evolving worldwide, with regard to the wheat rust pathologist, this could be devastating to our wheat industry, not only in ND, but worldwide. It takes 10-15 years of pathology work to come up with a strain that will be resistant to this rust. For us to wait in anticipation that we can fund this later in this case, is not acceptable. We have to do this today to get started down the road, before we have to fight this when it hits this country. There are additional increases that we recommended here. As our population gets further and further removed from the Ag base that it is associated with, we need to keep the people aware of the needs for agriculture. That was the logic behind some of what the committee has done. The pathologist at Carrington has to do with peas and lentils. It is one of the most rapidly expanding crops in ND. We've been fortunate in that the disease levels have been minimal. However, with the anticipated changes in that, with regard to moisture, they are very susceptible to moisture problems. Our Section thought these were appropriate changes based on the fact that we did not give them everything they wanted; only a small portion. Agents in training asked for 5 FTE's, we gave them 0. We gave them some flexibility and some dollars to work with. Our committee felt that this was an appropriate change on this budget. It is an investment in the largest industry in the state. The creation of one new strain of wheat, at one time, generated \$350 million dollars in one year additional revenue based on the fact that it reduced the losses due to scabs. The effect that this budget has on our economy is tremendous.

Ch. Svedjan: On the motion to adopt amendment .0201 to SB 2020, voice vote. Motion carried. We now have the bill before us as amended. What are the committee's wishes.

Rep. Wald: I move a Do Pass as amended.

Rep. Hawken: Second.

Ch. Svedjan: Further discussion. Roll call vote.

22 YES 3 NO 0 ABSENT

DO PASS AS AMENDED

CARRIER: Rep. Onstad

Date: March 25, 2009
Roll Call Vote #: 1

2009 HOUSE STANDING COMMITTEE ROLL CALL VOTES
BILL/RESOLUTION NO. 2020

House House Appropriations Education and Environment Committee

Check here for Conference Committee

Legislative Council Amendment Number _____

Action Taken Do Pass Do Not Pass Amended

Motion Made By Rep. Martinson Seconded By Rep. Hawken

Representatives	Yes	No	Representatives	Yes	No
Bob Skarphol - Chairman	✓		Joe Kroeber	✓	
Francis Wald - Vice Chairman	✓		Kenton Onstad	✓	
Kathy Hawken	✓		Clark Williams	✓	
Matthew M. Klein	✓				
Bob Martinson	✓				

Total Yes 8 No 0

Absent 0

Bill Carrier _____

If the vote is on an amendment, briefly indicate intent:

Add \$220,000 for FTE at Carrington.

Date: *March 25, 2009*
Roll Call Vote #: *2*

2009 HOUSE STANDING COMMITTEE ROLL CALL VOTES
BILL/RESOLUTION NO. *2020*

House House Appropriations Education and Environment Committee

Check here for Conference Committee

Legislative Council Amendment Number _____

Action Taken Do Pass Do Not Pass Amended

Motion Made By *Rep. Martinson* Seconded By *Rep. Albin*

Representatives	Yes	No	Representatives	Yes	No
Bob Skarphol - Chairman	✓		Joe Kroeber	✓	
Francis Wald - Vice Chairman	✓		Kenton Onstad	✓	
Kathy Hawken	✓		Clark Williams	✓	
Matthew M. Klein	✓				
Bob Martinson	✓				

Total Yes 8 No 0

Absent 0

Bill Carrier _____

If the vote is on an amendment, briefly indicate intent:
\$4/0,000 master junior garden

Date: *March 25, 2009*
Roll Call Vote #: *3*

2009 HOUSE STANDING COMMITTEE ROLL CALL VOTES
BILL/RESOLUTION NO. *2020*

House House Appropriations Education and Environment Committee

Check here for Conference Committee

Legislative Council Amendment Number _____

Action Taken Do Pass Do Not Pass Amended

Motion Made By _____ Seconded By _____

Representatives	Yes	No	Representatives	Yes	No
Bob Skarphol – Chairman	✓		Joe Kroeber	✓	
Francis Wald – Vice Chairman	✓		Kenton Onstad	✓	
Kathy Hawken	✓		Clark Williams	✓	
Matthew M. Klein	✓				
Bob Martinson	✓				

Total Yes _____ No _____

Absent _____

Bill Carrier _____

If the vote is on an amendment, briefly indicate intent:

to add \$22,000 for the 4-H agronomist

Date: *March 25, 2009*
Roll Call Vote #: *4*

2009 HOUSE STANDING COMMITTEE ROLL CALL VOTES
BILL/RESOLUTION NO. *2020*

House House Appropriations Education and Environment Committee

Check here for Conference Committee

Legislative Council Amendment Number _____

Action Taken Do Pass Do Not Pass Amended

Motion Made By *Rep. Hawken* Seconded By *Rep. Klein*

Representatives	Yes	No	Representatives	Yes	No
Bob Skarphol – Chairman	✓		Joe Kroeber	✓	
Francis Wald – Vice Chairman	✓		Kenton Onstad	✓	
Kathy Hawken	✓		Clark Williams	✓	
Matthew M. Klein	✓				
Bob Martinson	✓				

Total Yes *8* No *0*

Absent *0*

Bill Carrier _____

If the vote is on an amendment, briefly indicate intent:

parenting resource

Date: March 25, 2009
 Roll Call Vote #: 5

**2009 HOUSE STANDING COMMITTEE ROLL CALL VOTES
 BILL/RESOLUTION NO.**

House House Appropriations Education and Environment Committee

Check here for Conference Committee

Legislative Council Amendment Number _____

Action Taken Do Pass Do Not Pass Amended

Motion Made By Rep. Hawken Seconded By Rep. Klein

Representatives	Yes	No	Representatives	Yes	No
Bob Skarphol - Chairman	✓		Joe Kroeber	✓	
Francis Wald - Vice Chairman	✓		Kenton Onstad	✓	
Kathy Hawken	✓		Clark Williams	✓	
Matthew M. Klein	✓				
Bob Martinson	✓				

Total Yes 6 No 0

Absent 0

Bill Carrier _____

If the vote is on an amendment, briefly indicate intent:

Include \$925,000 to the Dickenson Research Center.

Date: March 25, 2009
Roll Call Vote #: 56

2009 HOUSE STANDING COMMITTEE ROLL CALL VOTES
BILL/RESOLUTION NO. 2020

House House Appropriations Education and Environment Committee

Check here for Conference Committee

Legislative Council Amendment Number _____

Action Taken Do Pass Do Not Pass Amended

Motion Made By Rep. Wald Seconded By Rep. Klein

Representatives	Yes	No	Representatives	Yes	No
Bob Skarphol - Chairman	✓		Joe Kroeber	✓	
Francis Wald - Vice Chairman	✓		Kenton Onstad	✓	
Kathy Hawken	✓		Clark Williams	✓	
Matthew M. Klein	✓				
Bob Martinson	✓				

Total Yes 8 No 0

Absent 0

Bill Carrier _____

If the vote is on an amendment, briefly indicate intent:

add \$65,000 to Williston irrigation scientist

March 27, 2009

VR
4/2/09
176

PROPOSED AMENDMENTS TO ENGROSSED SENATE BILL NO. 2020

Page 1, line 4, after the first semicolon insert "to provide legislative intent;"

Page 1, line 20, replace "5,088,122" with "5,913,122" and replace "46,616,157" with "47,441,157"

Page 1, line 22, replace "5,188,122" with "6,013,122" and replace "47,453,957" with "48,278,957"

Page 2, line 1, replace "3,122,967" with "3,947,967" and replace "21,425,080" with "22,350,080"

Page 2, line 2, replace "1.00" with "3.00" and replace "267.33" with "269.33"

Page 2, line 23, replace "26,123,544" with "26,373,544" and replace "104,702,142" with "104,952,142"

Page 2, line 25, replace "26,573,544" with "26,823,544" and replace "105,152,142" with "105,402,142"

Page 2, line 27, replace "23,911,041" with "24,161,041" and replace "60,138,875" with "60,388,875"

Page 2, line 28, replace "6.00" with "7.00" and replace "353.39" with "354.39"

Page 3, line 2, replace "(\$12,786)" with "\$912,214" and replace "5,362,580" with "6,287,580"

Page 3, line 3, replace "73,454" with "293,454" and replace "2,340,602" with "2,560,602"

Page 3, line 7, replace "(276,861)" with "(211,861)" and replace "2,857,183" with "2,922,183"

Page 3, line 8, replace "970,624" with "1,150,624" and replace "6,547,962" with "6,727,962"

Page 3, line 9, replace "2,552,987" with "3,942,987" and replace "26,169,006" with "27,559,006"

Page 3, line 10, replace "1,252,305" with "2,177,305" and replace "14,266,816" with "15,191,816"

Page 3, line 11, replace "1,300,682" with "1,765,682" and replace "11,902,190" with "12,367,190"

Page 3, line 12, replace "0.00" with "1.70" and replace "95.56" with "97.26"

Page 3, line 24, replace "29,035,552" with "30,575,552" and replace "96,595,159" with "98,135,159"

206

Page 3, line 25, replace "10,019,165" with "10,944,165" and replace "112,819,662" with "113,744,662"

Page 3, line 26, replace "39,054,717" with "41,519,717" and replace "209,414,821" with "211,879,821"

Page 4, line 7, replace "0" with "925,000"

Page 4, line 17, replace "20,882,000" with "21,807,000"

Page 4, line 18, replace "3,350,000" with "4,275,000"

Page 5, after line 21, insert:

"SECTION 8. PERMANENT OIL TAX TRUST FUND - DICKINSON RESEARCH CENTER - OPERATING POOL FUNDING. The estimated income line item in subdivision 5 of section 1 of this Act includes \$925,000 from the permanent oil tax trust fund. This funding is available only for defraying the costs of operations of the Dickinson research center, for the biennium beginning July 1, 2009, and ending June 30, 2011."

Renumber accordingly

STATEMENT OF PURPOSE OF AMENDMENT - LC 98039.0201 FN 1

A copy of the statement of purpose of amendment is attached.

STATEMENT OF PURPOSE OF AMENDMENT:

Senate Bill No. 2020 - Summary of House Action

	Executive Budget	Senate Version	House Changes	House Version
Transportation Institute				
Total all funds	\$23,326,992	\$26,326,992	\$0	\$26,326,992
Less estimated income	21,737,199	24,737,199	0	24,737,199
General fund	\$1,589,793	\$1,589,793	\$0	\$1,589,793
Branch Research Centers				
Total all funds	\$26,169,006	\$26,169,006	\$1,390,000	\$27,559,006
Less estimated income	14,266,816	14,266,816	925,000	15,191,816
General fund	\$11,902,190	\$11,902,190	\$465,000	\$12,367,190
NDSU Extension Service				
Total all funds	\$47,403,957	\$47,453,957	\$825,000	\$48,278,957
Less estimated income	25,928,877	25,928,877	0	25,928,877
General fund	\$21,475,080	\$21,525,080	\$825,000	\$22,350,080
Northern Crops Institute				
Total all funds	\$3,037,486	\$3,037,486	\$0	\$3,037,486
Less estimated income	1,598,265	1,598,265	0	1,598,265
General fund	\$1,439,221	\$1,439,221	\$0	\$1,439,221
Main Research Center				
Total all funds	\$105,002,142	\$105,152,142	\$250,000	\$105,402,142
Less estimated income	44,813,267	45,013,267	0	45,013,267
General fund	\$60,188,875	\$60,138,875	\$250,000	\$60,388,875
Agronomy Seed Farm				
Total all funds	\$1,275,238	\$1,275,238	\$0	\$1,275,238
Less estimated income	1,275,238	1,275,238	0	1,275,238
General fund	\$0	\$0	\$0	\$0
Bill total				
Total all funds	\$206,214,821	\$209,414,821	\$2,465,000	\$211,879,821
Less estimated income	109,619,662	112,819,662	925,000	113,744,662
General fund	\$96,595,159	\$96,595,159	\$1,540,000	\$98,135,159

Senate Bill No. 2020 - Branch Research Centers - House Action

	Executive Budget	Senate Version	House Changes	House Version
Dickinson Research Center	\$5,362,580	\$5,362,580	\$925,000	\$6,287,580
Central Grasslands Research Center	2,340,602	2,340,602	220,000	2,560,602
Hettinger Research Center	2,995,155	2,995,155		2,995,155
Langdon Research Center	2,091,572	2,091,572		2,091,572
North Central Research Center	3,973,952	3,973,952		3,973,952
Williston Research Center	2,857,183	2,857,183	65,000	2,922,183
Carrington Research Center	6,547,962	6,547,962	180,000	6,727,962
Total all funds	\$26,169,006	\$26,169,006	\$1,390,000	\$27,559,006
Less estimated income	14,266,816	14,266,816	925,000	15,191,816
General fund	\$11,902,190	\$11,902,190	\$465,000	\$12,367,190
FTE	95.56	95.56	1.70	97.26

Department No. 628 - Branch Research Centers - Detail of House Changes

	Adds Funding for Plant Pathologist Position ¹	Adds Funding for Forage Agronomist Position ²	Increases Funding for Irrigation Scientist Position ³	Adds Funding for Operating Pool ⁴	Total House Changes
Dickinson Research Center				\$925,000	\$925,000
Central Grasslands Research Center		220,000			220,000
Hettinger Research Center					
Langdon Research Center					
North Central Research Center					
Williston Research Center			65,000		65,000
Carrington Research Center	180,000				180,000
Total all funds	\$180,000	\$220,000	\$65,000	\$925,000	\$1,390,000
Less estimated income	0	0	0	925,000	925,000
General fund	\$180,000	\$220,000	\$65,000	\$0	\$465,000
FTE	0.70	1.00	0.00	0.00	1.70

¹ This amendment adds funding from the general fund for a .7 FTE plant pathologist located at the Carrington Research Center, including salaries and wages (\$140,000) and operating expenses (\$40,000).

² This amendment adds funding from the general fund for 1 FTE forage agronomist located at the Central Grasslands Research Center, including salaries and wages (\$180,000) and operating expenses (\$40,000).

³ This amendment provides increased funding from the general fund for the irrigation scientist position at the Williston Research Center.

⁴ This amendment provides \$925,000 from the permanent oil tax trust fund as one-time funding to the Dickinson Research Center for operating expenses.

Senate Bill No. 2020 - NDSU Extension Service - House Action

	Executive Budget	Senate Version	House Changes	House Version
Extension Service	\$46,666,157	\$46,616,157	\$825,000	\$47,441,157
Soil Conservation Committee	737,800	837,800		837,800
Total all funds	\$47,403,957	\$47,453,957	\$825,000	\$48,278,957
Less estimated income	25,928,877	25,928,877	0	25,928,877
General fund	\$21,475,080	\$21,525,080	\$825,000	\$22,350,080
FTE	267.33	267.33	2.00	269.33

Department No. 630 - NDSU Extension Service - Detail of House Changes

	Adds Funding for 4-H Leadership Position ¹	Adds Funding for Agents-In-Training ²	Adds Funding for Agribusiness Specialist Position ³	Increases Junior Master Gardener Funding ⁴	Increases Funding for Parenting Resource Centers ⁵	Total House Changes
Extension Service Soil Conservation Committee	\$220,000	\$200,000	\$240,000	\$40,000	\$125,000	\$825,000
Total all funds	\$220,000	\$200,000	\$240,000	\$40,000	\$125,000	\$825,000
Less estimated income	0	0	0	0	0	0
General fund	\$220,000	\$200,000	\$240,000	\$40,000	\$125,000	\$825,000
FTE	1.00	0.00	1.00	0.00	0.00	2.00

¹ This amendment adds funding from the general fund for 1 FTE state specialist position for the 4-H leadership education and camping program, including salaries and wages (\$180,000) and operating expenses (\$40,000).

² This amendment provides funding for agents-in-training and interns.

³ This amendment adds funding from the general fund for 1 FTE state specialist in agribusiness enterprise and rural development, including salaries and wages (\$200,000) and operating expenses (\$40,000).

⁴ This amendment increases funding from the general fund by \$40,000 for the junior master gardener program to provide a total of \$60,000.

⁵ This amendment increases funding from the general fund for parenting resource centers by \$125,000 to provide a total of \$250,000.

Senate Bill No. 2020 - Main Research Center - House Action

	Executive Budget	Senate Version	House Changes	House Version
Main Research Center	\$104,502,142	\$104,702,142	\$250,000	\$104,952,142
Deferred maintenance	500,000	450,000		450,000
Total all funds	\$105,002,142	\$105,152,142	\$250,000	\$105,402,142
Less estimated income	44,813,267	45,013,267	0	45,013,267
General fund	\$60,188,875	\$60,138,875	\$250,000	\$60,388,875
FTE	353.39	353.39	1.00	354.39

Department No. 640 - Main Research Center - Detail of House Changes

	Adds Funding for Wheat Rust Pathologist Position ¹	Total House Changes
Main Research Center Deferred maintenance	\$250,000	\$250,000
Total all funds	\$250,000	\$250,000
Less estimated income	0	0
General fund	\$250,000	\$250,000
FTE	1.00	1.00

¹ This amendment adds funding from the general fund for 1 FTE wheat rust pathologist located at the Main Research Center, including salaries and wages (\$210,000) and operating expenses (\$40,000).

Date: March 30, 2009
Roll Call Vote #: 1

2009 HOUSE STANDING COMMITTEE ROLL CALL VOTES
BILL/RESOLUTION NO. 2020

House House Appropriations Education and Environment Committee

Check here for Conference Committee

Legislative Council Amendment Number 98039.0201

Action Taken Do Pass Do Not Pass Amended

Motion Made By Rep. Wald Seconded By Rep. Klein

Representatives	Yes	No	Representatives	Yes	No
Bob Skarphol - Chairman	✓		Joe Kroeber	✓	
Francis Wald - Vice Chairman	✓		Kenton Onstad	✓	
Kathy Hawken	✓		Clark Williams	✓	
Matthew M. Klein	✓				
Bob Martinson	✓				

Total Yes 8 No 0

Absent 0

Bill Carrier _____

If the vote is on an amendment, briefly indicate intent:

pass the amendment

Date: March 30, 2009
Roll Call Vote #: 2

2009 HOUSE STANDING COMMITTEE ROLL CALL VOTES
BILL/RESOLUTION NO. 2020

House House Appropriations Education and Environment Committee

Check here for Conference Committee

Legislative Council Amendment Number 98039.0201

Action Taken Do Pass Do Not Pass Amended

Motion Made By Rep. Wald Seconded By Rep. Onstad

Representatives	Yes	No	Representatives	Yes	No
Bob Skarphol – Chairman	✓		Joe Kroeber	✓	
Francis Wald – Vice Chairman	✓		Kenton Onstad	✓	
Kathy Hawken	✓		Clark Williams	✓	
Matthew M. Klein	✓				
Bob Martinson					

Total Yes 8 No 0

Absent 0

Bill Carrier Rep. Onstad

If the vote is on an amendment, briefly indicate intent:

Do pass as amended. 0201

Date: 4/2/09
 Roll Call Vote #: 1

2009 HOUSE STANDING COMMITTEE ROLL CALL VOTES
BILL/RESOLUTION NO. 2020

Full House Appropriations Committee

Check here for Conference Committee

Legislative Council Amendment Number .0201

Action Taken adopt amendment .0201

Motion Made By Onstad Seconded By Hawken

Representatives	Yes	No	Representatives	Yes	No
Chairman Svedjan					
Vice Chairman Kempenich					
Rep. Skarphol			Rep. Kroeber		
Rep. Wald			Rep. Onstad		
Rep. Hawken			Rep. Williams		
Rep. Klein					
Rep. Martinson					
Rep. Delzer			Rep. Glassheim		
Rep. Thoreson			Rep. Kaldor		
Rep. Berg			Rep. Meyer		
Rep. Dosch					
Rep. Pollert			Rep. Ekstrom		
Rep. Bellew			Rep. Kerzman		
Rep. Kreidt			Rep. Metcalf		
Rep. Nelson					
Rep. Wieland					

Total (Yes) _____ No _____

Absent _____

Floor Assignment Voic Vote - carries

If the vote is on an amendment, briefly indicate intent:

Date: 4/2/09
 Roll Call Vote #: 2

2009 HOUSE STANDING COMMITTEE ROLL CALL VOTES
BILL/RESOLUTION NO. 2020

Full House Appropriations Committee

Check here for Conference Committee

Legislative Council Amendment Number .0701

Action Taken Do Pass as Amended

Motion Made By Rep. Wald Seconded By Hawken

Representatives	Yes	No	Representatives	Yes	No
Chairman Svedjan	✓				
Vice Chairman Kempenich	✓				
Rep. Skarphol	✓		Rep. Kroeber	✓	
Rep. Wald	✓		Rep. Onstad	✓	
Rep. Hawken	✓		Rep. Williams	✓	
Rep. Klein	✓				
Rep. Martinson	✓				
Rep. Delzer		✓	Rep. Glasheim	✓	
Rep. Thoreson	✓		Rep. Kaldor	✓	
Rep. Berg	✓		Rep. Meyer	✓	
Rep. Dosch		✓			
Rep. Pollert	✓		Rep. Ekstrom	✓	
Rep. Bellew		✓	Rep. Kerzman	✓	
Rep. Kreidt	✓		Rep. Metcalf	✓	
Rep. Nelson	✓				
Rep. Wieland	✓				

Total (Yes) 22 No 3

Absent 0

Floor Assignment Rep. Onstad

If the vote is on an amendment, briefly indicate intent:

REPORT OF STANDING COMMITTEE

SB 2020, as engrossed: Appropriations Committee (Rep. Svedjan, Chairman) recommends **AMENDMENTS AS FOLLOWS** and when so amended, recommends **DO PASS** (22 YEAS, 3 NAYS, 0 ABSENT AND NOT VOTING). Engrossed SB 2020 was placed on the Sixth order on the calendar.

Page 1, line 4, after the first semicolon insert "to provide legislative intent;"

Page 1, line 20, replace "5,088,122" with "5,913,122" and replace "46,616,157" with "47,441,157"

Page 1, line 22, replace "5,188,122" with "6,013,122" and replace "47,453,957" with "48,278,957"

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Page 3, line 7, replace "(276,861)" with "(211,861)" and replace "2,857,183" with "2,922,183"

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Page 5, after line 21, insert:

"SECTION 8. PERMANENT OIL TAX TRUST FUND - DICKINSON RESEARCH CENTER - OPERATING POOL FUNDING. The estimated income line item in subdivision 5 of section 1 of this Act includes \$925,000 from the permanent oil tax trust fund. This funding is available only for defraying the costs of operations of the Dickinson research center, for the biennium beginning July 1, 2009, and ending June 30, 2011."

Renumber accordingly

STATEMENT OF PURPOSE OF AMENDMENT - LC 98039.0201 FN 1

A copy of the statement of purpose of amendment is on file in the Legislative Council Office.

2009 SENATE APPROPRIATIONS

CONFERENCE COMMITTEE

SB 2020

2009 SENATE STANDING COMMITTEE MINUTES

Bill/Resolution No. SB 2020 conference committee

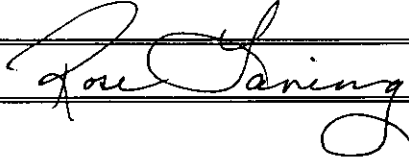
Senate Appropriations Committee

Check here for Conference Committee

Hearing Date: April 21, 2009

Recorder Job Number: 12069

Committee Clerk Signature



Minutes:

Senator Bowman: called the conference committee hearing to order on SB 2020 which concerns the extension service. Roll call was taken. Committee members present were:

Senator Holmberg, Senator Lindaas, Rep. Skarphol, Rep. Hawken, and Rep. Onstad.

Senator Bowman: When the bill came over from the House we made a few changes and with approval of those at NDSU. Two guys were in agreement with them. Why don't you go thru House amendments and I'd like to know if this was recommendation from NDSU or someone within your district.

Rep. Skarphol: I would just go through the House amendments. We talked with Dr. Ken Grafton and Dr. Duane Hauck. Our perception of this particular agency is this group does an excellent job. I would start on page two of statement of purpose – top of page two. Added a plant pathologist in Carrington – disease control and legumes. That is the logic behind Carrington due to climatic reason. Looking at the book provided by the Ag research – SBARE (# 1 and # 2) went through and granted 1st three priorities. We have no Forage Agronomist position will be put at central Grasslands. Adds funding for operating the pool – at Dickinson State Research Center. Revenue from oil was hoped to be more but appears to be running short.

Bottom of page reflects House change. The total amount of change for the Research Center amounted to \$1,390,000; of which \$925K would come from the Oil Trust Fund. One of the overbearing things on this budget was the costs of \$11M given to the green house. We added an FTE for 4-H leadership (#3) Priority #5 was a request for \$600K and 5 FTE's for the Agents-in-training. We were impressed and found value in the whole concept, however we did not want to grant FTE but rather give them a pool of money to work with, probably for intern purposes, and put \$200,000 in. #3 is Agribusiness Specialist position. We want to enable agriculture be promoted We want to give them ½ of their wish list. #4 was an Increase the Junior Master Gardener and increased it to \$40,000. As kids get further and further away from farm, this would be helpful. Partnering resource – Rep. Hawken wanted it doubled. Main Research Center was for a rust pathologist. Strain disease from Africa and it would be years and want to be proactive and ready if it comes here.

Senator Bowman: The deferred maintenance. – The new green house that was \$450,000 . They had one for utilities and was wondering if that was it.

Rep. Hawken: Where is that?

Senator Bowman:

Sheila Sandness, Legislative Council:

Tammy Dolan, OMB: Those were the Senate changes.

Senator Bowman: That was a \$50,000 reduction, not \$450,000

Senator Holmberg: When we had budget a few weeks ago, that was included on the other sheet.

Rep. Skarphol: That was germane to only UND. I'm assuming they'll include the research.

Senator Holmberg: If we're looking at campus level, we should also look at in experiments.

Rep. Skarphol: If there was any potential places to reduce the budget ever so slightly.

Senator Bowman: I think we're going to meet again and can discuss then. I've been conscious of work of SBARE and what they brought forward. We wanted to stay within budget. Everyone who had idea brought one forward. We have to do soul searching on budget and if we can leave all, we will.

Rep. Skarphol: In the original request, there were 6 FTEs given to research center. You tell me where you think you can reduce. His comment (#11 on green sheet) and he suggested – we could take one scientist and one technician. There was one of each and he wants to keep the plant pathologist and rust technicians. He understands the needs moving forward. In my conversations with Duane Hauck, he stated that 7/10 FTE at Langdon can remove it.

Rep. Hawken: One of the major things we talked about with additions – the ability to generate revenue. This is one place where they generate revenue. The investment here seems to be a wise one as we move forward and grow ND. Our primary discussion wasn't willy nilly, everybody was weighing in and they do generate revenue.

Senator Bowman: When we got done with budget, we had same requests. We had to stay in governor's budget. We put a lot of money in the infrastructure, and now we have to put researchers out there. There was \$14 - \$16 M that was over. How far do we want to go over budget? I don't need to be sold on that, I just need to be sold on the final line of the budget and how we are going to reach it.

Rep. Hawken: Someone said this is such a happy budget. It brings back more than we put in. We have the opportunity to invest.

Senator Lindaas: It's refreshing to hear that we're investing instead of spending. Education is an investment.

Senator Bowman: Investments need a common sense approach. We have to be practical. It is a matter of where we can be when the final budget is done.

Rep. Skarphol: 6 parts to this budget, \$20,500 with deferred maintenance one thing we have to discuss has to do with grapes. It's in our finance and tax committee. There was a \$325,000, House says put \$50,000 in advertising and spend with advice of committee formed in HB

Senator Bowman: Had one request to use \$5M of stimulus to finish greenhouse.

Rep. Skarphol: I'm not sure there's any left.

Senator Holmberg: Had miscellaneous money. It's mostly gone.

2009 SENATE STANDING COMMITTEE MINUTES

Bill/Resolution No. 2020 Conference Committee

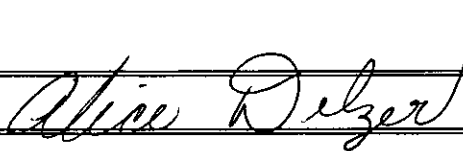
Senate Appropriations Committee

Check here for Conference Committee

Hearing Date: 04-24-09

Recorder Job Number: 12240

Committee Clerk Signature



Minutes:

Chairman Bowman: Opened the conference committee at 5:00 p.m. in reference to SB 2020. Let the record show all conferees are present. They are as follows: **Senators:**

Bowman, Holmberg, Lindaas; Representatives: Skarphol, Hawken, and Onstad.

Tammy Dolan from OMB and Sheila Sandness legislative Council were present.

Chairman Bowman: The other day you gave us a list of some of your priorities. Did you write them down in the most important to least important? We would like to have that list and we will try to take the highest priorities. I don't have a problem with any of them but it just a matter of how many we can fund. On the other part of the budget, what were the other differences between the House version and Senate version?

Rep. Skarphol: We didn't change anything that you had done nor did we remove anything.

Senator Bowman: If there are no other changes then one thing we can all agree on is that you had taken the salary adjustment money out and that will stay out because it will be in another budget. Let's take a look at the importance of the add on that the House did. Wheat Rust was one that I had on the top of the list and the House had said that was a strain coming in from another country and they want to get a handle on that right away. Did I understand this right?

Rep. Skarphol: That would be correct. There is a new rust that has developed on the continent of Africa and moved to Europe and there is fear that it will come here. It is a rust that would decimate the wheat industry in North America.

Senator Bowman: Would that be like scab was a few year ago?

Rep. Skarphol: Worse than that.

Rep. Onstad: We do not have one variety that is resistant to that kind of rust.

Senator Bowman: It sounds to me that this is the first add on if we all agree. That could be rather devastating to the grain industry in the state. We will write that down as very important.

Rep. Hawken: The forage agronomist in the Federal Grasslands would be very important.

Rep. Skarphol: We put a plant pathologist for legumes, forage agronomist, and wheat rust specialist in and we feel pretty strongly about all 3 of these.

Senator Bowman: The forage agronomist will work into the beef resource facility and now we have a place to test these cattle we will be able to get good read out on forages.

Rep. Hawken: That is one of things we were discussing. You are correct.

Senator Bowman: Your 3rd one was?

Rep. Skarphol: A plant pathologist at Carrington.

Senator Bowman: In one place I thought I saw 3 or 4 researchers in line item.

Rep. Skarphol: That would be in the green sheet. It was granted as a budget request by the governor for six positions. I did have a conversation with Dr. Grafton and in lieu of these he would be willing to give up one of each of those. I have not consented anyone from SBARE.

Senator Bowman: We want to look at the whole picture as we go through all of these. As we go through all of these we have to look at the most important and the least important. We want the most important things in this budget.

Rep. Skarphol: The things we did, the subcommittee felt strong about.

Senator Bowman: I added up every item of them and with the budget we had presented to us most of the money was tied up in the 2 building facilities which took away the dollars for these researchers. The way I looked at this if these were our highest priorities, we need these two buildings (greenhouses) they complement each other over the years. Now it is a matter at looking at other potential problems and trying to stay within SBARE recommendation. We put this group together, they don't always agree on what they do, but when they are done, they feel they have done the best job they can. I am glad we do have that group. That's where we have to be careful when we are budgeting that we respect the work they have done. As for the wheat rust, if rust puts people out of business it should be on the priority list.

Rep. Hawken: There isn't anything in here that wasn't on the SBARE list. We did honor that process. We honor their list, we see the priorities but for our region of the state or whatever, maybe 6 would be better than 5. I think that is all we did.

Senator Skarphol: With regard to extension, the governor's budget recommended 1 and 2 and our committee added part of 3, 4 and 5. We need to do the building, we thought we needed to do a little bit more than the governor's recommendation.

Senator Bowman: I had no problem when I saw the list but I tried to stay close to the governor's budget.

Rep. Skarphol: My leader told me this wouldn't waddle. This one can waddle. There is 20 and ½ million dollars in capital projects. The House position is to stay with what we did.

Senator Bowman: I will talk to our leaders and I'll stress what you did and why you did it. It is worthy of that. I don't make the final decisions, if I can talk them into half of these things and if they are willing to go with all of them. More power to us. We need to come up with a decision to finish this. We all agree that these are important items but yet it is a matter of how many of these extra items can we afford.

Rep. Skarphol: He handout out some language to add at the request of Dr. Grafton.

Attachment #1 We do not have to make a decision today. Shane Goettle thought it looked fine. It is just something for cleanup.

Senator Holmberg: What is section 9 of HB 1021 from the fifty-eighth legislative session?

The reason I ask is because in the past this issue has been very sensitive.

Rep. Skarphol: I would agree with that, council should take a look at it.

Senator Bowman: Did you look at the \$450,000 utility bill that is going to be added on to the greenhouse?

Rep. Skarphol: We discussed it, it is not unusual because it is a projection of what is needed.

Senator Bowman: When I asked I was told that this is not an educational building, it is a research building. Education would be funded on campus. I never questioned anything like that and it is the first time I have seen an electric bill added on to a building.

Rep. Hawken: We saw it someplace else too. It is a research building and it is for ongoing planning.

Senator Bowman: If you have college graduates that want to work on research, isn't that education? We have to remember this for next session.

Rep. Skarphol: We were told it would not show up on the budget next time. This was just to recognize the fact that there would be a utility bill associated with that building.

Tammy: The utilities for that building will become part of the base budget for the research budget going forward. It wouldn't stand out as a line item.

Rep. Skarphol: The potential to use stimulus dollars for geothermal heat could be used in the commerce budget. Maybe it would not be a bad idea to authorize that.

Senator Bowman: There will be a lot of requests for stimulus but it would be nice to use stimulus money to finish the last phase of this building.

Rep. Skarphol: I am not applying that. Only for the heating section.

Senator Bowman: We just talked about that for the Veterans home. It could be under the same grant. We could have that drafted into the amendment. Any comment? I think for right now we have covered all the good reasons why you put these items on your list. The last thing I want to do is end up with a floor debate. I hope we have some flexibility there. If all else fails we will be able to get the Rust project. Are we on track?

Rep. Onstad: Our addition is basically \$1,540,000 increase in general funds the way it came from the Senate, there are special funds that are not included. That comes out of the permanent oil trust. (Dickinson)

Rep. Skarphol: That was done with the result of drop of oil, what that meant to the Dickinson budget.

Senator Bowman: If it wasn't in the budget, was the money to fund the Dickinson Research center to come out of the general fund?

Rep. Skarphol: The revenue projections were in the budget and it is now projected to fall short by 925 and that is what is in this budget. Dickinson doesn't have anything to sell like other Experiment stations. This is to replace that loss to this facility.

Senator Bowman: Where does their feeder cattle go?

Rep. Onstad: Most of the other researchers centers have the capability to sell, Dickinson doesn't have that capability.

Senator Holmberg: If you prioritize the most important, I don't think we are that far apart.

Rep. Skarphol: There was some discussion with amending grape production 2373. We need to be aware of that. There was some discussion in the ag budget and something might come out of that.

Senator Holmberg: The bill that was out there was in conference committee and the Senate overrode the Finance and Tax committee and all three people that were on the original conference committee were against the bill. I don't know what happened to it in that conference committee.

Rep. Skarphol: What this amendment does, with the approval of SBARE, authorizes spending any available funds for purpose of grape research? That is all this does.

Senator Bowman closed the hearing.

2009 SENATE STANDING COMMITTEE MINUTES

Bill/Resolution No. SB 2020 conference committee

Senate Appropriations Committee

Check here for Conference Committee

Hearing Date: April 27, 2009

Recorder Job Number: 12289

Committee Clerk Signature

Alice DeZee (Alice DeZee)

Minutes:

Chairman Bowman called the conference committee hearing to order on SB 2020 on the NDSU Extension Service. The minutes are to reflect that all conferees are present: **Senators Bowman, Holmberg, and Lindaas; Representatives Skarphol, Hawken, and Onstad.**

Tammy Dolan, OMB and Sheila Sandness, Legislative Council were also present.

Chairman Bowman Where we left off at our last meeting there were a considerable amount of proposals from the house side on changes from the senate side. Basically most of these are additions to the bill that was passed by the Senate. I gave you 3 different sheets that show all of the requests that were proposed by the House. We will have to try and prioritize these, we will go down the list until we have maxed out on the amount of money we can spend on this. Every one of these is additions to the budget. The language that was handed to us at the last regarding the beef centers that needed to be put into the bill, is there any opposition?

Rep. Skarphol We have no objection.

Chairman Bowman Does our side have any objection to that language on the beef research facility? I would entertain a motion that we accept the language written by council that addresses the language needed to include the beef research facility.

Senator Holmberg So moved and asked it be included in the amendments

Rep. Skarphol Second

The motion was carried on a unanimous voice vote.

Chairman Bowman I am open to suggestions about how to do this. My idea was that each one of us will look at these 3 sheets of paper and have special interests in different things. I was hoping that all of us could take a few minutes and rate these from the most important to the least important, hand them in and then rate them for next conference meeting. Then if we can agree that this is what we can do, at least we will have prioritized those items that we all feel are the most important. I think there are a total of 11 items. Spoke about prioritizing the expenditures and what format use

Senator Holmberg This is just the handout #1?

Chairman Bowman This is just my idea of how to get everyone's input.

Rep. Skarphol I guess that I would ask to have legislative council or OMB evaluate the \$925,000 for Dickinson Research to ensure that it does accurately reflect the sustained need over a period of biennium.

Chairman Bowman When the budget was prepared for this appropriation I'm sure the Dickinson facility knew they weren't going to have the money from the oil revenues, and consequently the general fund money might have been used to pick up that shortfall.

Tammy I have more recent information on the oil revenue, I can put something together. And there was a reduction; they did reduce their operating budget.

Rep. Skarphol The spreadsheet I'd like to see would reflect the last 4 or 5 biennium: their budget, their anticipated oil revenue, and their actual oil revenue so we can see how they are hitting and missing their budget.

Chairman Bowman I think the point is that we want to make sure they have their operating money to operate their facility. I was assuming that when the budget was presented and discussed it would have been in the original bill.

Rep. Skarphol While the House likes the position as we sent it to you; we did talk about some changes. I hope you give adequate time to go over those changes, they are not necessarily increases.

Senator Holmberg That would be helpful as we look at both lists, if we have an idea of targets because that makes a big difference on how I would look at some of those things. If you are looking at a target of reducing it to the executive level is one thing. But, increasing it all the way that the House had done...do you have a number you are dealing with?

Chairman Bowman I believe the figure that the House gave was a little over 2M in additional requests.

Senator Holmberg What is the exact number?

Rep. Onstand It was \$1,540,000 in general funds. The only special funds were the oil revenue which was additional. If you are only considering general funds its \$1,540,000. (11.37)

Chairman Bowman Let's get these rated so we have a guideline.

Discussion about the Dickinson State numbers

Senator Holmberg I have a question about process. If we turn these in, are we not secret voting? Which we can't do, I think if we say them out loud then it is not a secret vote.

Rep. Skarphol I didn't get past two. I am little bit flexible in some areas but I am pretty rock solid on most of it. The forage agronomist is new but I think it is just as important as the wheat rust pathologist. I think that is critical to ND. I am willing to work with you and I did suggest there are some changes I am willing to make. I just think we need to have a cordial discussion. My colleagues are certainly welcome to state their opinion but I will not give up the wheat rust pathologist. And I believe equally in the plant pathologist in Carrington, and I believe equally in the forage agronomist, and I believe the Williston area needs the money to get a scientist. I am

a little bit flexible on some of them but if we adopt those recommendations over here, we need to know what a number might be that is workable.

Senator Holmberg I'd be interested to know what your #2 rankings are. I looked over at the changes which propose a reduction from what was in the bill and I am kind of partial to the Langdon research center. I certainly am at a 2 or a 3 for the decrease in the onetime funding for the interactive. My number 2 was the agent in training and the agri-business enterprise were lower on my list than were the research positions on rust, forage agronomist, and pathologist. I think those are pretty high on my list. Those other two would decrease it and bring it close to where we might have agreement.

Rep. Skarphol The only reason the Langdon piece was put in there was that I had a conversation with Dr. (name inaudible). He indicated that appropriation probably wouldn't do him as much good because of the fact that the other three (tents?) didn't get included. So if we are really going to consummate that deal, we need to put those three (tents?) in somewhere else. That is the reason that when I asked him if he would be willing to give up anything he said that he would be willing to let that one go. And, the onetime funding, he thought he could find some way to work through that without having that money available. I did these in concert with Dr. Grafton and Dr. Hogue. My colleagues are certainly welcome to share their opinions. My number 2 was the junior garden thing and that was the only number 2 I had. I did one and a 1.5.

Senator Holmberg We are not negotiating, we are just discussing. I would certainly vote if we also took out from that list and added the junior gardening and left the gardening program at \$40,000—that would get us over \$700,000. I would be happy.

Chairman Bowman When you presented this to us you talked about the African rust problem and what that could do to our wheat industry in ND. We know that you don't solve that problem

overnight, so if we indeed are going to look at the future, I look at and compare to the scab problem that we had. The sooner we get a research person on that, the better off the state is. My question to you is do you agree with that and if you do, should we make sure that it is included in this bill?

Rep. Skarphol I would agree with that. I will move it.

Rep. Onstad Second

The motion was carried on a unanimous voice vote.

Rep. Onstad I would like to discuss the forage agronomy position. It is not only for our livestock, but also for the advancement of (inaudible). I would like to move that part of the field forward if everyone is willing.

Rep. Hawken Second

Chairman Bowman Talked about the position and voiced his support of the position.

The motion carried on a unanimous voice vote.

Rep. Skarphol Maybe it would work equally well to talk about what we want to remove.

Rep. Onstad I recommend the removal of the agri-business position. I think there are other entities across the state. I think it is important for discussion but I will move its removal.

Senator Holmberg Second.

Rep. Skarphol I am assuming that we are making these motions to figure out our priority list. I am not willing to support that removal right now. I don't want to say yes to this and then feel obligated to follow through, I might want it back in. I don't know what your plan is here.

Chairman Bowman We are trying to get to a priority list, we will fund some, but not all. And when we get done, we will have a better budget.

Rep. Skarphol I would resist this because I would prefer to remove the \$249,000 as recommended by the director of extension as opposed to something that we put in that he did

not suggest we remove. I think his preference would be the \$249,000 reflected on the sheet I handed out. I am trying to make sure we all understand what we are voting on, if we vote on this now, does that mean it is out? I want another option for when we remove these.

Chairman Bowman Let's talk about that for a second. The first request I had was for this pulse position, they would like to see that stay in the budget. So, there is a difference in opinion right off the bat, we have to make some decisions based upon what we think our priorities are. Our time is up, we will reconvene and I will put this back on the agenda. We are adjourned.

2009 SENATE STANDING COMMITTEE MINUTES

Bill/Resolution No. 2020 Conference Committee

Senate Appropriations Committee

Check here for Conference Committee

Hearing Date: 04-28-09

Recorder Job Number: 12347

Committee Clerk Signature

Alice Riber (Am. Captains)

Minutes:

Chairman Bowman: called the conference committee to order on SB 2020 at 3:00 pm on the Extension Service. Let the record show that all conferees are present: Senators: Bowman, Holmberg, Lindaass; Representatives: Skarphol, Hawken, and Onstad. Tammy Dolan of OMB and Sheila Sandness of Legislative Council were also present.

Chairman Bowman: One of the requests we had at last meeting this money transferred from the general fund out of oil trust fund @ \$925K, we needed to know what the reason was.

Tammy Dolan: \$925K is for the Dickinson research center to replace oil special funds that comes from oil revenue that has been decreasing. And right now, they are going to be short \$1.2M based on the most recent receipts that are coming in.

Chairman Bowman: This was not in the budget when first prepared.

Tammy Dolan: in the budget, those were to be paid with spec funds; it was part of the budget all along. In the governor's budget, we did not expect the shortfall; our budget was based on the antic of receiving that amount. The shortfall came during session now that the oil production is declining.

Senator Holmberg: You anticipated \$1.2M; they are getting less than that, so we are going into the oil fund to fill the gap from their mineral interests. We could do this option or tell them to "Suck it up!" and that is quite a bit of money for our smaller campuses.

Chairman Bowman: The oil income from Dickinson should be about \$275K. All I am trying to do is get to the bottom line on this so we can understand this because it is a substantial amount of money coming out of something we have never done before this budget.

Tammy Dolan: a similar budget request was done last session, in which the recipients received \$750K from the trust fund.

Chairman Bowman: They are planning on drilling for more oil.

Tammy Dolan: this is the only well.

Senator Holmberg: we need to start weaning them off of this; utilizing more realistic.

Representative Skarphol: In preparing their budget, when they anticipated was there a subsequent reduction, in reality we reduced the general fund dollars because we were anticipating \$1.2M. Then there would be nothing inappropriate that is a consideration that we need to keep in mind.

Tammy Dolan: as far as this biennium this oil revenue has been in place, I couldn't even tell you how long they have had it, not this biennium were it done previously.

Representative Skarphol: If it has been a windfall or revenue, in the future we will need to have some analysis done, it does beg the question.

Chairman Bowman: We are going to have to make a decision on this, if we are going to accept the \$925K from the permanent oil trust fund.

Senator Holmberg: Moved we do. Accept \$925K trust funds to Dickinson.

Representative Skarphol: Second

Chairman Bowman: All in favor say aye. None opposed **motion passes.**

Chairman Bowman: Next item, there was a request if there was any stimulus money for the green house and or for geothermal heat, I don't know if we have that in a motion, this would allow some money to finish the greenhouse, or for geothermal energy. If that is something we

should put in this bill, just gives them the language to look at it, they can't do it if no money there,

Representative Skarphol: I did inquire about it, I received an email from Dr. Grafton, a contractor; I'll give it to the committee. The extra cost for geothermal, an additional \$700K above what we already have, the normal heating system. That would probably do to put that language in there.

Chairman Bowman: Could we have language written up if there is stimulus money for geothermal and /or greenhouse, at least if it is in there, they can plan for it. What surprises me, the difference between the existing and geothermal.

Representative Skarphol: With that in mind, if we do take action on the bill I would move we give to get access from whatever stimulus for geothermal heat.

Representative Hawken: Second. No dollar amount.

Chairman Bowman: How about the 3rd phase, we can add that for the green house.

Representative Skarphol: Make a separate motion. All in favor motion passes. The 3rd issue is stimulus money for the green house.

Representative Skarphol: I would move if stimulus for purposes of completion of green house with budget and emergency.

Senator Lindaas: Second, I do think approval is necessary.

Chairman Bowman: Say aye, motion carries.

Chairman Bowman: A list of proposals, are you going to put

Representative Skarphol: A discussion with my colleagues there is a willingness on our part to remove some of the positions. We are willing to remove Dr Grafton and Dr. Hauck, the ones they agreed would be less difficult to deal with it; I did get some revised numbers from Dr.

Grafton. He thought fairly substantial. I guess less difficulty as to what was proposed by the council.

Senator Holmberg: What you're suggesting is we remove your Christmas present from under the tree and use yours.

Representative Skarphol: What I am suggesting is as the bill came out of the House remove 2 positions, willing to remove 1 scientist, there were 6 individuals, 2 science and 4 technicians, we have some willingness to remove 1 sc and 1 tech number 2, sheet.

Senator Holmberg: I have been working off.

Representative Skarphol: I haven't asked my colleagues how they will vote.

Chairman Bowman: We need to have something in the form of a motion. Did you make a motion?

Representative Skarphol: I don't want to single out one or the other, I don't want to treat one better than the other, if we make reductions, do all or none of them, these 3 positions and the onetime funding; my motion will be remove the two positions at main research center, and 1 position and one-time funding at the NDSU Expansion Service?

Senator Holmberg: Second

Chairman Bowman: My objection to the motion taking the spec in the original budget, taking two out of the 6, seems to me like it doesn't fit well with the original plan. Those people were selected for what their needs were.

Representative Skarphol: SBARE Board, have no objection to this. Rather than the ones we removed in the house. As I said I talked with Dr. Grafton and Dr. Hawk, a little bit of indifference. Any more discussion

Representative Hawken: The info I received is the same. Now certainly if you feel strongly about this, and moving forward, this is an area. I love this budget as it is, as it came from the House that would be awesome.

Chairman Bowman: Any other questions?

Representative Skarphol: Can we review what we have that is different. The \$700K is for the geothermal.

Senator Holmberg: In the budget, we approved it.

Representative Skarphol: The Senate accedes to House amendments.

Chairman Bowman: I was going to present a counter offer to that.

Representative Skarphol: Will withdraw this motion. Can we have that in writing?

Chairman Bowman: Call another meeting, before noon. Alice call.

2009 SENATE STANDING COMMITTEE MINUTES

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Bill/Resolution No. 2020 Conference Committee

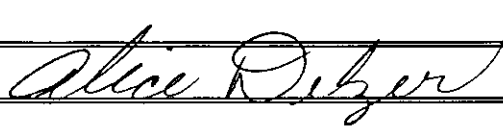
Senate Appropriations Committee

Check here for Conference Committee

Hearing Date: 04-29-09

Recorder Job Number: 12395

Committee Clerk Signature



Minutes:

Chairman Bowman called the conference committee to order on SB 2020 at 5:00 pm in regards to Extension Service. Let the record show that all conferees are present: **Senators:**

Bowman, Holmberg, Lindaas; Representatives: Skarphol, Hawken, Onstad.

Also present: **Sheila Sandness**, Legislative Council and **Tammy Dolan**, OMB

Chairman Bowman: I had told you that I had put together a counter offer for the amendments that you suggested. I was surprised almost everything we had considered is in here. There are two items on the back that were on that list that are not in here. Here is what dollar wise, if you add the new positions, and subtract the two that were recommended by NDSU, and then add the oil trust money onto that, we are looking at an increased budget of \$1,434,000. Does anyone have any questions on this? I tried to gather from first discussion the most important items. I Wanted to also look at the extension part of it and make sure they weren't left out. We will need discussion on this. If it is something we could put in a form of an amendment and make a decision on this and make a further amendment I would like to see this passed. I would entertain a motion. We have already acted on the oil trust.

Chairman Holmberg: You would like an amendment for consideration that we would subtract these three items at the top and add the 930 at the bottom and then you will talk separately

about agri business and printing etc. I would make that motion. What happens is legislative council gets to weed through these things.

Representatives Skarphol: If I look at the amend with house changes, the 9.5 is there for the operating, look at the sheet here, you are ok with the \$65,000 There is the forage agronomy , the wheat rust plant pathologist and we go back to extension and you have the 4-H leadership position, operating and junior gardner. What we are missing are two positions.

Chairman Bowman: Only 2 positions taken out, I got an email from Ken Grafton here. Is that the same one you received?

Sandy Those two are the same.

Representatives Skarphol: I had suggested we take out 7/10 of an individual in Langdon. Not this individual but an original individual that was originally included in the original budget request you folks approved. Mr.??? tells me he does have that other 3/10th. That is a different person than this.

Chairman Bowman We did not do anything with those at Langdon.

Representative Skarphol: The position is \$167,668 and includes operating. But that is a different person than we added. This is a pea and lentil person for crop disease management. What you are suggesting is the real difference is in the agency training and agri-business positions.

Chairman Bowman: That is why I put those on the back four. I would entertain a motion for everything that is on the table if you are comfortable with it. We have a base to start with and then we can add amendments if you wish

Senator Holmberg: We are starting with the position what the House passed. The motion would be that we would subtract the oil seed, the technical and the operating for that position at the top and we would defer voting on the agents in training and agri-business until we have

taken care of this and then vote on them and then the bill would be done. Is that your understanding? If that is your understanding of what we are doing then that is my motion. Sheila will tell us what we are doing.

Representatives Skarphol: again tries to clarify what he is voting on. (12:36)

Rep. Hawken: What if we take the piece that you suggested on the top and that would be one motion. **I would make that a motion.**

Senator Holmberg seconded.

Chairman Bowman: Do we all understand the motion on the floor?

Voice vote: Carried.

Chairman Bowman: That is reduced from the budget. Now the additions to the budget.

Rep. Skarphol: One more, I agree the one position at Langdon could be removed. That figure I gave you of \$167,668 and also the \$82,000 for the onetime which would total \$249,668. **I would move that we remove that from the extension portion of this budget.**

Chairman Bowman: If we remove that IVAN funding then that becomes a part of the local extension or county. Doesn't it?

Rep. Skarphol: They assured me he would find another way to pay for that.

Senator Holmberg: Seconded the motion. To remove the point 7 at Langdon and the video...

Voice vote: Motion passed.

Senator Bowman: We have removed those two items.

Rep. Skarphol: In the interest of further compromise, the House had added \$200,000 for the agents in training. I will make a motion to reduce that to \$100,000.

Senator Holmberg: Seconded.

Chairman Bowman: Does everyone understand for the Agents in Training there would be \$100,000 and no FTE.

Voice vote: Carried.

Senator Bowman: That will be an amendment to add on to that.

Rep. Skarphol: The total we just removed is a good compromise.

Senator Bowman: You have taken roughly half out.

Chairman Bowman: We tried to put a budget together we can all get along with. We are accountable for that. I am happy we can sit down and talk about it.

Senator Holmberg: moved the House recede from its amendments and we further amended.

Rep. Skarphol: Seconded. The 700,000 from potential stimulus money for the energy savings for the heating on the green house needs to be amended.

Discussion followed on whether that was already in and it was explained that they were already incorporated in and that was understood in the motion.

Chairman Bowman: The amendments will all be in writing.

Roll call vote: Motion carried. 6-0-0

Hearing closed.

**REPORT OF CONFERENCE COMMITTEE
(ACCEDE/RECEDE)**

Motion failed

Bill Number 2020 (, as (re)engrossed):

Date: 4/28/09

Your Conference Committee _____

DATE	For the Senate:				For the House:				DATE
	Yes	No	YES / NO		Yes	No	YES / NO		
<u>4/28</u>			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		<u>4/28</u>
			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		
			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		

recommends that the (SENATE/HOUSE) (ACCEDE to) (RECEDE from)

the (Senate/House) amendments on (SJ/HJ) page(s) _____

_____, and place _____ on the Seventh order.

_____, adopt (further) amendments as follows, and place _____ on the Seventh order:

_____, having been unable to agree, recommends that the committee be discharged and a new committee be appointed.

((Re)Engrossed) _____ was placed on the Seventh order of business on the calendar.

DATE: _____

CARRIER: _____

LC NO. _____	of amendment
LC NO. _____	of engrossment
Emergency clause added or deleted	
Statement of purpose of amendment	

MOTION MADE BY: _____

SECONDED BY: _____

VOTE COUNT ___ YES ___ NO ___ ABSENT

PROPOSED AMENDMENTS TO ENGROSSED SENATE BILL NO. 2020

That the House recede from its amendments as printed on pages 1254 and 1255 of the Senate Journal and pages 1147 and 1148 of the House Journal and that Engrossed Senate Bill No. 2020 be amended as follows:

Page 1, line 20, replace "5,088,122" with "5,563,454" and replace "46,616,157" with "47,091,489"

Page 1, line 22, replace "5,188,122" with "5,663,454" and replace "47,453,957" with "47,929,289"

Page 2, line 1, replace "3,122,967" with "3,598,299" and replace "21,425,080" with "22,000,412"

Page 2, line 2, replace "1.00" with "2.30" and replace "267.33" with "268.63"

Page 2, line 23, replace "26,123,544" with "25,951,820" and replace "104,702,142" with "104,530,418"

Page 2, line 25, replace "26,573,544" with "26,401,820" and replace "105,152,142" with "104,980,418"

Page 2, line 27, replace "23,911,041" with "23,739,317" and replace "60,138,875" with "59,967,151"

Page 2, line 28, replace "6.00" with "5.00" and replace "353.39" with "352.39"

Page 3, line 2, replace "(\$12,786)" with "\$912,214" and replace "5,362,580" with "6,287,580"

Page 3, line 3, replace "73,454" with "293,454" and replace "2,340,602" with "2,560,602"

Page 3, line 7, replace "(276,861)" with "(211,861)" and replace "2,857,183" with "2,922,183"

Page 3, line 8, replace "970,624" with "1,150,624" and replace "6,547,962" with "6,727,962"

Page 3, line 9, replace "2,552,987" with "3,942,987" and replace "26,169,006" with "27,559,006"

Page 3, line 10, replace "1,252,305" with "2,177,305" and replace "14,266,816" with "15,191,816"

Page 3, line 11, replace "1,300,682" with "1,765,682" and replace "11,902,190" with "12,367,190"

Page 3, line 12, replace "0.00" with "1.70" and replace "95.56" with "97.26"

Page 3, line 24, replace "29,035,552" with "29,804,160" and replace "96,595,159" with "97,363,767"

Page 3, line 25, replace "10,019,165" with "11,644,165" and replace "112,819,662" with "114,444,662"

Page 3, line 26, replace "39,054,717" with "41,448,325" and replace "209,414,821" with "211,808,429"

Page 4, line 2, replace "907,705" with "907,750"

Page 4, line 7, replace "0" with "925,000"

Page 4, remove line 13

Page 4, line 17, replace "20,882,000" with "21,725,000"

Page 4, line 18, replace "3,350,000" with "4,275,000"

Page 4, line 19, replace "17,532,000" with "17,450,000"

Page 5, after line 2, insert:

"SECTION 4. APPROPRIATION - FEDERAL FISCAL STIMULUS FUNDS.

There is appropriated from federal fiscal stimulus funds made available to the state under the federal American Recovery and Reinvestment Act of 2009, not otherwise appropriated, the sum of \$700,000, or so much of the sum as may be necessary, to the main research center for the purpose of installing a geothermal heating system in the main research center greenhouse project, for the biennium beginning July 1, 2009, and ending June 30, 2011.

SECTION 5. FEDERAL FISCAL STIMULUS FUNDS - ADDITIONAL FUNDING - APPROVAL. The main research center may seek emergency commission and budget section approval under chapter 54-16 for authority to spend any additional federal funds received under the federal American Recovery and Reinvestment Act of 2009 for the construction of the third phase of the main research center greenhouse project, for the biennium beginning July 1, 2009, and ending June 30, 2011.

Any federal funds received and spent under this section are not a part of the agency's 2011-13 base budget. Any program expenditures made with these funds will not be replaced with state funds after the federal American Recovery and Reinvestment Act of 2009 funds are no longer available."

Page 5, after line 21, insert:

"SECTION 10. PERMANENT OIL TAX TRUST FUND - DICKINSON RESEARCH CENTER - OPERATING POOL FUNDING. The estimated income line item in subdivision 5 of section 1 of this Act includes \$925,000 from the permanent oil tax trust fund. This funding is available only for defraying the costs of operations of the Dickinson research center, for the biennium beginning July 1, 2009, and ending June 30, 2011.

SECTION 11. LEGISLATIVE INTENT - BEEF SYSTEMS CENTER OF EXCELLENCE. It is the intent of the sixty-first legislative assembly that the beef systems center of excellence authorized by the fifty-eighth legislative assembly has met the funding requirements as outlined in section 9 of chapter 20 of the 2003 Session Laws for collection of both federal and special funds by private contributions through the creation of the North Dakota agricultural innovation center and the capitalization for the creation of North Dakota natural beef, LLC, which was approved by the office of

management and budget when it released \$800,000 to the North Dakota state university agricultural experiment station in 2006 pursuant to section 8 of chapter 20 of the 2003 Session Laws. It is also the intent of the sixty-first legislative assembly that this center is subject to requirements outlined in chapter 136 of the 2003 Session Laws and not those enacted later as a part of the center of excellence program administered by the department of commerce pursuant to chapter 15-69."

Renumber accordingly

STATEMENT OF PURPOSE OF AMENDMENT - LC 98039.0208 FN 1

A copy of the statement of purpose of amendment is attached.

STATEMENT OF PURPOSE OF AMENDMENT:

Senate Bill No. 2020 - Summary of Conference Committee Action

	Executive Budget	Senate Version	Conference Committee Changes	Conference Committee Version	House Version	Comparison to House
Transportation Institute						
Total all funds	\$23,326,992	\$26,326,992	\$0	\$26,326,992	\$26,326,992	\$0
Less estimated income	21,737,199	24,737,199	0	24,737,199	24,737,199	0
General fund	\$1,589,793	\$1,589,793	\$0	\$1,589,793	\$1,589,793	\$0
Branch Research Centers						
Total all funds	\$26,169,006	\$26,169,006	\$1,390,000	\$27,559,006	\$27,559,006	\$0
Less estimated income	14,266,816	14,266,816	925,000	15,191,816	15,191,816	0
General fund	\$11,902,190	\$11,902,190	\$465,000	\$12,367,190	\$12,367,190	\$0
NDSU Extension Service						
Total all funds	\$47,403,957	\$47,453,957	\$475,332	\$47,929,289	\$48,278,957	(\$349,668)
Less estimated income	25,928,877	25,928,877	0	25,928,877	25,928,877	0
General fund	\$21,475,080	\$21,525,080	\$475,332	\$22,000,412	\$22,350,080	(\$349,668)
Northern Crops Institute						
Total all funds	\$3,037,486	\$3,037,486	\$0	\$3,037,486	\$3,037,486	\$0
Less estimated income	1,598,265	1,598,265	0	1,598,265	1,598,265	0
General fund	\$1,439,221	\$1,439,221	\$0	\$1,439,221	\$1,439,221	\$0
Main Research Center						
Total all funds	\$105,002,142	\$105,152,142	\$528,276	\$105,680,418	\$105,402,142	\$278,276
Less estimated income	44,813,267	45,013,267	700,000	45,713,267	45,013,267	700,000
General fund	\$60,188,875	\$60,138,875	(\$171,724)	\$59,967,151	\$60,388,875	(\$421,724)
Agronomy Seed Farm						
Total all funds	\$1,275,238	\$1,275,238	\$0	\$1,275,238	\$1,275,238	\$0
Less estimated income	1,275,238	1,275,238	0	1,275,238	1,275,238	0
General fund	\$0	\$0	\$0	\$0	\$0	\$0
Bill total						
Total all funds	\$206,214,821	\$209,414,821	\$2,393,608	\$211,808,429	\$211,879,821	(\$71,392)
Less estimated income	109,619,662	112,819,662	1,625,000	114,444,662	113,744,662	700,000
General fund	\$96,595,159	\$96,595,159	\$768,608	\$97,363,767	\$98,135,159	(\$771,392)

Senate Bill No. 2020 - Transportation Institute - Conference Committee Action

The House and the Conference Committee did not change the Senate version.

Senate Bill No. 2020 - Branch Research Centers - Conference Committee Action

	Executive Budget	Senate Version	Conference Committee Changes	Conference Committee Version	House Version	Comparison to House
Dickinson Research Center	\$5,362,580	\$5,362,580	\$925,000	\$6,287,580	\$6,287,580	
Central Grasslands Research Center	2,340,602	2,340,602	220,000	2,560,602	2,560,602	
Hettinger Research Center	2,995,155	2,995,155		2,995,155	2,995,155	
Langdon Research Center	2,091,572	2,091,572		2,091,572	2,091,572	
North Central Research Center	3,973,952	3,973,952		3,973,952	3,973,952	
Williston Research Center	2,857,183	2,857,183	65,000	2,922,183	2,922,183	
Carrington Research Center	6,547,962	6,547,962	180,000	6,727,962	6,727,962	
Total all funds	\$26,169,006	\$26,169,006	\$1,390,000	\$27,559,006	\$27,559,006	\$0
Less estimated income	14,266,816	14,266,816	925,000	15,191,816	15,191,816	0
General fund	\$11,902,190	\$11,902,190	\$465,000	\$12,367,190	\$12,367,190	\$0
FTE	95.56	95.56	1.70	97.26	97.26	0.00

Department No. 628 - Branch Research Centers - Detail of Conference Committee Changes

	Adds Funding for Plant Pathologist Position ¹	Adds Funding for Forage Agronomist Position ²	Increases Funding for Irrigation Scientist Position ³	Adds Funding for Operating Pool ⁴	Total Conference Committee Changes
Dickinson Research Center				\$925,000	\$925,000
Central Grasslands Research Center		220,000			220,000
Hettinger Research Center					
Langdon Research Center					
North Central Research Center					
Williston Research Center			65,000		65,000
Carrington Research Center	180,000				180,000
Total all funds	\$180,000	\$220,000	\$65,000	\$925,000	\$1,390,000
Less estimated income	0	0	0	925,000	925,000
General fund	\$180,000	\$220,000	\$65,000	\$0	\$465,000
FTE	0.70	1.00	0.00	0.00	1.70

¹ This amendment adds funding from the general fund for a .7 FTE plant pathologist position located at the Carrington Research Center, including salaries and wages (\$140,000) and operating expenses (\$40,000), the same as the House version.

² This amendment adds funding from the general fund for 1 FTE forage agronomist position located at the Central Grasslands Research Center, including salaries and wages (\$180,000) and operating expenses (\$40,000), the same as the House version.

³ This amendment provides increased funding from the general fund for the irrigation scientist position at the Williston Research Center, the same as the House version.

⁴ This amendment provides \$925,000 from the permanent oil tax trust fund as one-time funding to the Dickinson Research Center for operating expenses, the same as the House version.

A section of legislative intent is added providing that the appropriation from the permanent oil tax trust fund is available only for providing funding for the operations of the Dickinson Research Center, the same as the House version.

Senate Bill No. 2020 - NDSU Extension Service - Conference Committee Action

	Executive Budget	Senate Version	Conference Committee Changes	Conference Committee Version	House Version	Comparison to House
Extension Service	\$46,666,157	\$46,616,157	\$475,332	\$47,091,489	\$47,441,157	(\$349,668)
Soil Conservation Committee	737,800	837,800		837,800	837,800	
Total all funds	\$47,403,957	\$47,453,957	\$475,332	\$47,929,289	\$48,278,957	(\$349,668)
Less estimated income	25,928,877	25,928,877	0	25,928,877	25,928,877	0
General fund	\$21,475,080	\$21,525,080	\$475,332	\$22,000,412	\$22,350,080	(\$349,668)
FTE	267.33	267.33	1.30	268.63	269.33	(0.70)

Department No. 630 - NDSU Extension Service - Detail of Conference Committee Changes

	Adds Funding for a 4-H Leadership Position ¹	Adds Funding for Agents-In-Training ²	Adds Funding for Agribusiness Specialist Position ³	Increases Junior Master Gardener Funding ⁴	Increases Funding for Parenting Resource Centers ⁵	Removes Funding for Crop Disease Management Specialist ⁶
Extension Service	\$220,000	\$100,000	\$240,000	\$40,000	\$125,000	(\$167,668)
Soil Conservation Committee						
Total all funds	\$220,000	\$100,000	\$240,000	\$40,000	\$125,000	(\$167,668)
Less estimated income	0	0	0	0	0	0
General fund	\$220,000	\$100,000	\$240,000	\$40,000	\$125,000	(\$167,668)
FTE	1.00	0.00	1.00	0.00	0.00	(0.70)

	Removes Funding for Interactive Video Equipment Upgrade ⁷	Total Conference Committee Changes
Extension Service	(\$82,000)	\$475,332
Soil Conservation Committee		
Total all funds	(\$82,000)	\$475,332
Less estimated income	0	0
General fund	(\$82,000)	\$475,332
FTE	0.00	1.30

¹ This amendment adds funding from the general fund for 1 FTE state specialist position for the 4-H leadership education and camping program, including salaries and wages (\$180,000) and operating expenses (\$40,000), the same as the House version.

² This amendment provides funding for agents-in-training and interns, the House added \$200,000 and the Conference Committee reduced that amount to \$100,000.

³ Funding from the general fund is added for 1 FTE state specialist position in agribusiness enterprise and rural development, including salaries and wages (\$200,000) and operating expenses (\$40,000), the same as the House version.

⁴ This amendment increases funding from the general fund by \$40,000 for the junior master gardener program to provide a total of \$60,000, the same as the House version.

⁵ Funding from the general fund for parenting resource centers is increased by \$125,000 to provide a total of \$250,000, the same as the House version.

This amendment removes funding for salaries and wages (\$139,668) and operating expenses (\$28,000) to remove a .7 FTE area specialist position for crop disease management at the Langdon Research Center included in the executive recommendation and the Senate and House versions.

⁷ This amendment removes **one-time** funding for interactive video equipment upgrades. The executive recommendation included \$132,000. The Senate reduced this amount to \$82,000.

Senate Bill No. 2020 - Northern Crops Institute - Conference Committee Action

The House and the Conference Committee did not change the Senate version.

Senate Bill No. 2020 - Main Research Center - Conference Committee Action

	Executive Budget	Senate Version	Conference Committee Changes	Conference Committee Version	House Version	Comparison to House
Main Research Center	\$104,502,142	\$104,702,142	(\$171,724)	\$104,530,418	\$104,952,142	(\$421,724)
Deferred maintenance	500,000	450,000		450,000	450,000	
Federal Fiscal Stimulus Funds			700,000	700,000		700,000
Total all funds	\$105,002,142	\$105,152,142	\$528,276	\$105,680,418	\$105,402,142	\$278,276
Less estimated income	44,813,267	45,013,267	700,000	45,713,267	45,013,267	700,000
General fund	\$60,188,875	\$60,138,875	(\$171,724)	\$59,967,151	\$60,388,875	(\$421,724)
FTE	353.39	353.39	(1.00)	352.39	354.39	(2.00)

Department No. 640 - Main Research Center - Detail of Conference Committee Changes

	Adds Funding for Wheat Rust Pathologist Position ¹	Removes Funding for Pulse, Oilseed, and Wheat Quality Scientist ²	Removes Funding for Pulse, Oilseed, and Wheat Quality Technician ³	Appropriates Federal Fiscal Stimulus Funds for Geothermal Heating System ⁴	Total Conference Committee Changes
Main Research Center	\$250,000	(\$256,750)	(\$164,974)		(\$171,724)
Deferred maintenance				700,000	700,000
Federal Fiscal Stimulus Funds					
Total all funds	\$250,000	(\$256,750)	(\$164,974)	\$700,000	\$528,276
Less estimated income	0	0	0	700,000	700,000
General fund	\$250,000	(\$256,750)	(\$164,974)	\$0	(\$171,724)
FTE	1.00	(1.00)	(1.00)	0.00	(1.00)

¹ This amendment adds funding from the general fund for 1 FTE wheat rust pathologist position located at the Main Research Center, including salaries and wages (\$210,000) and operating expenses (\$40,000), the same as the House version.

² This amendment removes funding for salaries and wages (\$223,750) and operating expenses (\$33,000) for 1 FTE scientist position for pulse, oilseed, and wheat quality included in the executive recommendation and in the Senate and House versions.

³ This amendment removes funding for salaries and wages (\$131,974) and operating expenses (\$33,000) for 1 FTE technician position for pulse, oilseed, and wheat quality included in the executive recommendation and in the Senate and House versions.

This amendment provides, in a separate section, funding from federal funds made available to the state through the Department of Commerce under the American Recovery and Reinvestment Act of 2009, for a geothermal heating system for the Main Research Center greenhouse project. This authority was not included in the House or Senate versions.

This amendment also adds sections:

- Authorizing the Main Research Center to seek Emergency Commission and Budget Section approval for authority to spend any additional funds that may become available under the American Recovery and Reinvestment Act of 2009 for the construction of the third phase of the Main Research Center greenhouse project; and
 - Providing legislative intent that the Beef Systems Center of Excellence authorized by the 58th Legislative Assembly has met the funding requirements as outlined in Section 9 of House Bill No. 1021 (2003).
-

Senate Bill No. 2020 - Agronomy Seed Farm - Conference Committee Action

The House and the Conference Committee did not change the Senate version.

Final motion

**REPORT OF CONFERENCE COMMITTEE
(ACCEDE/RECEDE)**

Bill Number 2020 (, as (re)engrossed):

Date: 4/29/09

Your Conference Committee Senate Appropriations

For the Senate:

For the House:

	^{4/29} YES / NO				^{4/29} YES / NO		
<i>Baumgardner</i>	✓	✓		<i>Skarphol</i>	✓	✓	
<i>Holmberg</i>	✓	✓		<i>Hawker</i>	✓	✓	
<i>Lindas</i>	✓	✓		<i>Onstad</i>	✓	✓	

recommends that the (SENATE/HOUSE) (ACCEDE to) (RECEDE from)

the (Senate/House) amendments on (SJ/HJ) page(s) _____ - _____

____, and place _____ on the Seventh order.

adopt ~~(further)~~ amendments as follows, and place _____ on the Seventh order:

____, having been unable to agree, recommends that the committee be discharged and a new committee be appointed.

((Re)Engrossed) _____ was placed on the Seventh order of business on the calendar.

DATE: _____

CARRIER: _____

LC NO.	of amendment
LC NO.	of engrossment
Emergency clause added or deleted	
Statement of purpose of amendment	

MOTION MADE BY: _____

SECONDED BY: _____

VOTE COUNT ___ YES ___ NO ___ ABSENT

REPORT OF CONFERENCE COMMITTEE

SB 2020, as engrossed: Your conference committee (Sens. Bowman, Holmberg, Lindaas and Reps. Skarphol, Hawken, Onstad) recommends that the **HOUSE RECEDE** from the House amendments on SJ pages 1254-1255, adopt amendments as follows, and place SB 2020 on the Seventh order:

That the House recede from its amendments as printed on pages 1254 and 1255 of the Senate Journal and pages 1147 and 1148 of the House Journal and that Engrossed Senate Bill No. 2020 be amended as follows:

Page 1, line 20, replace "5,088,122" with "5,563,454" and replace "46,616,157" with "47,091,489"

Page 1, line 22, replace "5,188,122" with "5,663,454" and replace "47,453,957" with "47,929,289"

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Page 3, line 3, replace "73,454" with "293,454" and replace "2,340,602" with "2,560,602"

Page 3, line 7, replace "(276,861)" with "(211,861)" and replace "2,857,183" with "2,922,183"

Page 3, line 8, replace "970,624" with "1,150,624" and replace "6,547,962" with "6,727,962"

Page 3, line 9, replace "2,552,987" with "3,942,987" and replace "26,169,006" with "27,559,006"

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Page 4, line 7, replace "0" with "925,000"

Page 4, remove line 13

Page 4, line 17, replace "20,882,000" with "21,725,000"

Page 4, line 18, replace "3,350,000" with "4,275,000"

Page 4, line 19, replace "17,532,000" with "17,450,000"

Page 5, after line 2, insert:

"SECTION 4. APPROPRIATION - FEDERAL FISCAL STIMULUS FUNDS.

There is appropriated from federal fiscal stimulus funds made available to the state under the federal American Recovery and Reinvestment Act of 2009, not otherwise appropriated, the sum of \$700,000, or so much of the sum as may be necessary, to the main research center for the purpose of installing a geothermal heating system in the main research center greenhouse project, for the biennium beginning July 1, 2009, and ending June 30, 2011.

SECTION 5. FEDERAL FISCAL STIMULUS FUNDS - ADDITIONAL FUNDING - APPROVAL. The main research center may seek emergency commission and budget section approval under chapter 54-16 for authority to spend any additional federal funds received under the federal American Recovery and Reinvestment Act of 2009 for the construction of the third phase of the main research center greenhouse project, for the biennium beginning July 1, 2009, and ending June 30, 2011.

Any federal funds received and spent under this section are not a part of the agency's 2011-13 base budget. Any program expenditures made with these funds will not be replaced with state funds after the federal American Recovery and Reinvestment Act of 2009 funds are no longer available."

Page 5, after line 21, insert:

"SECTION 10. PERMANENT OIL TAX TRUST FUND - DICKINSON RESEARCH CENTER - OPERATING POOL FUNDING. The estimated income line item in subdivision 5 of section 1 of this Act includes \$925,000 from the permanent oil tax trust fund. This funding is available only for defraying the costs of operations of the Dickinson research center, for the biennium beginning July 1, 2009, and ending June 30, 2011.

SECTION 11. LEGISLATIVE INTENT - BEEF SYSTEMS CENTER OF EXCELLENCE. It is the intent of the sixty-first legislative assembly that the beef systems center of excellence authorized by the fifty-eighth legislative assembly has met the funding requirements as outlined in section 9 of chapter 20 of the 2003 Session Laws for collection of both federal and special funds by private contributions through the creation of the North Dakota agricultural innovation center and the capitalization for the creation of North Dakota natural beef, LLC, which was approved by the office of management and budget when it released \$800,000 to the North Dakota state university agricultural experiment station in 2006 pursuant to section 8 of chapter 20 of the 2003 Session Laws. It is also the intent of the sixty-first legislative assembly that this center is subject to requirements outlined in chapter 136 of the 2003

Session Laws and not those enacted later as a part of the center of excellence program administered by the department of commerce pursuant to chapter 15-69."

Renumber accordingly

STATEMENT OF PURPOSE OF AMENDMENT - LC 98039.0208 FN 1

A copy of the statement of purpose of amendment is on file in the Legislative Council Office.

Engrossed SB 2020 was placed on the Seventh order of business on the calendar.

2009 TESTIMONY

SB 2020

SB 2020 (Vice Chairman Bowman Comments)

01-27-2009

V. Chair Bowman problem with this budget, if we did not spend any money on buildings we could fund every request by State Board for Agricultural Research and Extension (SBARE) my suggestion to Ken Grafton now that we have updated our budgets, next budget should be for research. I need some feedback before this project is done. This is the highest budget we've ever had. Two years from now, if we don't build any more buildings, we should be able to do an awful lot of research. Keep that in mind. This in regards to SB 2020.

3

SB 2020
March 11, 2009
attachment # 2

HOUSE APPROPRIATIONS EDUCATION AND ENVIRONMENT
March 11, 2009

SB2020 Testimony: Jerry S. Effertz, chairman
STATE BOARD OF AGRICULTURE RESEARCH AND EDUCATION

MR. CHAIRMAN, MEMBERS OF THE COMMITTEE, MY NAME IS JERRY EFFERTZ, I LIVE AND RANCH IN RURAL MCHENRY COUNTY AND CURRENTLY SERVE AS CHAIR OF THE STATE BOARD OF AGRICULTURE RESEARCH AND EDUCATION. SINCE ITS CREATION BY LEGISLATIVE DECREE IN 1997, SBARE HAS BEN RESPONSIBLE FOR THE BUDGETING AND POLICY-MAKING ASSOCIATED WITH THE NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION AND SINCE 1999 ALSO THE NDSU EXTENSION SERVICE.

I HAVE INCLUDED AT YOUR DESKS A BRIEF BROCHURE ABOUT SBARE SO YOU MIGHT KNOW WHO ARE BOARD MEMBERS ARE AND I AM PLEASED THAT SEVERAL OF OUR BOARD HAVE BEEN ABLE TO JOIN US TODAY.

SINCE ITS INCEPTION AND FOR SIX LEGISLATIVE SESSIONS, SBARE HAS DILLEGENTLY FOLLOWED THE GUIDELINES ESTABLISHED BY THE LEGISLATURE TO DETERMINE THE CAUSES OF ANY ADVERSE ECONOMIC IMPACTS ON CROPS AND LIVESTOCK PRODUCED IN THE STATE AND WITH THE ASSISTANCE OF THE FOLKS AT NDSU DEVELOP ONGOING STRATEGIES FOR THE PROVISION OF RESEARCH SOLUTIONS AND RESOURCES TO NEGATE THESE IMPACTS.

THE BOARD MEMBERS OF SBARE HAVE CONSCIENTIOUSLY WORKED OVER THE PAST 18 MONTHS GATHERING INFORMATION RELATING TO IMPACTS ON CROPS AND LIVESTOCK WHICH AGRICULTURE PRODUCERS, AGRICULTURE ORGANIZATIONS AND OTHERS IN THIS STATE HAVE INITIATED AS AREAS OF CONCERN. THOSE ISSUES WERE ADDRESSED BY RESEARCH SPECIALISTS, EXTENSION PERSONNEL AS WELL AS NDSU AGRICULTURE LEADERSHIP IN

EAST PART OF THE STATE. THESE ARE THE DIRECT RESULTS OF AGRICULTURE RESEARCH. NEVER HAS THERE BEEN A TIME WHEN CROPS HAVE NOT BE PLANTED OR CROPS HARVESTED SOMEWHERE IN THE STATE OF NORTH DAKOTA.

BUT LIKE THE LITTLE RED HEN IN THE CLASSIC CHILDRENS STORY FARMERS AND RANCHERS ARE ASKING WHO IS GOING HELP US PLANT, WHO IS GOING TO HELP US SOLVE THE DISEASE, PEST, OR THE FERTILIZER PROBLEMS. WE KNOW WHO IS THERE TO SHARE IN THE REVENUES AND TAX THE REWARDS. INVESTING IN AGRICULTURE IS ONE OF THE FEW SURE BETS IN INVESTING IN NORTH DAKOTA.

PROGRAM INITIATIVES WHICH WOULD BEST PROVIDE SOLUTIONS TO THE ISSUES AS PRESENTED TO SBARE. FINALLY IN A DETAILED PROCESS, SBARE MEMBERS PRIORITIZED THE LIST OF INITIATIVES BY RANK OF THEIR GREATEST IMPACT AND IMPORTANCE FOR SOLUTIONS. SBARE DOES NOT NOR HAS IT EVER PRESENTED ITS REQUEST ON THE BASIS OF DOLLARS. WE HAVE CONFINED OUR PRIORITY LIST ON THE BASIS OF NEED. THE STATE BOARD OF HIGHER EDUCATION AND ULTIMATELY THE OFFICE OF MANAGEMENT AND BUDGET PROVIDE THE DOLLAR GUIDELINES. THIS THEN DETERMINES THE NUMBER OF INITIATIVES WHICH BECOME A PART OF THE DRAFT BILL.

SB2020 AS INITIATED WITHIN THE EXECUTIVE BUDGET AND APPROVED BY THE NORTH DAKOTA SENATE IS A POSITIVE AND ENCOURAGING SUPPORT FOR AGRICULTURE RESEARCH AND EXTENSION.. IT IS HOWEVER VERY MODEST IN THE NUMBER OF PROGRAM INITIATIVES IT FUNDS. WHILE SBARE IS APPRECIATIVE OF THE SUPPORT THIS REPRESENTS, AS THE FOLKS FROM NDSU OUTLINE THE OPPORTUNITYS WHICH LIE BEFORE US, I SINCERELY HOPE YOU WILL NOTE THE IMPACT THAT FUNDING ADDITIONAL PROGRAMS CAN HAVE ON NORTH DAKOTA.

THIS IS NOT A PLEA BY CHICKEN LITTLE THAT THE SKY IS FALLING. IT IS HOWEVER A REFLECTION OF THE STORY OF THE LITTLE RED HEN. FOR AGRICULTURE IS STILL NORTH DAKOTA'S MAJOR INDUSTRY. WHEN THE OIL RIGS ARE PARKED AND THE WORKERS GO BACK SOUTH, GAS PRICES SPIKE AND TOURISTS DECLINE, ONLY AGRICULTURE CONTINUES TO PLANT, CONTINUES TO HARVEST AND BUY AND SELL PRODUCTS. DURING ONE OF THE SEVEREST DROUGHTS IN PARTS OF SOUTH WEST NORTH DAKOTA THE FOLKS IN EAST CENTRAL NORTH DAKOTA HARVESTED RECORD BREAKING CROPS. CORN REMAINS UNHARVESTED IN THE NORTHERN PART OF THE STATE DURING A HARVEST OF OVER 200 BUSHELS PER ACRE IN THE SOUTH

2020
March 16, 200
Attachment #

State Board of Agricultural Research and Education

Who We Are
and What We Do

SBARE

History

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

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

For more information, contact

Jerry Effertz, chair
1975 48th St. N.
Velva, ND 58790
(701) 624-5136
ebba@srt.com

www.ag.ndsu.nodak.edu/sbare/sbare.htm

information

NDSU is an equal opportunity institution.

March 2008

Duties

The State Board of Agricultural Research and Education (SBARE), within the policies of the State Board of Higher Education, is responsible for budgeting and policymaking associated with the North Dakota Agricultural Experiment Station and the North Dakota State University Extension Service.

SBARE responsibilities include:

1. Determine the causes of any adverse economic impacts on crops and livestock produced in this state;
2. Develop ongoing strategies for the provision of research solutions and resources to negate adverse economic impacts on crops and livestock produced in this state;
3. Develop ongoing strategies for the dissemination of research information through the Extension Service;
4. Implement the strategies developed under subsections 2 and 3, subject to approval by the State Board of Higher Education;
5. Develop with the Agricultural Experiment Station and the North Dakota State University Extension Service, an annual budget for the operations of these entities;
6. Develop a biennial budget request and submit that request to the President of North Dakota State University and the State Board of Higher Education;
7. Maximize the use of existing financial resources, equipment, and facilities to generate the greatest economic benefit from research and extension efforts and to promote efficiency;
8. Annually evaluate the results of research and extension activities and expenditures and report the findings to the Legislative Council and the State Board of Higher Education;
9. Advise the President of North Dakota State University regarding the recruitment, selection and performance of the Vice President for Agricultural Affairs, the Extension Service Director and the Station Director; and
10. Present a status report to the budget section of the Legislative Council.

Membership

The State Board of Agricultural Research and Education consists of:

- The President of North Dakota State University or the President's designee
 - The Vice President for Agriculture and University Extension at North Dakota State University*
 - The Director of the Agricultural Experiment Station*
 - The Director of the Extension Service*
 - Five people appointed by the Ag Coalition
 - Five people appointed in the geographic areas represented by the Extension Service's multi-county program units
 - The Commissioner of Agriculture*
 - Two members of the legislative assembly appointed by the chair of the Legislative Council
- *serve in an ex-officio, nonvoting capacity

Current members include:

- | | |
|--|--|
| Robert Bahm (2009)
115 54th St. NW
Minot, ND 58703
701-839-0498
rbahm@minot.ndak.net | Ken Gräffon
Morrill 315, NDSU Campus
Fargo, ND 58105
701-231-7655
k.graffon@ndsu.edu |
| John Bollingberg (2009)
5544 Co. Hwy 5
Bremen, ND 58319
701-947-5608
john.bollingberg@plantpioneer.com | Duane Hauck
Morrill 315, NDSU Campus
Fargo, ND 58105
701-231-8944
duane.hauck@ndsu.edu |
| Tom Borgen (2008)
9147 Highway 1
Langdon, ND 58249
701-256-3943
borgen@utma.com | Rodney Howe (2007)
202 Lakeview Drive
Hettinger, ND 58639
701-567-4127
rodneyh@ndsUPERnet.com |
| Joseph Chapman
Old Main 102, NDSU Campus
Fargo, ND 58105
701-231-7211
joseph.chapman@ndsu.edu | Doyle Johannes (2007)
3559A 3rd St. NW
Underwood, ND 58576
(701) 442-3526
doylej@westriv.com |
| Randei Christmann
401 3rd Ave. NE
Hazen, ND 58545
701-748-5420
rchristmann@nd.gov | Roger Johnson
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Bismarck, ND 58505-0200
701-328-4754
rojohns@state.nd.us |
| D.C. Coston
Morrill 314, NDSU Campus
Fargo, ND 58105
701-231-7656
d.c.coston@ndsu.edu | James Kerzman
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jkerzman@nd.gov |
| Jerry Effertz (2008)
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701-624-5136
ebba@srt.com | Paul Langseth (2010)
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701-274-8916
langbp@rrt.net |
| Carol Goodman (2010)
901 3rd St.
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701-256-3475
goodman@utma.com | Larry Lee (2010)
5124 19th Ave. N
Velva, ND 58790
701-624-5472
leeefarm@ndak.net |
| | Doyle Lentz (2010)
RR1, Box 101
Rolla, ND 58208-3078
(701) 477-3556
lentz@utma.com |

Compensation and Expense Reimbursement

Each appointed member of the State Board of Agricultural Research and Education is entitled to receive \$75.00 per day as compensation for the time actually spent devoted to the duties of office and is entitled to receive necessary expenses in the same manner and amounts as state officials for attending meetings and performing other functions of office. Legislative assembly members receive compensation from Legislative Council.



Box 2599
Bismarck, ND 58502
(701) 355-4458
FAX (701) 223-4645

MEMBERS

- AmeriFlax
- Independent Beef Association of North Dakota
- Milk Producers Association of North Dakota, Inc.
- Minn-Dak Farmers Co-op
- North Dakota Ag Aviation Association
- North Dakota Ag Consultants
- North Dakota Agricultural Association
- North Dakota Agri-Women
- North Dakota Association of Soil Conservation Districts
- North Dakota Association of Agricultural Educators
- North Dakota Barley Council
- North Dakota Beef Commission
- North Dakota Corn Growers Association
- North Dakota Corn Utilization
- North Dakota Crop Improvement and Seed Association
- North Dakota Department of Agriculture
- North Dakota Dry Bean Council
- North Dakota Dry Edible Bean Seed Growers
- North Dakota Elk Growers
- North Dakota Farm Bureau
- North Dakota Farm Credit Council
- North Dakota Farmers Union
- North Dakota Grain Dealers Association
- North Dakota Grain Growers Association
- North Dakota Lamb and Wool Producers
- North Dakota Oilseed Council
- North Dakota Pork Producers
- North Dakota Soybean Council
- North Dakota Soybean Growers Association
- North Dakota State Seed Commission
- North Dakota State University Agriculture and University Extension
- North Dakota Wheat Commission
- Northern Canola Growers Association
- Northern Plains Potato Growers Association
- Northern Pulse Growers Association
- Red River Valley Sugarbeet Growers

6



Testimony of Mike Beltz

North Dakota Ag Coalition

SB 2020

January 14, 2009

Chairman Holmberg and members of the Senate Appropriations Committee:

I am Mike Beltz. I farm near Hillsboro and am here today as the chairman of the North Dakota Ag Coalition. On behalf of the Ag Coalition, I would encourage your support of SB 2020.

The Ag Coalition has provided a unified voice for North Dakota agricultural interests for over 25 years. Today, we represent more than 35 statewide organizations and associations that represent specific commodities or have a direct interest in agriculture. Through the Ag Coalition, these members seek to enhance the climate for North Dakota's agricultural producers.

The Ag Coalition takes a position on a limited number of issues brought to us by our members that have significant impact on North Dakota's agriculture industry. The Ag Coalition supports the funding of the 2009 SBARE priorities for the NDSU Extension Service and the North Dakota Agricultural Experiment Station as ag research and extension continue to be one of the top priorities for North Dakota's crop and livestock producers.

We appreciate your past support and would urge your continued support of research and extension as these programs provide valuable information, education and tools for the state's producers. They have been and will continue to be driving forces in the future of North Dakota's agriculture industry.

It is for these reasons we encourage your support of SB 2020.



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MEMBERS

AmeriFlax
BNSF Railway Company
Independent Beef Association of North Dakota
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Minn-Dak Farmers Co-op
North Dakota Ag Aviation Association
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North Dakota Barley Council
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North Dakota Crop Improvement and Seed Association
North Dakota Department of Agriculture
North Dakota Dry Bean Council
North Dakota Dry Edible Bean Seed Growers
North Dakota Elk Growers
North Dakota Farm Bureau
North Dakota Farm Credit Council
North Dakota Farmers Union
North Dakota Grain Dealers Association
North Dakota Grain Growers Association
North Dakota Lamb and Wool Producers
North Dakota Oilseed Council
North Dakota Pork Producers
North Dakota Soybean Council
North Dakota Soybean Growers Association
North Dakota State Seed Commission
North Dakota State University Agriculture and University Extension
North Dakota Wheat Commission
North Dakota Canola Growers Association
Northern Food Grade Soybean Association
Northern Plains Potato Growers Association
Northern Pulse Growers Association
Red River Valley Sugarbeet Growers

SB 2020
March 11, 2009
attachment # 12

**Testimony of Mike Beltz
North Dakota Ag Coalition
In Support of SB 2020
March 11, 2009**

Chairman Skarphol and members of the House Appropriations-Education and Environment Committee:

I am Mike Beltz. I farm near Hillsboro and am here today as the chairman of the North Dakota Ag Coalition. On behalf of the Ag Coalition, I would encourage your support of SB 2020.

The Ag Coalition has provided a unified voice for North Dakota agricultural interests for over 25 years. Today, we represent 38 statewide organizations and associations that represent specific commodities or have a direct interest in agriculture. Through the Ag Coalition, these members seek to enhance the climate for North Dakota's agricultural producers. The Ag Coalition takes a position on a limited number of issues brought to us by our members that have significant impact on North Dakota's agriculture industry.

The Ag Coalition supports the funding of the 2009 SBARE priorities for the NDSU Extension Service and the North Dakota Agricultural Experiment Station as agriculture research and extension continue to be one of the top priorities for North Dakota's crop and livestock producers. Advancements in research are essential to growing the state's number one industry, remaining competitive in the global market and maintaining the economic well-being of the state. It has been and will continue to be a driving force in the future of North Dakota's agriculture industry.

We appreciate your past support and would urge your continued support of research and extension as these programs provide valuable information, education and tools for the state's producers.

We encourage your favorable consideration of SB 2020.

Beltz testimony in support of SB 2020.

Grow 21:

Enhancing North Dakota's Economy Through Agriculture

Agriculture in North Dakota continues to be a remarkable success story and a vital cornerstone of the state's economy. Farmers, ranchers and agribusiness leaders are remarkably innovative and creative in seeking opportunities and finding new ways of operating their enterprises. Agriculture is dramatically different than it was a few short years ago. It will be dramatically different in a few short years.

These enterprises require continued development of new knowledge and technology and ongoing education to assure continued success. The North Dakota Agricultural Experiment Station (NDAES) and the NDSU Extension Service (NDSUES) have been and will continue to be major sources for the innovation and support to keep North Dakota's agriculture at the leading edge.

Much of agriculture occurs in rural areas. Farming and the success of rural communities have become inextricably linked. In North Dakota, they are mutually dependent. In our state, healthy communities are essential for the success of agriculture and agriculture is essential for the success of rural communities. Numerous studies across rural America, including North Dakota, find that the majority of farm family income is derived from off-farm sources. An essential key to the continued success of agriculture is assuring that communities remain successful and vibrant with

numerous successful enterprises and quality of life. In North Dakota, much of this development will emerge from agricultural and natural resource-based opportunities.

In preparation for the 2007 session of the North Dakota legislative assembly, we met with scores of organizations and hundreds of citizens across North Dakota, asking them to describe what they want this state to be like in 2025. With the guidance and support of the State Board of Agricultural Research and Education, the NDAES and NDSUES propose "GROW 21: Enhancing North Dakota's Economy through Agriculture" as the approach for addressing the vital issues raised above.

We have continued to have discussions with organizations, leaders and individual citizens and continue to get enthusiastic feedback that the GROW 21 focus on healthy communities is a solid strategy.

Briefly, GROW 21 says the focus in the coming years must be on communities and that a healthy community has three essential attributes: a diverse and resilient economy; an effective, efficient infrastructure; and leadership. If a community is missing any of these, it is in trouble. These are outlined briefly below:

■ **Diverse, Resilient Economy**

A community must not "put all its eggs in one basket." Rather, it needs multiple sources of income that provide a buffer when one sector of the economy may be down. As we look to the future, certainly enhancing agricultural production will be essential, but not sufficient. Significant opportunities exist to add value to raw products; explore new enterprises;

NDSU

**NDSU Extension Service
North Dakota Agricultural Experiment Station**

www.ndsu.edu/legislators

develop new markets; produce renewable energy and bioproducts; and find multiple uses for land where, in addition to agricultural production, there are tourism and recreational businesses and potential to enhance the manufacturing of devices developed for agricultural applications. All of these hold significant promise for North Dakota's rural areas. Some of these efforts will be developed through large-scale enterprises and some through the activity of entrepreneurs.

■ **Effective, Efficient Infrastructure**

Traditional infrastructure (roads, water, electricity, phones, etc.) continue to be vital. In the future, equally important will be access to high-speed broadband digital communications, adequate health care, youth and family development, local planning and access to capital. Through the dispersed system of the Extension Service, NDSU can play catalytic roles in helping communities be positioned for future success. Research and Extension activities also are critical components of infrastructure throughout the state. To improve our capacity to serve North Dakota, the infrastructure capacity of the NDAES and NDSU Extension Service needs to be enhanced. Additional funding for support staffing, equipment pools, operating funds and information specialists are needed. This investment will ensure that the NDAES and NDSU Extension Service remain a highly respected source of technology, products and information needed to allow our producers to remain competitive in a global market.

■ **Leadership**

Without local citizens who have skills and feel confident that they can make a difference, a community will not be successful. Many North Dakota communities possess a desire to have a bright future, but they do not have a cadre of citizens who have the skills and feel empowered to effectively plan and carry out programs and activities that will lead to future success.

In the 2007 session, the Legislature supported the GROW 21 strategy by providing investments in many program areas, including bioproducts and bioenergy, critical crop diseases, livestock waste management, enhanced irrigated agriculture, youth development, rural leadership enhancement, parenting and horticulture. The Legislature also provided support to enhance greenhouse research facilities, facilities at several Research Extension Centers and planning for essential beef research facilities. In addition, the Legislature provided support for updating vital research equipment and general operations and investment in compensation support to allow us to reward the commitment of our people. The Experiment Station and Extension Service have implemented these investments aggressively, which already has resulted in significant impact for the citizens of North Dakota.

In preparation for the 2009 legislative session, the State Board of Agricultural Research and Education reaffirmed the importance of the GROW 21 approach. Many groups and individuals from North Dakota agriculture and rural communities came before SBARE with concepts and ideas. Numerous others provided written comments. SBARE asked Experiment Station and Extension leadership to synthesize the large amount of input into approaches. The materials included herein are the result of listening to North Dakota citizens; drawing on the insights of our scientists, specialists and staff; and SBARE's careful and well-studied prioritizing of investments that will make great differences for North Dakota in the next generation.

These initiatives hold great promise for enhancing North Dakota's rural economies through continuing the innovation that has made North Dakota's agriculture so successful while concurrently providing the information and technologies for new rural enterprises and successful rural communities.

State Board of Agricultural Research and Education
2009 Priorities
Grow 21 – Enhancing North Dakota's Economy through Agriculture
NDSU Extension Service

Theme/Program Area	Rank
Family Nutrition Program	1
Crop Disease Management <i>(complements AES initiative 5)</i>	2
Extension Operating Support	3
4-H Leadership Education and Camping	4
Institute for Agribusiness Enterprise and Rural Development	5
Agents-in-Training and Interns	6
Enhancing Livestock Development <i>(complements AES initiative 10)</i>	7
Agronomy Technical Support	8
Salinity/State Soil Conservation Committee <i>(complements AES initiative 8)</i>	9
Crop Quality <i>(complements AES initiative 9)</i>	10
Weeds <i>(complements AES initiative 14)</i>	11
Support Staff	12
Swine <i>(complements AES initiative 18)</i>	13
Insects	14
Food Entrepreneurs	15
Multiple Land Use <i>(complements AES initiative 19)</i>	16
Nutrition and Wellness	17
Energy Conservation through Precision Agriculture	18
Journalist	19
<hr/>	
One-time interactive video equipment (IVN) upgrades at 23 sites	

State Board of Agricultural Research and Education

2009 Priorities

Grow 21 – Enhancing North Dakota's Economy through Agriculture

North Dakota Agricultural Experiment Station

<i>Theme/Program Area</i>	<i>Rank</i>
Greenhouse Utilities	1
Deferred Maintenance/Extraordinary Repairs	2
Pulse, Oilseed and Wheat Quality and Product Evaluation	3
NDAWN	4
Wheat Rust Pathologist, Crop Disease Plant Pathologist (<i>complements EXT initiative 2</i>)	5
Revolving Equipment Fund	6
Forage Agronomist and Bioproducts Agronomists	7
Soil Health (<i>complements EXT initiative 9</i>)	8
Quality Research for Food and Non-food Uses of North Dakota Crops. (<i>complements EXT initiative 10</i>)	9
Enhancing Livestock Development (<i>complements EXT initiative 7</i>)	10
Office and Research Support Staff	11
Genetics of Bioproduct Research	12
Graduate Research Assistants	13
Weed Science (<i>complements EXT initiative 11</i>)	14
Soil Microbiology	15
State Data Center	16
Animal Health	17
Swine Research (<i>complements EXT initiative 13</i>)	18
Multiple Land Use (<i>complements EXT initiative 16</i>)	19
Insect Vectors of Plant Diseases	20
<hr/> One-time extraordinary repairs/deferred maintenance <hr/>	

SB 2020
 March 16, 2009
 attachment # 3

Agriculture: the cornerstone of North Dakota's future

Agriculture is a large, complex and changing industry. Traditionally defined as crop and livestock production, agriculture now expands far beyond the farm gate. It also encompasses national and international trade issues; the safe and beneficial employment of biotechnology; food processing and safety; animal and human health and nutrition; and biobased energies and products. It also includes related urban and business issues.

The North Dakota Agricultural Experiment Station (NDAES) is the research arm for agriculture at NDSU. Consisting of nine research departments on campus in Fargo and eight off-campus research centers, it provides extensive research and development solutions to address these and many other issues.

NDAES research activities in brief...

plant health
& development...

NDAES has nationally recognized plant breeding and genetic research expertise that emphasizes classical plant breeding and incorporates biotechnology tools. North Dakota is the No. 1 producer of 13 crops in the United States. To support this industry, the NDAES has more than 10 plant breeding and molecular genetics programs integrating disease and insect resistance and enhanced agronomic traits to benefit the producer, and superior nutritional attributes that can be utilized for both human food and livestock feed.

equipment
development ...

The NDAES incorporates the use of technologies in its laboratories to increase productivity by developing and engineering more effective machinery and equipment, and improving the processing of feed and food to ensure efficient and economical production.

bioenergy &
bioproducts...

The recent formation of the NDSU Bio Energy and Product Innovation Center coordinates NDAES and other NDSU research in biorelated activities, and develops, promotes and collaborates with industry, other institutions and government in this vital and innovative area of research and development.

urban living &
food safety...

For the expanding urban population, NDAES encompasses research related to the growing horticulture, recreation and parks industries including trees, garden and turfgrass varieties suited to this region and its specific environmental conditions. In the area of food safety and production it monitors safe transportation, storage and processing methods and researches new and innovative ways to incorporate added nutritional value into everyday foods.

for the
environment...

NDAES has expanded to include conservation of our natural resources in the areas of range management, and soil fertility and management. It researches and encourages sustainable agricultural systems to protect and conserve our environment.

animal health
& nutrition...

NDAES has extensive research programs in animal reproduction, nutrition and physiology to improve efficiency and profitability of livestock and equine management. Its expertise includes the utilization of the myriad of ND crops and coproducts of bioenergy production to enhance livestock nutrition. It has developed a successful, competitive research program in the molecular causes of infectious diseases of animals, relative to animal health, public health and food safety.

money matters
& trade...

The NDAES researches and monitors the effects of changes in international trade policies on agriculture. It designs alternative policies to stabilize farm household incomes and monitors investments to promote economic development in the state's rural areas. It studies market effects of crops modified by biotechnology and monitors changing crop insurance needs and requirements. It also surveys housing market characteristics in the state, and market and nonmarket values associated with alternative water management strategies.

agriculture
still no.1...

Because Agriculture is the No. 1 industry in the state, the NDAES will continue to research, as well as innovate, and collaborate with community government and industry to generate beneficial solutions for North Dakota, the region, the nation and the world.

Beef — second only to wheat

Cattle production is ranked second only to wheat production as the most important sector in North Dakota's agricultural economy. Research at NDSU provides critical links between laboratory research and field research conducted throughout the state.

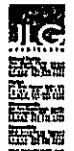
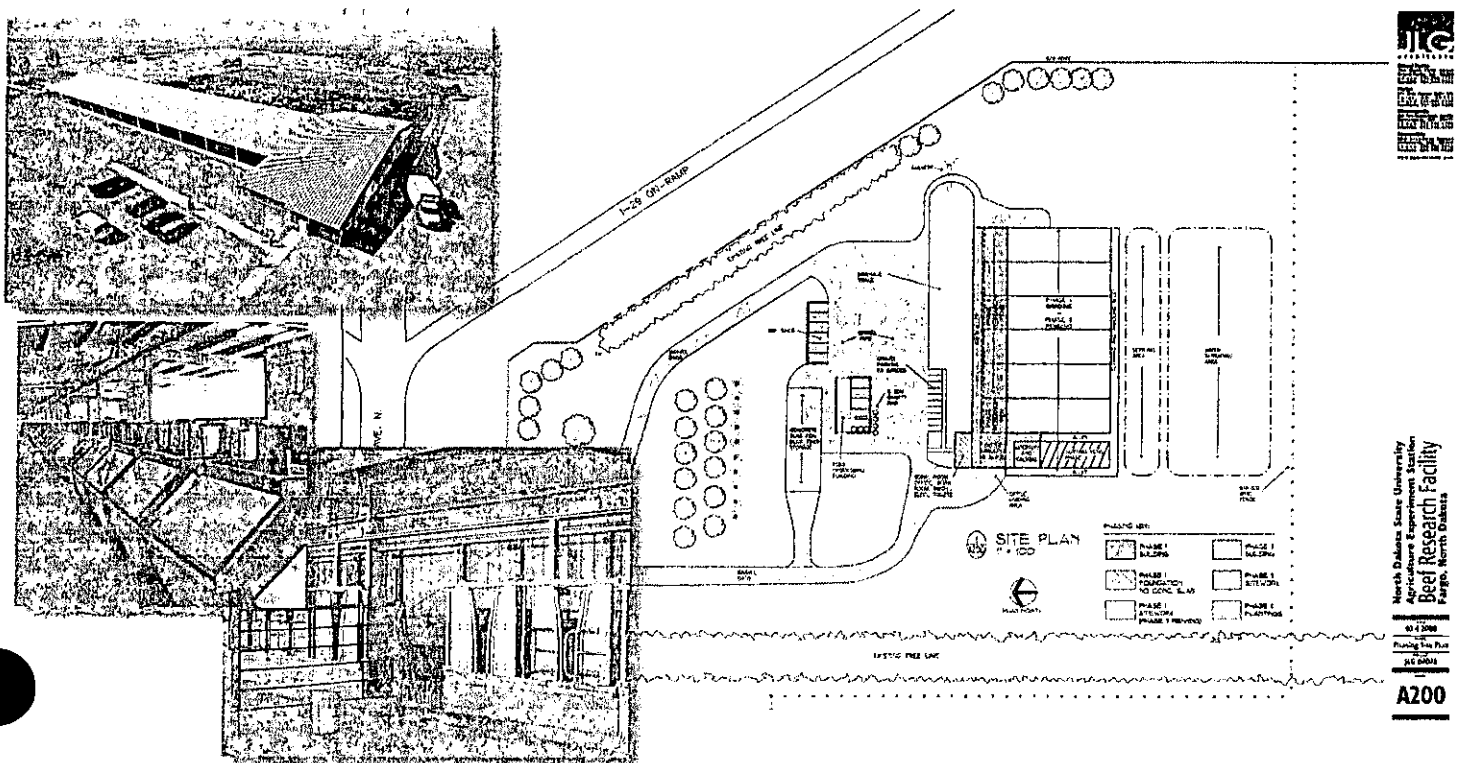
The NDSU Beef Cattle Research Center, coordinating with the NDSU Beef Systems Center of Excellence and the NDSU feedlot at Carrington Research Extension Center, is an essential component of the research infrastructure that is vital for moving North Dakota forward in beef cattle nutrition, reproduction, genetics, meat science, food safety, nutrient management and economics.

Beef Cattle Research Center: An important investment

- Feed is the largest single cost in beef cow-calf production
- Feed quality and quantity affect the animal in every stage of production, from reproduction to finishing
- Research at the Beef Cattle Research Center will use state-of-the-art equipment to monitor and research feed quality and quantity to optimize feeding costs
- A 10% improvement in feed efficiency is estimated to be worth **\$40 million** annually to the North Dakota beef industry.



\$2.6 million required to complete facility



North Dakota State University
Agricultural Experiment Station
Beef Research Facility
Fargo, North Dakota

6/1/2008
Planning and Design
JTC 0003
A200

Beef — second only to wheat

From Conception to Consumption, the Meat Science program covers it all

Research indicates:

Consumers value tenderness in steak and are willing to pay more for tender cuts.

Ensuring the customer has a tender product will ensure livestock production continues to thrive.



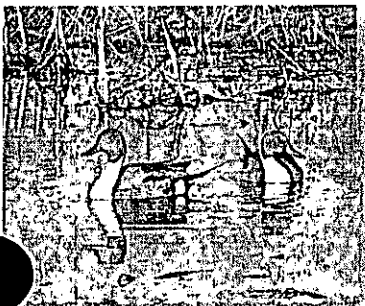
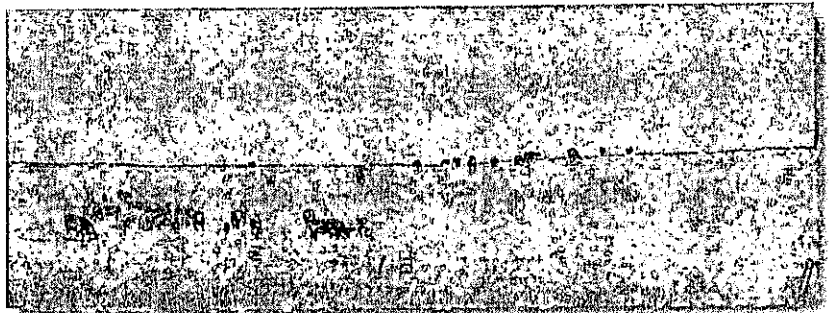
Working within the NDSU Beef Systems Center of Excellence, the Meat Science program uses applied and molecular research procedures to understand the connections and interactions of genetics, nutrition, environment and processing to achieve the best quality beef for the consumer.

- Nutrition: Growth starts in the uterus, and the calf's development depends on the mother's health and nutrition, which effect how animals grow throughout their life.
- Environment: Production practices, transportation and animal handling that minimize stress on livestock have a positive impact on beef cattle welfare, improve growth efficiency and can improve beef palatability.
- Processing: New and innovative beef processing techniques can enhance palatability and improve marketability of lower-quality beef.
- Cellular and muscle level: Research into the physiological mechanisms that regulate growth and development can lead to differences in muscle structure and affect beef tenderness.

Rangeland management/maintenance critical

- 25% of North Dakota is classified as rangeland.
- Rangeland management is the backbone of the livestock industry, particularly cow-calf production.
- In 2007, this industry resulted in direct receipts of \$691 million and a total contribution of \$3.1 billion to North Dakota's economy.
- Rangeland is being used intensively and needs to be managed carefully.

Cow-calf production \$691 million direct receipts - total contribution \$3.1 billion (ND 2007)



Tourism and environment count

- Wildlife and waterfowl all inhabit rangeland areas and depend on it for food, cover and water.
- Wetlands produce 50% of waterfowl in the U.S. and therefore are valuable resources to maintain.
- Recreation and tourism based on rangeland activities such as hunting, horseback riding, wildlife viewing, hiking and biking is a multimillion dollar industry.
- Multiple land use (farming, grazing, recreation and wildlife) and maximizing profitability are a new challenge for landowners and managers.

Breeding for performance and profit

North Dakota leads the nation in the production of 13 crops and NDSU's 10 plant breeding programs are among the largest in the nation. Genetic improvement, as a consequence of plant breeding, is a major reason why North Dakota crop production agriculture generates more than \$4 billion in on-farm cash receipts annually. The availability of diverse products through plant breeding has been essential to maintaining this large sector of the state's economy

An increase in wheat yield by one-half of a bushel per acre equals \$28 million* increase in farm receipts annually, with a total economic impact of \$84 million

The number of NDSU regionally adaptive varieties that North Dakota producers use proves the importance of the university's plant breeding program to the state and the region's economy.



North Dakota friendly
NDSU varieties are especially adapted to North Dakota conditions and new releases are accepted quickly.

Example: Glenn wheat was released in 2005 and in 2008 accounted for 27.9 percent of wheat acreage (1.9 million acres). Fallor, a higher-yielding wheat, was released in 2007. It was 2.2% percent of acreage in 2008 and is increasing in popularity.

NDSU Foundation SeedStocks (FSS) Project
Farmers throughout history have recognized the importance of genetically pure seed. The FSS maintains genetically pure foundation class seed of public varieties as a service to the agricultural industry. (2007-08 NDSU FSS annual report)

- Largest program in the U.S., with 15 crops and more than 100 varieties
- 5,000 acres per year dedicated to seed increase programs
- Pedigree seed program ensures genetic purity
- Clean, genetically pure seed ensures producers will have enhanced yield, quality and disease resistance of new varieties

Collaboration with industry
The NDSU FSS supports the seed and commodity industry with genetically pure foundation seed, and purity is important in barley used for malting. FSS collaborates with private and public breeding programs to make new varieties from other programs available to North Dakota producers.
Example: Tradition barley (37.4 percent of North Dakota barley acreage) was developed by Busch Agricultural Resources Inc., but foundation seed distribution is done by agreement with NDSU FSS to assure that genetically pure seed is more accessible to North Dakota producers.



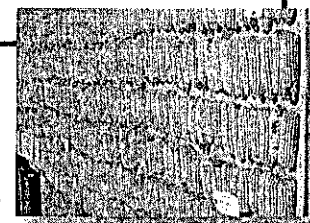
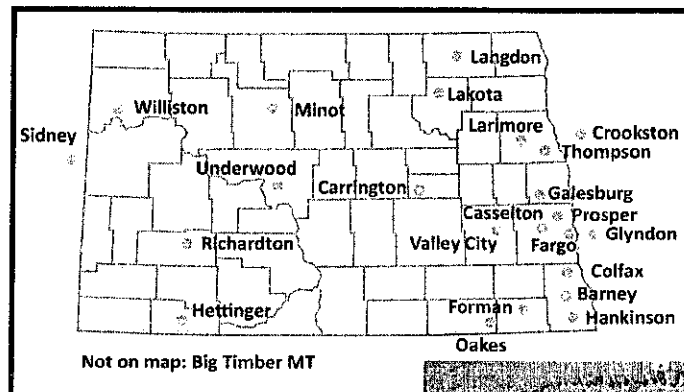
ND No. 1 producer of dry bean. NDSU's variety **Maverick** is the most popular variety. New pinto releases **Lariat, Stampede** and **ND-307** are gaining acreage.



In North Dakota FSS distributed varieties account for:
75% of wheat
91% of durum
90% of barley

Corn acres increase 425% in ten years

- Corn production has increased from 590,000 acres in 1997 to 2.55 million in 2007.
- In 2008, North Dakota produced more bushels of corn than wheat (the state's No 1 crop).
- NDSU's corn-breeding program is the largest in the region, using 20 locations in North Dakota.
- NDSU cooperates with more than 30 industry, USDA and public national and international partners to develop and increase genetic diversity and early maturing hybrids.
- Objectives are to adapt corn germplasm to North Dakota's challenging conditions and develop lines and hybrids for industry use, focusing on early maturity, drought and cold tolerance, and grain quality.
- Winter nursery in South America allows three seasons per year of breeding and testing early maturing varieties, which leads to the development of lines three times faster.
 - 60% of the corn yield is due to genetics which emphasizes the importance of breeding new lines.
 - NDSU corn breeding program has developed 12 early maturing products in the past five years which were requested by over 40 private and public national and international institutions yearly



Disease research, impacts and emerging problems

Every year, producers throughout the U.S. and the world lose billions of dollars to disease.

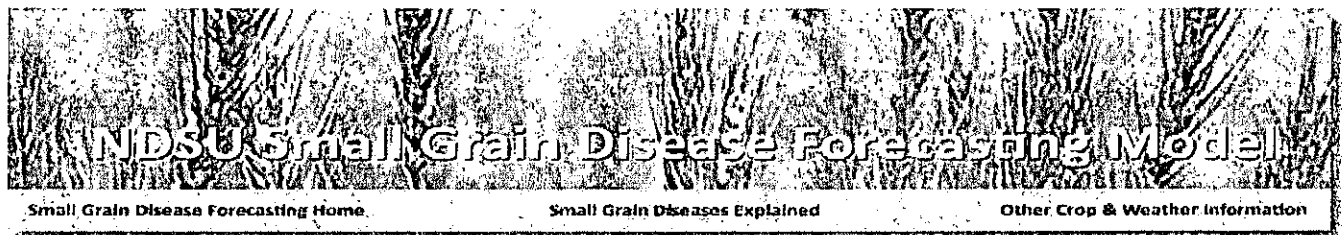
Plant pathologists and entomologists work to identify and control these diseases.

NDSU's North Dakota Agricultural Weather Network (NDAWN), in conjunction with the Small Grains Disease Forecasting Model, assist producers in making management decisions in disease conditions, such as outbreaks of fusarium head blight.

Alarming, new diseases are entering the northern region as various cultural and climatic conditions change, and researchers actively monitor and research methods of early detection and control.

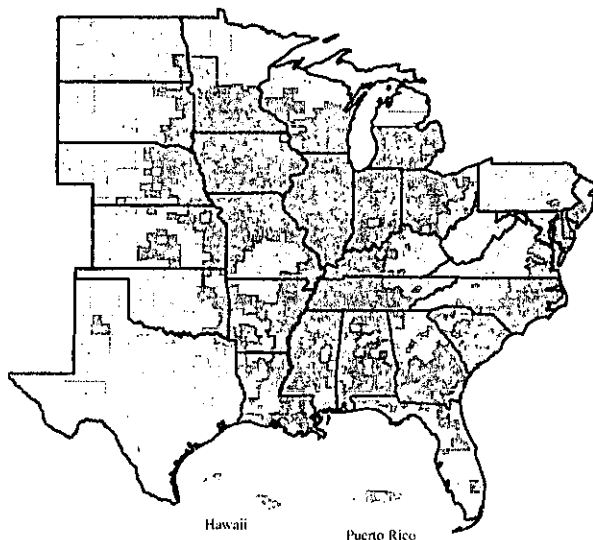
**NDAWN and The Small Grains Disease Forecasting Web sites:
Estimated \$34 Million saved/gained each year.**

- This Web site has 15,000 to 20,000 hits during the two months that crops are most likely to be affected by disease.
- By predicting the likelihood of disease, showing where disease is occurring and the crop growth stage of development, the Web sites, using weather data provided by NDAWN, helps producers make informed decisions on whether to spray fungicides for disease management
- Producers save money by not having to spray needlessly or gain income by spraying at the optimum time, ensuring high yields.
- The Web site was updated in 2008 to ensure easier access and usability. www.ndsu.edu/diseaseforecast



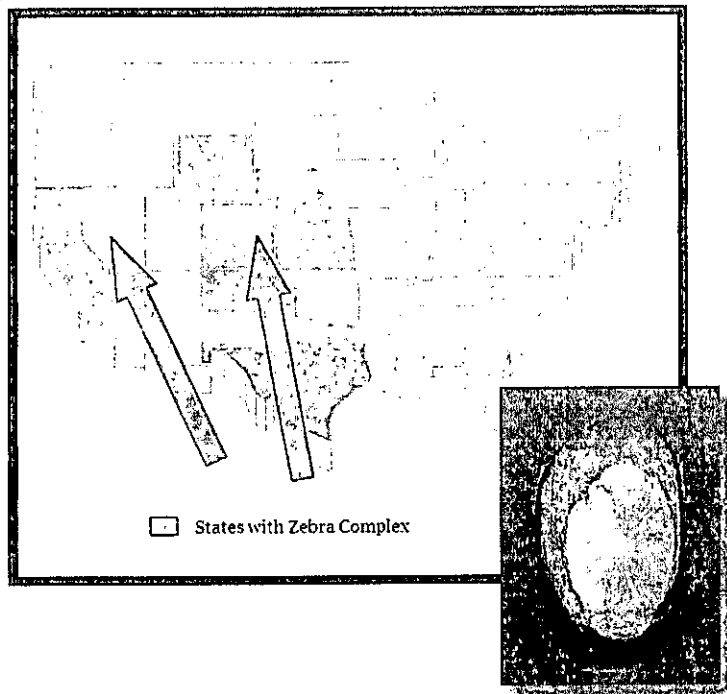
Soybean Cyst Nematode: New disease to ND

This nematode is recognized as one of the most problematic soybean diseases. It causes more than **\$1 billion** in agricultural losses in the U.S. each year.



- Recently identified in Richland and Cass counties, it WILL spread to other soybean areas in the state.
- This disease is hard to identify because it can show little or no above-ground symptoms but results in major yield reductions.
- North Dakota farmers are not as familiar with the disease and may not recognize it until major damage has occurred.
- North Dakota conditions are suitable to the nematode reproductive cycle – the cold climate reduces predator attacks on eggs, increasing survival levels and disease.
- Control methods:
 - Using recently developed resistant cultivars suitable for northern U.S. regions
 - Sample soil to determine egg levels
 - crop rotation to keep population levels low
 - education to help producers understand and control the disease
- Soybeans are grown on almost 4 million acres in North Dakota.

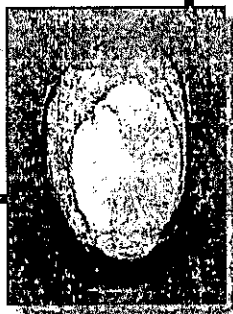
Emerging disease problems



Zebra Chip: A new threat to the potato industry

A new potato disease called zebra chip (named for its pattern in the potato tuber) has spread rapidly in the U.S. during the past eight years and is looming close to North Dakota, particularly the western half.

- This disease has had a devastating effect in Texas, with estimates of 35% to 40% of potato acreage affected and a crop loss of approximately \$25.9 million (2005 estimates).
- First found in Mexico in 1994 by NDSU scientist Gary Secor, the disease has, just this summer, been determined to be caused by a bacterium that is spread by a potato psyllid.
- This insect is spreading north following the path of trade winds, which are suspected of transporting the psyllid, and climate change assisting the ability of the insect to survive.
- Now that this has been identified, research can begin to investigate control methods.



Ug99 - a new virulent wheat rust strain

Ug99 was first found in Uganda (Africa) in 1999 and has started to spread around the world. Recent experiences with other new rust diseases suggest a high probability that the disease will reach the United States soon.

- Spring wheats are more susceptible to Ug99 than are winter wheats produced in competing states such as Kansas meaning North Dakota would be at a competitive disadvantage were Ug99 to strike today.
- Most wheat cultivars grown in ND and breeding lines for future cultivars are fully susceptible to Ug99.
- In 1954 a serious stem rust epidemic claimed 40% of the U.S. wheat harvest.
- Ug99 has caused localized losses of 100%.
- Sources of genetic resistance need to be identified and incorporated into ND wheat breeding programs.



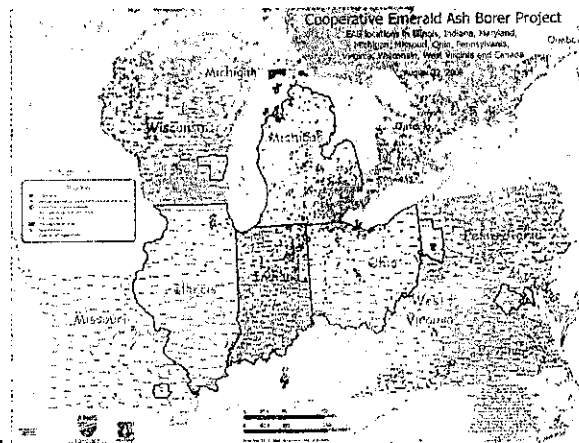
Photo courtesy of USDA website.

Emerald Ash Borer

Although the Emerald Ash Borer is not present in North Dakota at this time, it has moved quickly through many states since being discovered in Detroit, Michigan in 2002 and has now located in Michigan, Illinois, Indiana, Maryland, Missouri, Ohio, Pennsylvania, Virginia, West Virginia and Wisconsin.

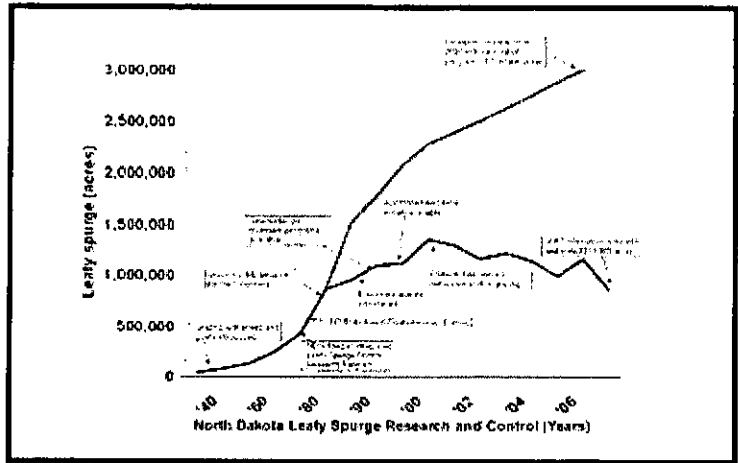
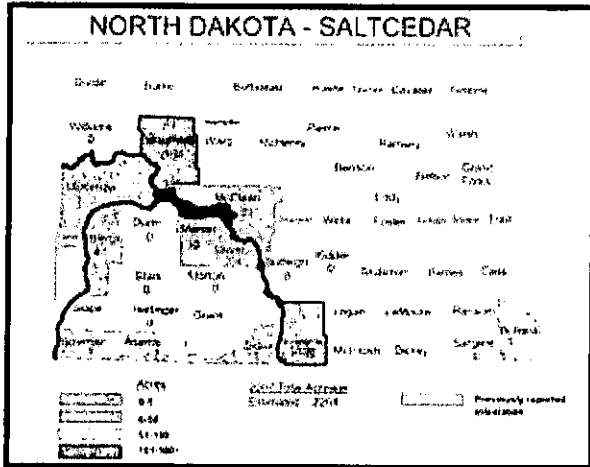
Although the beetle itself is not destructive, the larvae feed on the inner bark of ash trees and disrupt water and nutrient transport. It has killed tens of millions of ash trees and is a potential threat to North Dakotan trees.

Red dots on map show infested areas, white areas are State quarantine- generally infested areas. More information can be found at: www.emeraldashborer.info/



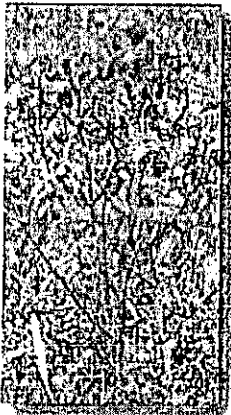
Invasive species control

Since the cooperative program involving the North Dakota Weed Control Association, state Agriculture Department and North Dakota State University began in the early 1980s to control leafy spurge, no other NEW invasive weed has become widely established in the state. This association enabled coordinated control and education programs across the state. With this framework in place, NEW invasive species, such as purple loosestrife, saltcedar and yellow starthistle, have been identified quickly and control programs begun to eradicate and/or stop further spread of these and other species.



Saltcedar

Incidence of this invasive species has **declined** in most counties but continues to be a problem along the Missouri River and Lake Sakakawea. Early detection in Richland and Sargent counties has been critical for maintaining control of this species in the Red River Valley. The saltcedar tree can use hundreds of gallons of water per day, which causes high soil salinity and low water levels.



Canada Thistle

Canada thistle, North Dakota's No. 1 invasive species and a perennial weed that has been in ND for decades, is present in all 53 counties.

- Current research is developing two herbicides for use in pasture and rangeland, one labeled and one still under investigation.
- This species affects approximately 1 million acres of pasture and rangeland and more than 8 million acres of cropland.

Leafy Spurge

Leafy spurge has been reduced to North Dakota's No. 2 invasive species and, although still a major problem, acreage is decreasing, thanks to the combined efforts of North Dakota Weed Control Association, NDSU and the North Dakota Department of Agriculture.

- Approximately 861,000 acres are affected, compared with an estimated 3.1 million acres had the species not been controlled aggressively. Rather than doubling every 10 years as it had since the 1940s, leafy spurge has been reduced to 1980 levels in the last decade.
- Land infested with leafy spurge causes an estimated \$86 million loss in livestock sales annually.
- Leafy spurge has been reduced by a combination of biological, chemical and cultural methods.



Yellow Star Thistle

Yellow starthistle is a member of the knapweed family and was added to the noxious weed list in 2000. Yellow starthistle occupies more than 8 million acres in California and is the No. 1 invasive weed in Idaho. This weed has been identified several times in various areas of North Dakota in the last 10 years. Control measures were put in place quickly and the yellow starthistle is considered eradicated

Houndstongue

Although not on the state noxious weed list, houndstongue has increased noticeably in southwestern and north-central counties.

- Prickly burrs attach themselves to livestock allow the species to spread easily.
- Ingestion of more than 6% of this plant by horses or cattle can have fatal results.



North Dakota Salinity and Sodicity Issues

Soil chemical, physical and biological properties underlie all crop decisions that agricultural producers make. These soil properties help dictate what crops and crop rotations to grow, as well as the crops' potential productivity and profitability.

Saline and Sodic Soils affect 25% (12.6 million acres) of N.D. agricultural land

Salinity (accumulated salts) and sodicity (accumulated sodium) are at levels which can limit potential production levels in many areas in North Dakota.

- Salinity may affect up to 2 million acres of Red River Valley soils.
- Soil salinity is a buildup of soluble salts in the root zone
- Plants absorb water or water evaporates from the soil and salts in the soil water are left behind, eventually resulting in levels toxic to vegetation
- Poor drainage and/or poor irrigation water cause the salinity buildup. Years of higher-than-average rainfall leads to shallow ground water depth and movement of this water and its salts to the soil surface.

Salinity Explained

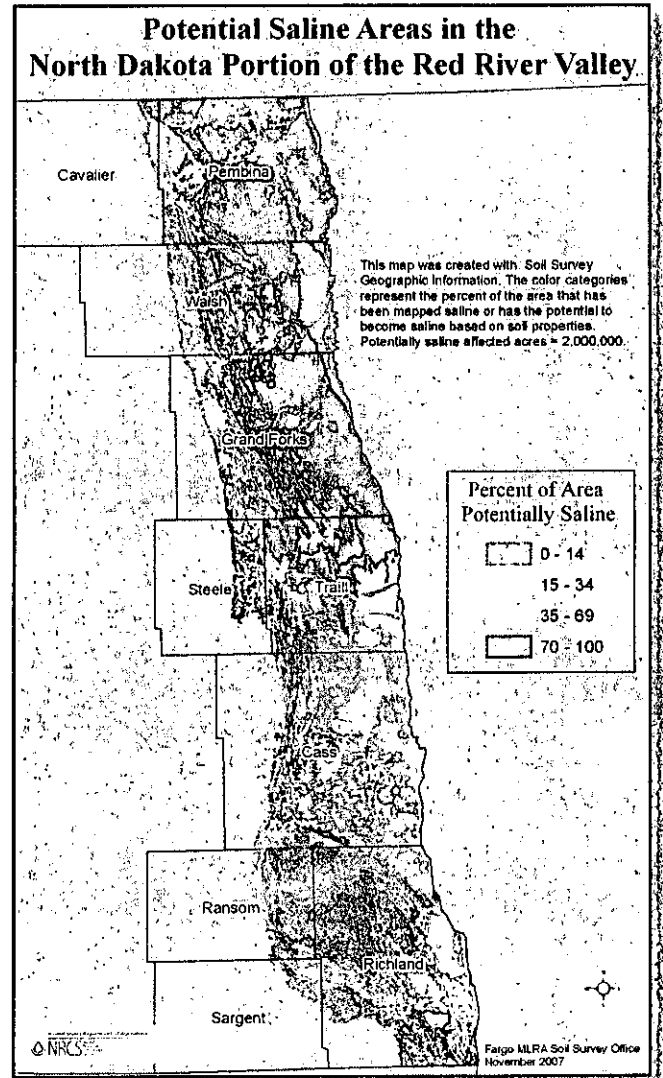
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What is the effect on plants?

- Plants are less able to absorb water; growth reductions occur as the salinity level in the soil increases
- Symptoms in the plant resemble that of drought: reduced growth, reduced production and plant death.

Managing or reducing salinity

- Addition of chemicals, conditioners or fertilizers will not combat salinity
- Tile drainage reduces excessive field wetness; it also helps reduce salinity
- Applying additional water will help leach the root zone area of excess salts. However, this may be possible only if leaching is combined with artificial drainage
- Using deep-rooted, long-season crops with salinity resistance in a rotation on fields with salinity problems
 - In areas where crops cannot grow, allow the weeds to grow and mow late so weeds use as much soil water as possible
 - Establish a rotation including alfalfa to lower the depth to field groundwater
 - Track soil salinity levels through soil testing to monitor progress.



Managing or reducing sodicity

- Conduct soil testing to see if soil mixing would help relieve the problem temporarily
- Install artificial drainage; apply soluble calcium amendments, such as gypsum; and allow irrigation or rainfall to leach away the sodium may reduce sodicity.

given to senate

North Dakota Agricultural Experiment Station

2007-09 Legislation that Included Reporting Requirements to 2009 Appropriation Committees

HB1020 (NDSU Research, Extension and Agronomy Seed Farm)

■ **SECTION 10. LEGISLATIVE INTENT - BEEF RESEARCH FACILITY.** It is the intent of the sixtieth legislative assembly that before proceeding with a beef research facility, a documented agreement as to the location of the facility must be provided to the main research center from applicable city and county government officials.

Status: All appropriate permits were obtained from proper governmental entities.

■ **SECTION 11. LEGISLATIVE INTENT - OPERATING POOL FUNDING.** It is the intent of the sixtieth legislative assembly that the appropriation from the permanent oil tax trust fund as provided in subdivision 4 of section 3 of this Act is to be available only for providing funding for operations of the Dickinson research center and the amount provided is to be limited to the lesser of \$750,000 or the amount actual oil revenues are less than budgeted for the research center for the biennium beginning July 1, 2007, and ending June 30, 2009.

Status: \$450,000 transferred from the permanent oil tax trust fund to Dickinson for legislatively approved waste management project at Manning Ranch. Evaluation of the remaining \$300,000 to be completed February 2009.

■ **SECTION 12. LEGISLATIVE INTENT - USE OF LIVESTOCK FACILITIES.** It is the intent of the sixtieth legislative assembly that the agricultural experiment station consider options to ensure that the use of the livestock facilities at Dickinson, Hettinger, Carrington, and Streeter are being maximized.

Status: Please see Beef Research in North Dakota report following Section 15 status update.

■ **SECTION 13. NATIONAL CATTLEMEN'S BEEF ASSOCIATION FUNDING - REPORT TO SIXTY-FIRST LEGISLATIVE ASSEMBLY.** The agricultural experiment station shall provide a report to the sixty-first legislative assembly regarding the funding received during the biennium beginning July 1, 2007, and ending June 30, 2009, from the national cattlemen's beef association.

Status: \$192,000 has been received from the North Dakota Beef Commission.

Projects include:

- Willingness to Purchase Known Tender Beef Steak from Foodservice and Retail (\$47,000)
- Evaluation of the Physiological Response of Feedlot Cattle to Working Chute Environment Relative to Temperament, Growth Rate, Carcass Composition, Beef Quality and Tenderness (\$65,000)
- Assess the Effectiveness of Oxygen Barrier Oven Bags in Low Temperature Cooking on the Reduction of Warmed Over Flavor (WOF) in Beef Roasts (\$33,000)

Given to Senate

- *A Comparison of Natural and Conventional Beef Production Systems: Effects on Beef Quality, Nutrients and Sensory Characteristics (\$37,000)*
- *Beef 101: From Calves to Carcasses (\$10,000)*

To date, no funding has been received from the National Cattlemen's Beef Association.

SECTION 15. ONE-TIME FUNDING - EFFECT ON BASE BUDGET - REPORT TO SIXTY-FIRST LEGISLATIVE ASSEMBLY. The total appropriation in section 3 of this Act includes \$8,732,750 from the general fund and \$750,000 from the permanent oil tax trust fund for the one-time funding items identified in this section. This amount is not a part of the agency's base budget to be used in preparing the 2009-11 executive budget. The agricultural experiment station shall report to the appropriations committees of the sixty-first legislative assembly on the use of this one-time funding for the biennium beginning July 1, 2007, and ending June 30, 2009.

- North Central Research Extension Center laboratory and greenhouse project - \$400,000
Status: *Completed July 2007*
- North Central Research Extension Center equipment storage facility - \$300,000
Status: *Estimated completion January 2009*
- Main research center greenhouse project - \$7,000,000
Status: *Total legislatively-approved authorization \$14 million. AES will continue to raise additional funds up to the goal of \$5 million in special fund authorization that was approved for the project. See detailed project description on page 35.*
- Deferred maintenance pool - \$100,000
Status: *Funds have been allocated. \$66,000 spent through Dec. 31, 2008, with the remainder to be spent by June 30, 2009. A sample of projects completed to date:*
 - Carrington: replaced furnace in seed stocks building (\$6,000)
 - Central Grasslands: water well at director's residence (\$13,000)
 - Dickinson: replaced door on feed Quonset at ranch (\$4,000)
 - Hettinger: replaced roof and door on feedlot barn (\$12,000)
 - Langdon: repaired seed cleaning plant per safety inspection (\$6,000)
 - Williston: replaced windows, flooring and light fixtures in seed house (\$12,000) and windows in lab (\$4,000)
- Carrington, Hettinger, and North Central Research Extension Centers office addition projects - \$907,750
Status:
 - *Construction of the Carrington and Hettinger REC headquarters additions began summer 2008 and estimated completion is February 2009*
 - *Due to reduced funding and increased construction costs, at the recommendation of the State Board of Agriculture Research and Education, construction of the North Central REC addition was delayed in order to complete the two other projects as initially designed*
- Operating pool from permanent oil tax trust fund - \$750,000
Status: *\$450,000 transferred from permanent oil tax trust fund to Dickinson for legislatively approved waste management project at Manning Ranch. Evaluation of remaining \$300,000 to be completed February 2009.*

Given to
Horse

2007-09 Legislation that Included Reporting Requirements to 2009 Appropriation Committees

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Given to
NDAES

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Update of NDAES Initiatives Funded in 2007-09 Budget

■ Costs to continue FY2007 salary increases

\$575,102 received and allocated July 1, 2007

■ Equipment and Operating Pool

\$940,000 received

- Operating distributed July 1, 2007
- Equipment monies distributed to Research Extension Centers

■ REC Support Staff

\$462,800 received

- All positions hired

■ Bioproducts/Bioenergy Development

\$400,000 received to fund two positions

Agricultural and Biosystems Engineering Bioprocess Engineer

- 60% Experiment Station, 40% Extension
- Readvertised; interviews scheduled for Jan. 2009
- Will help establish new industries based on renewable resources
- Primary focus: systems for supplying cellulosic feedstocks to biorefineries (harvest, densification, storage and transport)

Agribusiness and Applied Economics Bioproducts Specialist

- 60% Extension, 35% Experiment Station, 5% Teaching
- Hired effective May 2008
- Primary focus: Apply economic principles to bioenergy and bioproduct industries
- Completed feasibility study of using field peas as supplement to corn in ethanol production
- Grant applications submitted to evaluate non-food sugar beets to butanol and development of military biojet fuel
- Working to develop new crop insurance products for biofuel crops

■ Scab/NDAWN

\$625,000 received

- Funds distributed competitively to wheat and barley scientists in 2007 and 2008
- \$200,000 for NDAWN used to hire computer programmer and additional operating funds effective August 2007

Update of Initiatives Funded in 2007-09: NDAES

■ Pulse Improvement

\$470,000 received

Pulse breeder, Main Research Station

- Position filled
- Develops improved varieties of pea, lentil, and chickpea that are adapted to the northern Great Plains

Assistant breeder, North Central Research Extension Center

- Position filled
- Aids in the effort to develop improved varieties and evaluates appropriate production techniques

■ Waste Management Systems

\$280,000 received to fund two positions

Agricultural and Biosystems Engineering Livestock Waste Management Engineer

- 80% Experiment Station, 20% Extension
- Hired effective April 2008
- Develops innovative uses, processes and products from livestock waste; enhances air and water quality; improves local environment and reduces cost of utilization

Nutrient Management Specialist, Carrington Research Extension Center

- 60% Experiment Station, 40% Extension
- Hired effective September 2007
- Series of research projects focused on expanded utilization of livestock wastes in crop production systems
- Discovery Farms project
- Increased requests to be unbiased resource when determining sites for expanded livestock operations

■ Irrigation Research

\$250,000 received to fund two positions

Research Scientist, Williston Research Extension Center

- Currently recruiting for qualified individual
- Primary focus: evaluate irrigated production practices

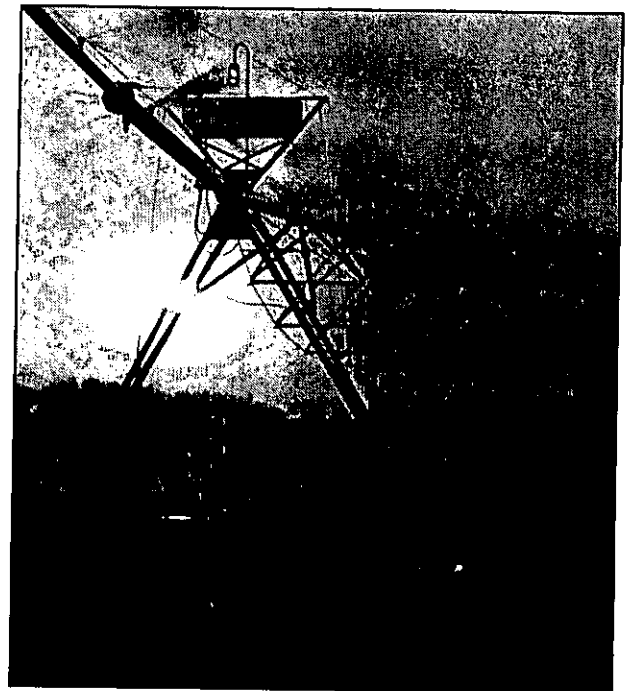
Research Technician

- Position filled

■ Additional Salary Increase

\$438,129

- All funds distributed to Main Research Center, branch centers, NDSU Extension Service, Northern Crops Institute and Agronomy Seed Farm as intended



Update of Initiatives Funded in 2007-09: NDAES

■ Beef Research Facility

\$80,000 to fund design and engineering costs

- Design and engineering of the facility was initiated
- All appropriate permits were obtained from appropriate governmental entities
- Under construction

■ Beef Research Facility

\$1,000,000 spending authority

- \$500,000 one-time funding obtained from Federal funds and \$121,900 in other special funds for initial construction
- Construction began May 2008 and Phase I was completed late September 2008

■ Maintenance Shop and Equipment Storage Facility at North Central REC

\$300,000

- Construction of the facility began in late summer and was completed January 2009

■ Agronomy Lab/Greenhouse at North Central REC

\$400,000

- Construction completed

■ Research Greenhouse Complex

\$7,000,000

- Groundbreaking for the facility occurred May 29, 2008 and construction of the facility is underway
- Cost of this initial construction activity is \$11.575 million and estimated completion date is spring 2010
- Total legislatively-approved authorization \$14 million. AES will continue to raise additional funds up to the goal of \$5 million in special fund authorization that was approved for the project. See detailed project description on page 35.

■ Carrington REC, Hettinger REC and North Central REC Office Additions

\$907,750

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- Due to reduced funding and increased construction costs, at the recommendation of the State Board of Agriculture Research and Education, construction of the North Central REC addition was delayed in order to complete the two other projects as initially designed

■ Deferred Maintenance

\$100,000

- Items for maintenance identified by REC directors
- All funds allocated

2007-09 Impacts

The North Dakota Agricultural Experiment Station develops and disseminates technology that is vital to the production and use of food, feed, fiber and fuel from crop and livestock operations.

To do that, the Agricultural Experiment Station has eight Research Extension Centers strategically placed throughout the state. Researchers at these centers work on solving problems the state faces and test new management techniques and crop varieties. The centers are the Main Station in Fargo, Agronomy Seed Farm (Casselton) and the Carrington, Central Grasslands (Streeter), Dickinson, Hettinger, Langdon, North Central (Minot) and Williston Research Extension Centers.

The centers work with the NDSU College of Agriculture, Food Systems, and Natural Resources' seven departments: Agribusiness and Applied Economics, Agricultural and Biosystems Engineering, Animal Sciences, Cereal and Food Sciences, Plant Pathology, Plant Sciences, and Veterinary and Microbiological Sciences along with the School of Natural Resources Sciences and the School of Food Systems.

- Continued breeding, disease and insect tests, fertility tests, responses to weed pressure, determination of desirable agronomic processing and products, and economic impacts for 14 major crops and several new crops.
- Leafy spurge infestation was reduced from its peak of 1.5 million acres to 862,000 by 2007, the lowest amount since 1971. In addition to regaining more than \$14 million in grazing and recreational land use, a combination of herbicide and *Aphthona* spp. biological control agents has saved approximately \$500,000 annually in herbicide costs.
- The soluble fiber consisting of beta-glucans in oats has been demonstrated to lower blood serum cholesterol levels, improve the ratio of high-density lipoprotein (HDL) vs. low-density lipoprotein (LDL) cholesterol and moderate glucose metabolism of type II diabetics when included in human diets.
- In the past four years, hard red spring wheat cultivars released by the NDSU hard red spring wheat breeding program occupied 50 percent to 60 percent of total HRSW acreages. In addition, some of these varieties are leading cultivars in Montana and Minnesota.
- Glenn, a 2005 HRSW release, was the leading wheat cultivar in the state, making up more than 20 percent of wheat acreage. In addition to Glenn, HRSW cultivars released by this program have improved disease resistance and agronomic/quality traits that contribute substantially to the economic development of the state and income of wheat growers and industry while meeting the export market requirements.

Glenn, developed by NDSU wheat breeders, is one of the most widely grown hard red spring wheat varieties in North Dakota.



IMPACTS: North Dakota Agricultural Experiment Station

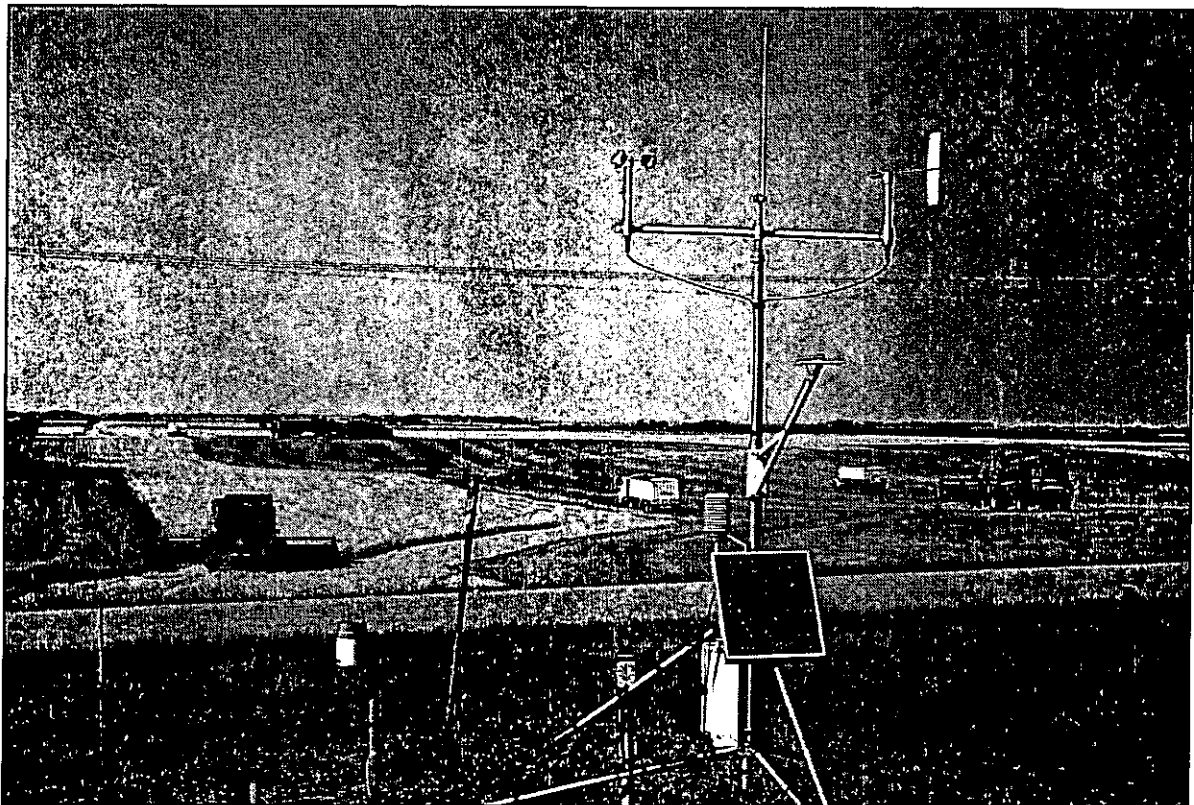
- NDSU corn breeding efforts continue to identify genetic combinations that possess high yield, early maturity and rapid drydown traits that are important for North Dakota to expand upon its record acreage of 2.6 million acres in 2007.
- NDSU barley researchers have identified a breeding line with improved fusarium head blight resistance and acceptable malt quality. This line accumulates about 30 percent less DON than Robust, a popular barley cultivar.
- NDSU plant breeders released seven cultivars in 2008 (one HRSW, two soybean and four dry edible bean), all of which are well-adapted to the North Dakota environment.
- NDSU plant pathologists help determine optimum timing for and rates of fungicide applications and help identify new fungicide chemistries to control diseases, saving producers tens of millions of dollars during recent fusarium head blight epidemics alone.
- Disease forecasting systems that were developed, maintained, improved and/or made accessible to the public by plant pathologist are important tools for managing a variety of important diseases on several crops, such as wheat, barley, sugar beets, potatoes and canola.
- Research on managing diseases of newer crops (such as pulse crops) and on new diseases in the state that affect established crops (such as anthracnose on dry beans and soybean cyst nematode) helps develop and protect the agricultural economy.
- Studied ways to increase the understanding of the effect of gestational events upon the long-term health and viability of the offspring of ewes. This research has enabled enhanced understanding of feeding ewes and cows during gestation, resulting in better recommendations for both sheep producers and cow-calf producers to increase viability of the offspring, which, in turn, enhances economic efficiency. This also has implications that could extend to human health issues.
- Iron deficiency chlorosis of soybeans leads to yellowing, stunting and severely reduced yields. Since 2001, the NDSU soybean research team has screened more than 1,500 varieties and breeding lines for resistance to chlorosis and found the most cost-effective control measure is planting a resistant variety.
- Determined that plant-root development and soil development are enhanced with managed grazing. Managed grazing enhances several soil properties, most notably soil infiltration.
- Assessed the impact of alternative farm bills and presented results in U.S. House and Senate hearings.
- Studied the risk of illness due to antibiotic resistance brought about by contamination of food by food-borne pathogens.
- Evaluated the outlook of the U.S. and world wheat and sugar industries and the outlook for the North Dakota farm economy, analyzed the economics of corn-based and cellulosic ethanol production, and examined economics effects of the recent trend of the U.S. dollar depreciation on North Dakota agricultural exports and agricultural inflation.
- Ag engineers are exploring the use of sugar beet pulp for cellulosic ethanol production.
- Characterized and tested canola meal protein composition for use in biocomposite materials and other industrial bioproducts. Higher value use of canola protein would benefit producers and processors.



NDSU continues to research and breed canola varieties to produce higher oil content and quality, as well as resin and meal properties.

IMPACTS: North Dakota Agricultural Experiment Station

- High throughput analysis of canola seed identified a line that produced 12 percent more oil per acre than existing commercial hybrids.
- Epoxy resins from canola oil for use in composite materials are being produced using a green, toluene method. The resins may be blended at up to 35 percent with synthetic epoxy resin.
- Evaluated water mass balance of drained and undrained fields, with emphases on validation of evapotranspiration estimates by satellite-based remote sensing model.
- NDAWN assists growers and many other agricultural sectors with information that allows better decisions to be made for enhanced crop productivity.
- Evaluated differences in land management on carbon sequestration in soil profiles on the upland landscape component adjacent to wetlands.
- Studied the effects of tile drainage and subsequent subirrigation on crop productivity and surface and subsurface water quality.
- Evaluated more rapid tests to predict bread-making quality and evaluated the suitability of new technologies to screen early generation germplasm.
- Characterized the quality of soybeans for soy food for developing new markets in Southeast and East Asia.
- Developed models to predict how moisture, relative humidity, temperature and time affect the extraction of soy proteins in soymilk and tofu quality.
- Evaluated the fractionated components of many crop commodities grown in North Dakota for functional and nutraceutical ingredients.
- Flaxseed is a significant source of omega-3 lipids, which has been shown to reduce certain forms of cancer.



The North Dakota Agricultural Weather Network has added an irrigation scheduling program.

Executive Recommendation 2009-11

NDSU Agriculture and University Extension
 North Dakota Agricultural Experiment Station and NDSU Extension Service

2009-11 General Fund Executive Recommendation
NDSU Research and Extension

	NDSU Extension Service	ND Agricultural Experiment Station	Northern Crops Institute	Totals
Costs to continue FY09 salary increases	291,554	824,234	21,290	1,137,078
Compensation package (5% per year)	2,019,336	4,303,649	111,916	6,434,901
EXT #1 – Crop disease management	220,000			220,000
EXT #2 – Extension operating	300,000			300,000
AES #1 – Greenhouse utilities		480,000		480,000
AES #2 – Extraordinary repairs		600,000		600,000
AES #3 – Pulse, oilseed and wheat quality and product evaluation		1,100,000		1,100,000
Milling specialist			160,000	160,000
Operating expenses			20,197	20,197
Totals	\$2,830,890	\$7,307,883	\$313,403	\$10,452,176
One-time funding – deferred maintenance		500,000		
One-time funding – IVN equipment	132,000			
Capital construction projects				
- Greenhouse		11,450,400		
- Beef Research Facility		2,612,400		
- REC Renovations		2,937,200		
North Central		624,000		
Williston		1,680,000		
Langdon		144,000		
Dickinson		489,200		

Given to Senate

General Fund —
Extension Service, Main and Branch Research Centers and
Northern Crops Institute

Reconciliation of 2007-09 Original Appropriation to 2009-11 Executive Recommendation (SB 2020)

	(1) Extension Service	(2) Main Research Center	(3) Branch Research Centers	(4) NCI	(5) Total
2007-09 Original Appropriation	\$18,402,113	\$44,235,584	\$11,301,508	\$1,143,312	\$75,082,517
Less amount used in 2005-07, per emergency clause			(2,120)		(2,120)
Transfer from Main Research Center to Extension Service and Branch Research Centers (1% Salary Increase)	110,077	(184,386)	66,803	7,506	-
2007-09 Adjusted Appropriation	18,512,190	44,051,198	11,366,191	1,150,818	75,080,397
Base Adjustments:					
2007-09 One-time funding, net of emergency clause		(8,007,750)	(697,880)	(25,000)	(8,730,630)
2007-09 Adjusted Appropriation, Less Base Adjustments	18,512,190	36,043,448	10,668,311	1,125,818	66,349,767
Increases (decreases) included in base budget request:					
Cost to continue FY2009 salary increases	291,554	646,460	177,774	21,290	1,137,078
Cost of 2009-11 capital bond payments		421,789	149,634		571,423
2009-11 Base General Fund Request	18,803,744	37,111,697	10,995,719	1,147,108	68,058,268
Executive Recommendation Increases (Decreases):					
Compensation package (5% per year) and health insurance increases	2,019,336	3,397,178	906,471	111,916	6,434,901
NCI and SBARE Initiatives ¹	520,000	2,180,000		180,197	2,880,197
One-time funding ²	132,000	500,000			632,000
2009-11 capital projects request		17,000,000			17,000,000
Total Increases (Decreases) to Budget Request	2,671,336	23,077,178	906,471	292,113	26,947,098
2009-11 Executive Recommendation - General Fund	21,475,080	60,188,875	11,902,190	1,439,221	95,005,366
Increase (Decrease) From 2007-09 Adjusted Appropriation, Less Base Adjustments	\$2,962,890	\$24,145,427	\$1,233,879	\$313,403	\$28,655,599

¹The following SBARE initiatives and NCI increases were funded (all base funding increases):

Extension - \$220,000 Crop disease management (.3 FTE Carrington, .7 FTE Langdon); \$300,000 Extension operating support [Total requested for all Extension initiatives = \$4,442,926]

Main Research - \$480,000 Greenhouse utilities; \$600,000 Extraordinary repairs base; \$1.1 million Pulse, oilseed & wheat quality and product evaluation [Total requested for all Research Centers = \$8,243,996]

NCI - \$160,000 Milling specialist; \$20,197 Operating expenses [Total requested = \$270,197]

²One-time funding includes the following:

Extension - \$132,000 IVN equipment replacement [Total requested = \$132,000]

Main Research - \$500,000 Deferred maintenance [Total requested = \$2,214,850]

NDSU Agriculture and University Extension

North Dakota Agricultural Experiment Station and NDSU Extension Service

Other Funds —

**Extension Service, Main and Branch Research Centers,
Northern Crops Institute and Agronomy Seed Farm**

Reconciliation of 2007-09 Original Appropriation to 2009-11 Executive Recommendation (SB 2020)

	(1) Extension Service	(2) Main Research Center	(3) Branch Research Centers	(4) NCI	(5) Agronomy Seed Farm	(6) Total
2007-09 Original Other Fund Appropriation	\$23,863,722	\$43,100,764	\$13,715,511	\$1,479,657	\$1,230,162	\$83,389,816
2005-07 capital assets carryover		7,000,000	366,623			7,366,623
Transfer from Main Research Center to Extension Service and Branch Research Centers	160,819	(648,597)	479,693	4,671	3,414	-
2007-09 Adjusted Appropriation	24,024,541	49,452,167	14,561,827	1,484,328	1,233,576	90,756,439
Increases (decreases) included in budget request:						
Costs to continue FY2009 salary increases	280,645	2,729,423	1,072,008	98,128	26,929	4,207,133
2005-07 Capital projects carryover		(7,000,000)	(366,623)			(7,366,623)
2007-09 Capital projects		(1,000,000)	(701,000)			(1,701,000)
2009-11 Capital projects			350,000			350,000
Other changes in estimated income	(70,000)	(995,516)	(960,384)	(36,500)	(26,000)	(2,088,400)
Total requested increases (decreases)	210,645	(6,266,093)	(605,999)	61,628	929	(6,598,890)
2009-11 Other Funds Request	24,235,186	43,186,074	13,955,828	1,545,956	1,234,505	84,157,549
Executive Recommendation Increases (Decreases):						
Compensation package (5% per year) and health insurance increases	1,693,691	1,627,193	310,988	52,309	40,733	3,724,914
Total Increases (Decreases) to Budget Request	1,693,691	1,627,193	310,988	52,309	40,733	3,724,914
2009-11 Executive Recommendation - Other Funds	\$25,928,877	\$44,813,267	\$14,266,816	\$1,598,265	\$1,275,238	\$87,882,463
Increase (Decrease) from 2007-09 Adjusted Appropriation	\$ 1,904,336	\$ (4,638,900)	\$ (295,011)	\$ 113,937	\$ 41,662	\$ (2,873,976)

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Bowman

Subtract

\$210,000	Oil seed faculty position
120,000	Technical position
<u>91,724</u>	Operating for the 2 positions
\$421,724	Total

Add

\$180,000	Forage Agronomist
40,000	Operating
210,000	Wheat rust pathologist
40,000	Operating
65,000	Irrigation specialist
180,000	4-H leadership
40,000	Operating
40,000	Junior gardener
<u>125,000</u>	Parenting resource center
\$930,000	Total

Agents in training

\$500,000 + \$100,000

Agribusiness and rural development

\$200,000 + 40,000

Oil trust - Dickinson

\$925,000

Budget Reconciliation

NDSU Agriculture and University Extension
 North Dakota Agricultural Experiment Station and NDSU Extension Service

Given to House

General Fund —
Extension Service, Main and Branch Research Centers and
Northern Crops Institute

Summary of Senate Amendments to SB 2020

	(1) Extension Service	(2) Main Research Center	(3) Branch Research Centers	(4) NCI	(5) Total
2007-09 Adjusted Appropriation, Less Base Adjustments	18,512,190	36,043,448	10,668,311	1,125,818	66,349,767
Executive Recommendation Increases (Decreases):					
Cost to continue FY2009 salary increases	291,554	646,460	177,774	21,290	1,137,078
Cost of 2009-11 capital bond payments		421,789	149,634		571,423
Compensation package (5% per year and health insurance increases ¹)	2,019,336	3,397,178	906,471	111,916	6,434,901
NCI and SBARE initiatives (1)	520,000	2,180,000		180,197	2,880,197
One-time funding (2)	132,000	500,000			632,000
2009-11 capital projects request		17,000,000			17,000,000
Total Increases-Executive Recommendation	2,962,890	24,145,427	1,233,879	313,403	28,655,599
General Fund per Executive Recommendation	21,475,080	60,188,875	11,902,190	1,439,221	95,005,366
Senate Amendments:					
Adjustments to Base Funding:					
Adds funding for Soil Conservation Committee	100,000				100,000
Subtotal Base Funding Adjustments	100,000	-	-	-	100,000
Adjustments to One-time Funding:					
Reduces funding for IVN replacement (2)	(50,000)				(50,000)
Reduces funding for deferred maintenance (2)		(50,000)			(50,000)
Subtotal One-time Funding Adjustments	(50,000)	(50,000)	-	-	(100,000)
Total Senate Amendments	50,000	(50,000)	-	-	-
General Fund per Engrossed SB2020	\$21,525,080	\$60,138,875	\$11,902,190	\$1,439,221	\$95,005,366

¹The following SBARE initiatives and NCI increases were funded (all base funding increases):

Extension - \$220,000 Crop disease management (.3 FTE Carrington, .7 FTE Langdon); \$300,000 Extension operating support (Total requested for all Extension initiatives = \$4,442,926)

Main Research - \$480,000 Greenhouse utilities; \$600,000 Extraordinary repairs base; \$1.1 million Pulse, oilseed & wheat quality and product evaluation (Total requested for all Research Centers = \$8,243,996)

NCI - \$160,000 Milling specialist; \$20,197 Operating expenses (Total requested = \$270,197)

²One-time funding includes the following:

Extension - \$132,000 IVN equipment replacement (Total requested = \$132,000)

Main Research - \$500,000 Deferred maintenance (Total requested = \$2,214,850)

Budget Reconciliation

NDSU Agriculture and University Extension
 North Dakota Agricultural Experiment Station and NDSU Extension Service

Other Funds —

**Extension Service, Main and Branch Research Centers,
 Northern Crops Institute and Agronomy Seed Farm**

Reconciliation of 2007-09 Original Appropriation to 2009-11 Executive Recommendation (SB 2020)

	(1)	(2)	(3)	(4)	(5)	(6)
	Extension Service	Main Research Center	Branch Research Centers	NCI	Agronomy Seed Farm	Total
2007-09 Adjusted Appropriation	24,024,541	49,452,167	14,561,827	1,484,328	1,233,576	90,756,439
Executive Recommendation						
Increases (Decreases):						
Cost to continue FY2009 salary increases	280,645	2,729,423	1,072,008	98,128	26,929	4,207,133
Compensation package (5% per year and health insurance increases"	1,693,691	1,627,193	310,988	52,309	40,733	3,724,914
Increase (decrease) capital projects & carryover		(8,000,000)	(717,623)			(8,717,623)
Other changes in estimated income	(70,000)	(995,516)	(960,384)	(36,500)	(26,000)	(2,088,400)
Total Increases (Decreases) to Budget Request	1,904,336	(4,638,900)	(295,011)	113,937	41,662	(2,873,976)
Other Funds per Executive Recommendation	25,928,877	44,813,267	14,266,816	1,598,265	1,275,238	87,882,463
Senate Amendments:						
Adjustments to Base Funding:						
Adds special fund authority for industrial hemp study		200,000				200,000
Subtotal Base Funding Adjustments	-	200,000	-	-	-	200,000
Adjustments to One-time Funding:						
Subtotal One-time Funding Adjustments	-	-	-	-	-	-
Total Senate Amendments	-	200,000	-	-	-	200,000
Other Fund per Engrossed SB2020	\$25,928,877	\$45,013,267	\$14,266,816	\$1,598,265	\$1,275,238	\$88,082,463

given to senate

**NORTH DAKOTA UNIVERSITY SYSTEM
ANALYSIS OF 2009-11 EXECUTIVE RECOMMENDATION BY LINE ITEM (SB 2020)
(NORTHERN CROPS INSTITUTE
EXTENSION SERVICE, RESEARCH STATIONS & AGRONOMY SEED FARM)**

	2009-11 Exec Recommendation	2007-09 Adj Appropriation	Incr (Decrease) 2007-09	\$\$\$ change	% change
Northern Crops Institute					
Operations	3,037,486	2,635,146	402,340	402,340	15.3%
Total all funds	3,037,486	2,635,146	402,340	402,340	15.3%
Less estimated income	1,598,265	1,484,328	113,937	113,937	7.7%
Total general fund appropriation	1,439,221	1,150,818	288,403	288,403	25.1%
Extension Service					
Operations	46,666,157	41,798,931	4,867,226	4,867,226	11.6%
Soil Conservation Committee	737,800	737,800	0	0	0.0%
Total all funds	47,403,957	42,536,731	4,867,226	4,867,226	11.4%
Less estimated income	25,928,877	24,024,541	1,904,336	1,904,336	7.9%
Total general fund appropriation	21,475,080	18,512,190	2,962,890	2,962,890	16.0%
Main Research Station					
Operations	87,080,353	77,495,615	9,584,738	9,584,738	12.4%
Deferred Maintenance	500,000	100,000	400,000	400,000	400.0%
Capital Bond Payments	421,789	0	421,789	421,789	100.0%
Subtotal all funds	88,002,142	77,595,615	10,406,527	10,406,527	13.4%
Less estimated income	44,813,267	41,452,167	3,361,100	3,361,100	8.1%
Subtotal general fund appropriation	43,188,875	36,143,448	7,045,427	7,045,427	19.5%
Major Capital Projects	17,000,000	8,907,750	8,092,250	8,092,250	90.8%
2005-07 Capital Assets Carryover	0	7,000,000	(7,000,000)	(7,000,000)	-100.0%
Subtotal all funds	17,000,000	15,907,750	1,092,250	1,092,250	6.9%
Less estimated income	0	8,000,000	(8,000,000)	(8,000,000)	-100.0%
Subtotal general fund appropriation	17,000,000	7,907,750	9,092,250	9,092,250	115.0%
Total:					
Total all funds	105,002,142	93,503,365	11,498,777	11,498,777	12.3%
Less estimated income	44,813,267	49,452,167	(4,638,900)	(4,638,900)	-9.4%
Total general fund appropriation	60,188,875	44,051,198	16,137,677	16,137,677	36.6%

Given to Senate

**NORTH DAKOTA UNIVERSITY SYSTEM
ANALYSIS OF 2009-11 EXECUTIVE RECOMMENDATION BY LINE ITEM (SB 2020)
(NORTHERN CROPS INSTITUTE
EXTENSION SERVICE, RESEARCH STATIONS & AGRONOMY SEED FARM)**

	2009-11 Exec Recommendation	2007-09 Adj Appropriation	Incr (Decr) 06/07-2007/09	\$% change	2008-09 % change
Branch Research Centers					
Dickinson Research Center	5,012,580	5,949,944	(937,364)	-15.8%	
Central Grasslands Research Center	2,283,694	2,176,051	107,643	4.9%	
Hettinger Research Center	2,995,155	2,452,299	542,856	22.1%	
Langdon Research Center	2,091,572	1,606,303	485,269	30.2%	
North Central Research Center	3,881,226	3,037,142	844,084	27.8%	
Williston Research Center	2,857,183	3,243,080	(385,897)	-11.9%	
Carrington Research Center	6,547,962	5,697,696	850,266	14.9%	
Capital Bond Payments	149,634	0	149,634	100.0%	
Subtotal all funds	25,819,006	24,162,515	1,656,491	6.9%	
Less estimated income	13,916,816	13,494,204	422,612	3.1%	
Subtotal general fund appropriation	11,902,190	10,668,311	1,233,879	11.6%	
Major Capital Projects	350,000	1,398,880	(1,048,880)	-75.0%	
2005-07 Capital Assets Carryover	0	366,623	(366,623)	-100.0%	
Subtotal all funds	350,000	1,765,503	(1,415,503)	-80.2%	
Less estimated income	350,000	1,067,623	(717,623)	-67.2%	
Subtotal general fund appropriation	0	697,880	(697,880)	-100.0%	
Total:					
Total all funds	26,169,006	25,928,018	240,988	0.9%	
Less estimated income	14,266,816	14,561,827	(295,011)	-2.0%	
Total general fund appropriation	11,902,190	11,366,191	535,999	4.7%	
Agromony Seed Farm:					
Operations	1,275,238	1,233,576	41,662	3.4%	
Subtotal all funds	1,275,238	1,233,576	41,662	3.4%	
Less estimated income	1,275,238	1,233,576	41,662	3.4%	
Subtotal general fund appropriation	0	0	0	0.0%	

given to Senate

**NORTH DAKOTA UNIVERSITY SYSTEM
ANALYSIS OF 2009-11 EXECUTIVE RECOMMENDATION BY LINE ITEM (SB 2020)
(NORTHERN CROPS INSTITUTE
EXTENSION SERVICE, RESEARCH STATIONS & AGRONOMY SEED FARM)**

Incl. Dec 11/2007-09
\$ change

2007-09 Adj
Appropriation

2009-11 Exec
Recommendation

TOTAL-ALL

	2009-11 Exec Recommendation	2007-09 Adj Appropriation	Incl. Dec 11/2007-09 \$ change	% change
Operating, Extraordinary Repairs, Deferred Maintenance & Capital Bond Payments (1):				
General Fund:				
Operating	\$ 75,593,478	\$ 65,634,302	\$ 9,959,176	15.2%
Extraordinary Repairs - Main Research Center	1,340,465	740,465	600,000	81.0%
Deferred Maintenance-Main Research Center	500,000	100,000	400,000	400.0%
Capital Bond Payments-Main, Central Grasslands and North Central REC (2)	571,423	-	571,423	100.0%
Total General Fund	78,005,366	66,474,767	11,530,599	17.3%
Total Special Funds	87,532,463	81,688,816	5,843,647	7.2%
Total All Funds	163,125,941	147,323,118	15,802,823	10.7%
Major Capital Projects & Carryover:				
Total General Fund	17,000,000	8,605,630	8,394,370	97.5%
Total Special Funds	350,000	9,067,623	(8,717,623)	-96.1%
Total All Funds	17,350,000	17,673,253	(323,253)	-1.8%
TOTAL-ALL:				
Total General Fund	95,005,366	75,080,397	19,924,969	26.5%
Total Special Funds	87,882,463	90,756,439	(2,873,976)	-3.2%
Total All Funds	\$ 182,887,829	\$ 165,836,836	\$ 17,050,993	10.3%

1/ SB 2020 includes single line-item budgets for the NDSU Main & Branch Research Stations and Agronomy Seed Farm, although major capital projects, extraordinary repairs and capital bond payments are listed separately for this analysis.
2/ Capital bond payments began in the 2007-09 biennium, but were not included in the 07-09 legislative appropriation. The 2007-09 payments, totaling \$136,153, are included in the Governor's deficiency appropriation recommendation.

given to house

**NORTH DAKOTA UNIVERSITY SYSTEM
ANALYSIS OF 2009-11 ENGROSSED SB2020 BY LINE ITEM
(NORTHERN CROPS INSTITUTE
EXTENSION SERVICE, RESEARCH STATIONS & AGRONOMY SEED FARM)**

	2009-11 Engrossed SB2020	2007-09 Adj Appropriation	Line Item Over 2007-09	% Change
Northern Crops Institute				
Operations	3,037,486	2,635,146	402,340	15.3%
Total all funds	3,037,486	2,635,146	402,340	15.3%
Less estimated income	1,598,265	1,484,328	113,937	7.7%
Total general fund appropriation	1,439,221	1,150,818	288,403	25.1%
Extension Service				
Operations	46,616,157	41,798,931	4,817,226	11.5%
Soil Conservation Committee	837,800	737,800	100,000	13.6%
Total all funds	47,453,957	42,536,731	4,917,226	11.6%
Less estimated income	25,928,877	24,024,541	1,904,336	7.9%
Total general fund appropriation	21,525,080	18,512,190	3,012,890	16.3%
Main Research Station				
Operations	87,280,353	77,495,615	9,784,738	12.6%
Deferred Maintenance	450,000	100,000	350,000	350.0%
Capital Bond Payments	421,789	0	421,789	100.0%
Subtotal all funds	88,152,142	77,595,615	10,556,527	13.6%
Less estimated income	45,013,267	41,452,167	3,561,100	8.6%
Subtotal general fund appropriation	43,138,875	36,143,448	6,995,427	19.4%
Major Capital Projects	17,000,000	8,907,750	8,092,250	90.8%
2005-07 Capital Assets Carryover	0	7,000,000	(7,000,000)	-100.0%
Subtotal all funds	17,000,000	15,907,750	1,092,250	6.9%
Less estimated income	0	8,000,000	(8,000,000)	-100.0%
Subtotal general fund appropriation	17,000,000	7,907,750	9,092,250	115.0%
Total:				
Total all funds	105,152,142	93,503,365	11,648,777	12.5%
Less estimated income	45,013,267	49,452,167	(4,438,900)	-9.0%
Total general fund appropriation	60,138,875	44,051,198	16,087,677	36.5%

NORTH DAKOTA UNIVERSITY SYSTEM
ANALYSIS OF 2009-11 ENGROSSED SB2020 BY LINE ITEM
(NORTHERN CROPS INSTITUTE
EXTENSION SERVICE, RESEARCH STATIONS & AGRONOMY SEED FARM)

*9/10/09
to Howe*

	2009-11 Engrossed SB2020	2007-09 Adj. Appropriation	Incr. (Decrease) over 2007-09
TOTAL-ALL:			\$\$\$ change %% change

Operating, Extraordinary Repairs, Deferred Maintenance & Capital Bond Payments (1):

General Fund:	\$	\$	\$	
Operating				
Extraordinary Repairs - Main Research Center	75,643,478	65,634,302	10,009,176	15.2%
Deferred Maintenance-Main Research Center	1,340,465	740,465	600,000	81.0%
Capital Bond Payments-Main, Central Grasslands and North Central REC (2)	450,000	100,000	350,000	350.0%
Total General Fund	571,423	-	571,423	100.0%
Total Special Funds	78,005,366	66,474,767	11,530,599	17.3%
Total All Funds	87,732,463	81,688,816	6,043,647	7.4%
	163,375,941	147,323,118	16,052,823	10.9%

Major Capital Projects & Carryover:

Total General Fund	17,000,000	8,605,630	8,394,370	97.5%
Total Special Funds	350,000	9,067,623	(8,717,623)	-96.1%
Total All Funds	17,350,000	17,673,253	(323,253)	-1.8%

TOTAL-ALL:

Total General Fund	95,005,366	75,080,397	19,924,969	26.5%
Total Special Funds	88,082,463	90,756,439	(2,673,976)	-2.9%
Total All Funds	\$ 183,087,829	\$ 165,836,836	\$ 17,250,993	10.4%

1/ SB 2020 includes single line-item budgets for the NDSU Main & Branch Research Stations and Agronomy Seed Farm, although major capital projects, extraordinary repairs and capital bond payments are listed separately for this analysis.

2/ Capital bond payments began in the 2007-09 biennium, but were not included in the 07-09 legislative appropriation. The 2007-09 payments, totaling \$136,153, are included in the Governor's deficiency appropriation recommendation.

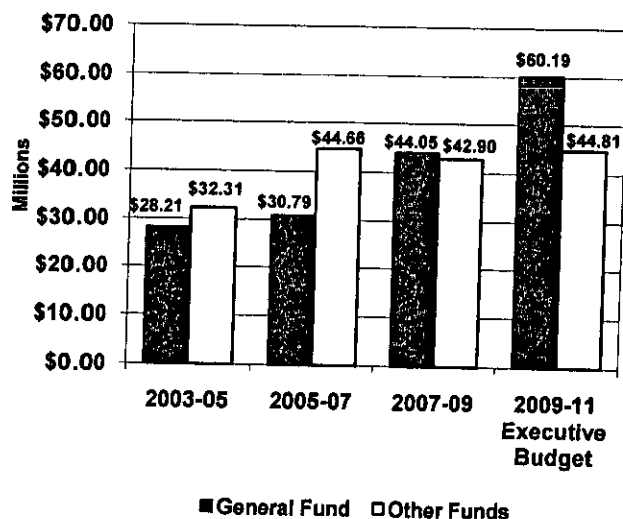
**Department 640 - NDSU Main Research Center
 Senate Bill No. 2020**

	FTE Positions	General Fund	Other Funds	Total
2009-11 Executive Budget	353.39	\$60,188,875	\$44,813,267	\$105,002,142
2007-09 Legislative Appropriations	347.39 ²	44,051,198	42,902,167	86,953,365 ¹
Increase (Decrease)	6.00	\$16,137,677	\$1,911,100	\$18,048,777

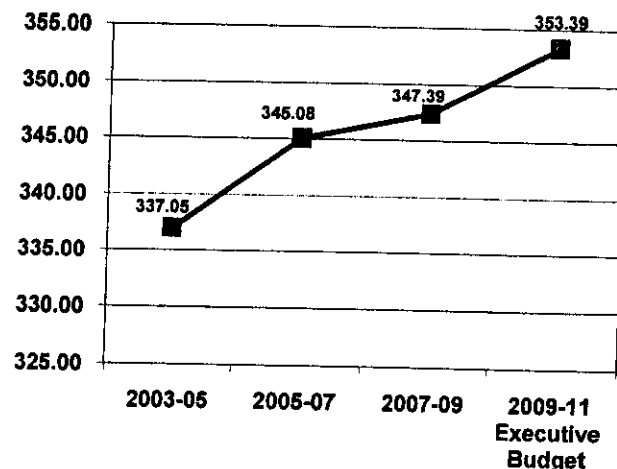
¹The Legislative Assembly appropriated \$829,669, of which \$438,129 is from the general fund and \$391,540 is from special funds, to the Main Research Center to provide agricultural research and extension agency employees an additional 1 percent per year salary increase each year of the biennium. The Main Research Center was to allocate the funding between the Main Research Center, branch research centers, North Dakota State University (NDSU) Extension Service, Northern Crops Institute, and Agronomy Seed Farm. The total salary increase provided is 5 percent effective July 1, 2007, and 5 percent effective July 1, 2008, which is the same increase provided to the North Dakota University System. The 2007-09 legislative appropriation amounts for the Main Research Center has been reduced by \$382,983, of which \$184,386 is from the general fund, for the funding allocated from the Main Research Center to the branch research centers, the NDSU Extension Service, the Northern Crops Institute, and the Agronomy Seed Farm for the additional salary increases. The 2007-09 appropriation amounts do not include a carryover special funds appropriation of \$7,000,000 for the greenhouse project nor have they been reduced for the \$450,000 of special funds authority transferred from the Main Research Center to the branch research centers.

²The 2007-09 appropriation was based on 348.88 FTE positions. Section 6 of House Bill No. 1020 (2007) authorizes the State Board of Higher Education to adjust FTE positions as needed. A total of 1.49 FTE positions were removed pursuant to this section and reported to the Office of Management and Budget.

Agency Funding



FTE Positions



Ongoing and One-Time General Fund Appropriations

	Ongoing General Fund Appropriation	One-Time General Fund Appropriation	Total General Fund Appropriation
2009-11 Executive Budget	\$42,688,875	\$17,500,000	\$60,188,875
2007-09 Legislative Appropriations	36,043,448	8,007,750	44,051,198
Increase (Decrease)	\$6,645,427	\$9,492,250	\$16,137,677

First House Action

Attached is a summary of first house changes.

**Executive Budget Highlights
 (With First House Changes in Bold)**

	General Fund	Other Funds	Total
1. Removes one-time funding from the permanent oil tax trust fund provided in the 2007-09 biennium		(\$750,000)	(\$750,000)
2. Removes one-time funding for deferred maintenance provided in the 2007-09 biennium	(\$100,000)		(\$100,000)

3. Removes 2007-09 biennium funding for extraordinary repairs	(\$740,465)		(\$740,465)
4. Removes 2007-09 biennium funding for equipment over \$5,000	(\$405,000)	(\$2,650,000)	(\$3,055,000)
5. Removes 2007-09 biennium capital projects, including headquarters office building addition and renovations (\$907,750), the research greenhouse complex (\$7,000,000), and the beef research facility (\$1,000,000)	(\$7,907,750)	(\$1,000,000)	(\$8,907,750)
6. Provides base funding for extraordinary repairs	\$740,465		\$740,465
7. Increases base funding for extraordinary repairs and deferred maintenance to provide total base funding of \$1,340,465	\$600,000		\$600,000
8. Provides funding for equipment over \$5,000	\$405,000	\$1,954,484	\$2,359,484
9. Provides funding for capital bond payments	\$421,789		\$421,789
10. Increases funding for utilities to provide a total of \$702,300. The increase is related to additional greenhouse utilities.	\$480,000		\$480,000
11. Adds 6 FTE academic experiment staff positions for pulse, oilseed, and wheat quality and product evaluation, including \$200,000 for operating expenses	\$1,180,484		\$1,180,484
12. Provides one-time funding for the research greenhouse complex	\$11,450,400		\$11,450,400
13. Provides one-time funding for the beef research facility	\$2,612,400		\$2,612,400
14. Provides one-time funding for renovations and additions to the North Central Research Center (\$624,000), the Williston Research Center (\$1,680,000), the Langdon Research Center (\$144,000), and the Dickinson Research Center (\$489,200)	\$2,937,200		\$2,937,200
15. Provides one-time funding for deferred maintenance to provide a total of \$1,840,465. The Senate reduced this funding by \$50,000.	\$500,000		\$500,000

Other Sections in Bill

Additional income appropriation - Section 3 provides that, in addition to the amount appropriated as other funds, any other income from federal acts, private grants, gifts, and donations, or from other sources received by the Main Research Center, is appropriated for the purposes designated in the act, grant, gift, or donation for the 2009-11 biennium.

Deferred maintenance transfer authority - Section 4 authorizes the Main Research Center to transfer from the deferred maintenance line item to the Main Research Center line item amounts necessary to address extraordinary repair needs. Any amounts transferred must be reported to the director of the Office of Management and Budget.

Transfer authority - Section 5 authorizes the transfer of appropriation authority between the Main Research Center, the branch research centers; NDSU Extension Service, and Northern Crops Institute and provides that any transfers be reported to the Office of Management and Budget.

FTE position adjustments - Section 6 authorizes the State Board of Higher Education to adjust or increase FTE positions for the Main Research Center and provides that any adjustments be reported to the Office of Management and Budget.

Unexpended general fund - Excess income - Section 7 authorizes the continuation of any unexpended general fund appropriation authority or excess income received by the Main Research Center to the 2011-13 biennium.

Appropriations continued from 2007-09 biennium - Section 8 provides that 2007-09 appropriations for the research greenhouse complex project for the Main Research Center are not subject to the provisions of North Dakota Century Code Section 54-44.1-11, and any unspent authority from this appropriation or related revenues are available and may be spent during the biennium beginning July 1, 2009, and ending June 30, 2011.

Emergency - Section 9 provides the appropriation for industrial hemp research (\$200,000), deferred maintenance (\$450,000), the research greenhouse complex (\$11,450,400), the beef research facility (\$2,612,400), the Dickinson headquarters facility parking lot and landscaping (\$350,000), and the renovations and additions to the North Central Research Center (\$624,000), the Williston Research Center (\$1,680,000), the Langdon Research Center (\$144,000), and the Dickinson Research Center (\$489,200) are emergencies.

Continuing Appropriations

No continuing appropriations for this agency.

Major Related Legislation

No major legislation is currently under consideration affecting this agency.

ATTACH:1

AGENCY OVERVIEW

Main Research Station

North Dakota Agricultural Experiment Station

Agency Statutory Authority

North Dakota Constitution, Article XIX; North Dakota Century Code Chapter 4-05.1

Agency Description

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

Agency Mission Statement

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

Agency Performance Measures

Per NDCC 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 19, 2008. The report it 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.

Agency Future Critical Issues

The NDAES continues to face the challenges in sustaining an infrastructure in which to do high-quality research. Shortfalls occur in good-quality greenhouse and plant research facilities, especially those for transgenic plants that will be more frequently introduced, as well as much needed animal research space for nutrition trials, genetic studies and meat quality.

Studies on transgenic crops will increase as methods to incorporate disease, insect and environmental stress resistance are more available. Our scientists travel farther each year in the state to conduct site-specific research to control wheat and barley scab (an ongoing problem) and other important yield-limiting diseases of crop commodities grown in the state.

www.ndsu.edu/legislators

NDSU
North Dakota State University
**ND Agricultural
Experiment Station**

AGENCY OVERVIEW: Main Research Station

Major problems occur in acquisition of costly field and laboratory equipment that cannot be obtained through grants. The NDAES has insufficient laboratory space to meet the needs of 21st century agriculture. North Dakota is becoming increasingly urban, and urban populations require some products and services that are different than those needed by livestock and crop producers. Continual efforts to improve horticultural research are occurring, and the NDAES is addressing the needs of campus research and demonstration plots. However, these efforts need to continue to allow the NDAES to serve this segment of agriculture well.

Increased focus on food safety and on natural resources management provide opportunities for growth and response to pressing national needs. Food safety and natural resources will attract doctoral students who will enhance research efforts significantly. This is particularly needed when quality control feedlot trials and consistent product evaluation is required for scientific evaluations. The Beef Systems Center of Excellence will provide much-needed information to beef cattle producers on how to improve herds for improved meat quality traits.

Our strength is in our researchers, but they are too few to cover all of the critical issues facing North Dakota agriculture, and the lack of adequate numbers precludes important faculty development. Through the years, faculty positions have been lost, and lost positions cannot be redirected. For some units, additional technical support would increase productivity of researchers significantly.

Faculty are responsible for attracting external funding, and their success during this biennium is impressive; however, the commensurate effort to write more and larger grants is apparent, and we have concerns about additional pressures that fundraising have on faculty burnout.

Rural populations continue to decline, and the dynamics of the farming population are changing. Economic realities often place the NDAES in a position of responding rather than being proactive in effecting positive change.

Communication to help sustain farmers/communities is critical, and the need to translate research information into useful formats is apparent. In addition to building the technologies for communication, we need to promote the development of high-quality information that is transmitted by the technologies.

Branch Research Centers

NDSU Agriculture and University Extension
North Dakota Agricultural Experiment Station

FACILITIES

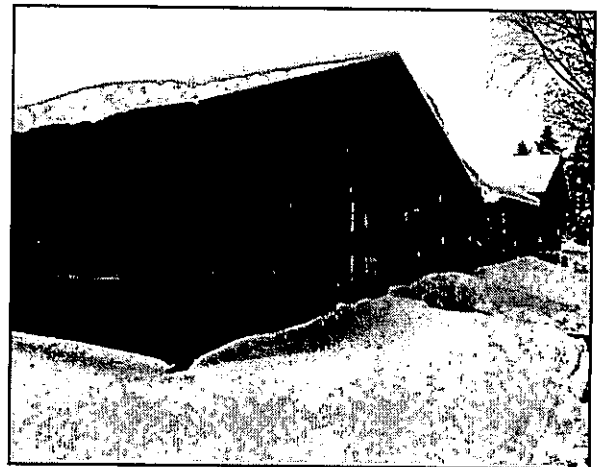
Headquarters Additions/Renovations

Carrington Research Extension Center

Total Project Costs:

\$614,600

From the funding provided in the 2007-09 legislative session, the Carrington Research Extension Center expanded the headquarters facility by 3,500 square feet. The addition, was substantially completed February 2009, provides six more offices, a room for videoconferencing and computer-based instruction, a conference room and a storage area for educational equipment. This expansion empowers the CREC to sustain and expand NDSU's diverse research and Extension programs to the dynamic agricultural constituency of the state and region.



Hettinger Research Extension Center

Total Project Costs:

\$293,150

A 1,400-square-foot addition added eight offices to the HREC complex. The addition was funded in the 2007-09 legislative session and was substantially completed February 2009. The addition allows the HREC to continue to provide agricultural programming to the landowners and producers of the region through additional working space for post-doctoral students, graduate students and additional scientists.

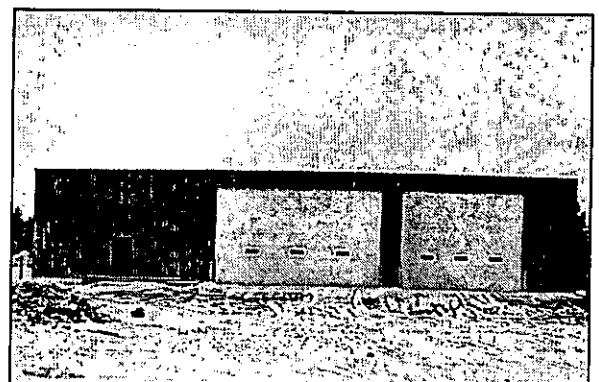


North Central Research Extension Center Equipment Storage and Maintenance Facility

Total Project Costs:

\$300,000

The NDSU North Central Research Extension Center received \$300,000 in funding during the 2007-09 legislative session to construct an equipment storage and maintenance facility. The 80-foot by 90-foot steel structure includes a heated floor shop area and was completed in January 2009.



Main Research Station

2009-11 Needs-based Budget

as Ranked by SBARE Aug. 1, 2008

SBARE ranked all of the projects for Main Station and branch stations together since many of the projects are joint efforts. Please refer to the ranked projects by reviewing the narrative in all of the agencies.

No. 1 ranked: Greenhouse Utilities

\$439,996 Total General Fund Increase

The NDAES is requesting funding for the estimated costs of utilities for the current greenhouse project.

No. 2 ranked: Extraordinary Repairs

\$600,000 Total General Fund Increase

The NDAES, which includes the Main Station and the RECs, has buildings worth \$25,009,718 and infrastructure valued at \$8,519,250. The NDAES has \$740,465 in continuing funds to address deferred maintenance projects at each of the RECs and Main Station farms. In addition, \$100,000 in one-time funding was added to this fund. Maintenance projects that receive high priority are those that affect employee safety and critical repairs. Insufficient funding is available for routine or scheduled maintenance.

No. 3 ranked: Pulse, Oilseed and Wheat Quality and Product Evaluation

\$1,100,000 Total General Fund Increase

\$420,000 salary and fringe benefits, 2.0 new FTE, Main Station

\$480,000 salary and fringe benefits, 4.0 new FTE, Main Station

\$200,000 operating

Developing high-quality evaluation programs for legume, pulses and oilseeds would be an important component of the research activities at the NDAES. Activities in this area would be similar to the highly successful, but inadequately staffed and funded, high-quality evaluation programs for wheat, durum wheat and barley and would be of extreme importance to the breeding/genetics programs for these crop commodities as new varieties are being developed, tested and released. In addition to the quality-demanding food uses of these crops, the market for nonfood uses of these crops, particularly for industrial purposes, is very high. Alternate uses of crop commodities provide value-added opportunities for North Dakotans. Two scientists and four research specialists, with operating funds, at the Main Station (Cereal and Food Science in the School of Food Systems [SFS] and Plant Sciences) are needed for this activity to be successful.

No. 4 ranked: NDAWN

\$300,000 Total General Fund Increase

\$150,000 salary and fringe benefits, 1.0 new FTE, Main Station

\$150,000 operating for weather stations in North Dakota

This widely-used weather network is an extremely visible component of NDSU Agriculture. It is used heavily by both ag and non-ag entities throughout the state and can be accessed using either telephone or Internet. Combined with the NDAWN Web site are disease forecasting systems, which utilize the weather information and provide statistically based predictions of potential disease development. NDAWN and the disease forecasting systems have saved tens of millions of dollars through the years by alerting farmers to use protective pesticides if disease development is imminent or to not spray if weather conditions are not appropriate for disease development. NDAWN has suffered due to inconsistent and inadequate funding. In 2007-09, \$200,000 was added to support computer programming, which is vital to the basic functions of the network, with the remaining funds to help offset operations. Additional funds clearly are needed for operations and to create a second research specialist position for weather station maintenance as new equipment is being evaluated and additional sites are established (Soils in the School of Natural Resource Sciences [SNRS]).

NDSU Main Research Station

North Dakota Agricultural Experiment Station

No. 5 ranked: Crop Disease Management

\$754,000 Total General Fund Increase

Crop agriculture is very diverse in North Dakota. The state's farmers grow 42 crops and lead the nation in the production of 13 crop commodities. This crop production system provides opportunities for diversification, but also places great burdens on research activities with respect to crop improvement and crop protection. In surveys conducted by numerous commodity groups, diseases routinely are identified by growers as the leading problems for their respective crop, with weed pressure typically ranked second in importance. Diseases and weed pressures not only affect yield, but also product quality. The magnitude and consistency of crop yield and quality losses due to plant diseases is a persistent problem and continues to increase, particularly given the vagaries of the North Dakota growing season. The significance of disease losses to crop diversity is threatening the viability to sustain and expand the agricultural economy of the central and eastern regions of North Dakota.

\$390,000 Total General Fund Increase for Wheat Rust Pathologist

\$210,000 salary and fringe benefits, 1.0 new FTE, Main Station

\$120,000 salary and fringe benefits, 1.0 new FTE, Main Station

\$ 60,000 operating funds, Main Station

Wheat Rust Pathologist - A scientist, research specialist and operating funds at Main Station (Plant Pathology Department) to coordinate research efforts to identify/develop improved levels of resistance to new races of both wheat leaf and stem rust that threaten wheat production in the state. The position will work closely with existing wheat genetics and breeding programs to identify new sources of genetic resistance and to incorporate these resistance genes into new germplasm and varieties developed for North Dakota. Yield losses to leaf rust vary with environmental conditions, but approached a 2 percent loss (USDA estimate; \$40 million of a \$2 billion crop). A new form of stem rust (Ug99) that recently emerged from Africa can overcome most known sources of resistance. This rust race is migrating into Europe and scientists anticipate that the race soon will be found in North America. This research effort will focus on identifying and incorporating resistance to this new race into adapted materials.

\$200,000 Total General Fund Increase for Plant Pathologist

\$140,000 salary and fringe benefits, 0.7 new FTE, CREC

\$ 60,000 operating, CREC

Plant Pathologist - A scientist located at Carrington to coordinate and conduct research on sclerotinia and other diseases of major crops grown in central North Dakota, including wheat, barley, sunflower, soybean, canola, pea and other crops important to eastern and central North Dakota. Carrington is the ideal location for applied disease research on the many crops grown in the state. A scientist with expertise in plant pathology will enhance the ability of the researchers stationed at the CREC to effectively carry out controlled studies on disease management. *(Complements Extension initiative 1)*

\$164,000 Total General Fund Increase for Crop Disease Management

\$110,000 salary and fringe benefits, 1.0 new FTE, NCREC

\$ 54,000 salary and fringe benefits, 0.3 new FTE, LREC

Crop Disease Management - two research specialists, one at North Central and one at Langdon, to assist in research on crop diseases, including fusarium head blight (scab), aschochyta, black leg and other foliar and root diseases of the state's diverse crop complex. *(Complements Extension initiative 1)*

No. 6 ranked: Revolving Equipment Fund

\$450,000 Total General Fund Increase

This was established at the Main Station to enhance the equipment base. This fund, established in the 2007-09 biennium, provided \$355,000 for the biennium to address much needed equipment for the research activities being carried out at the Main Station. For that, the NDAES is extremely grateful. Having distributed these funds to three units, it is apparent that the level of funding is insufficient for all of the equipment needs that have gone unmet for many years. Increasing this revolving equipment fund would allow for more rapid replacement of antiquated equipment.

NDSU Main Research StationNorth Dakota Agricultural Experiment Station

No. 7 ranked: Forage Agronomist and Bioproducts Agronomists**\$540,000 Total General Fund Increase**

\$180,000 salary and fringe benefits, 1.0 new FTE, CGREC

\$240,000 salary and fringe benefits, 3.0 new FTE, CGREC and CREC

\$120,000 operating, CGREC and CREC

A scientist and research specialist at Central Grasslands REC (Streeter), with operating funds, will focus on developing cellulosic and other feedstocks for biofuels and high-value products. This requires research on perennial crops typically grown for livestock forage and research specialists at the Main Station. A bioproducts agronomist at Carrington, with operating funds, will focus on identifying efficient agronomic practices of annual and perennial crops that are utilized for bioproduct development. Numerous questions arise regarding type of crop, management, harvest and transportation for this different use.

No. 8 ranked: Soil Health**\$490,000 Total General Fund Increase**

\$210,000 salary and fringe benefits, 1.0 new FTE, Main Station

\$220,000 salary and fringe benefits, 2.0 new FTE, LREC and HREC

\$ 60,000 operating, Main Station, Langdon and HREC

Soils research at NDSU has declined due to reduced faculty numbers in the Soils unit. In the mid-1980s, approximately 23 faculty were in the Soils Department; today, the unit has nine faculty. This erosion of scientific expertise has placed a great strain on the ability of the unit to complete its mission of research, teaching and outreach. As a result, some areas of importance to alleviate problems affecting the state have not been studied adequately. Saline and sodic soils are examples of two such problems that need to be addressed. Saline and sodic soils have increased in the state, with estimates that 12.6 million acres are affected to at least some degree. Saline and sodic soils reduce crop yields, lower weight gain of livestock and affect water quality. Three researchers at the Main Station (Soils in SNRS), Langdon and Hettinger are needed to help address these issues. *(Complements Extension initiative 9)*

No. 9 ranked: Quality Research for Food and Nonfood Uses of North Dakota Crops**\$654,000 Total General Fund Increase**

\$294,000 salary and fringe benefits, 1.4 new FTE, Main Station

\$240,000 salary and fringe benefits, 2.0 new FTE, Main Station

\$120,000 operating, Main Station

Research to focus on carbohydrates, fats and oils for food, fuel and other high-value products. A scientist (Cereal and Food Sciences in the School of Food Systems [SFS]) and two research support staff (one in SNS and one in Ag and Biosystems Engineering) at the Main Station and one research specialist at Williston, with operating funds, will focus on processing of consumer and biobased food products and ingredients, adhesives and plastics from oilseed and protein meals, and utilization of coproducts for food and nonfood uses for value-added enterprises. The WREC plans are to produce biodiesel from all the oilseed crops grown in North Dakota to document the oil quality characteristics from each oilseed crop for biodiesel use. In addition, collaborative efforts with Montana State University to develop safflower with enhanced oxidative stability, improved meal coproducts and improved disease resistance for use for biolubricant, biofuel, hydraulic oils, cosmetics and other industrial uses, as well as for human and livestock nutrition, are under way *(Complements Extension initiative 10)*

NDSU Main Research Station

North Dakota Agricultural Experiment Station

No. 10 ranked: Enhancing Livestock Development

\$460,000 Total General Fund Increase

\$360,000 salary and fringe benefit, 1.0 new FTE at CREC, 0.7 FTE at CGREC and 0.3 FTE at DREC

\$100,000 operating at CREC, CGREC and DREC

Many driving forces are interested in growing our state's livestock industry. These include the desire of many ag producers to grow their existing enterprises and/or to diversify their operations, utilization of potential feedstuffs that presently are shipped to other states for their livestock operations, opportunities to enhance production of feedstuffs to serve a growing North Dakota industry, use of coproducts emerging from the rapidly expanding bioenergy/bioproducts enterprises as feedstuffs, utilization of grazing capacity in range and managed areas, and confinement issues. Two research support staff, one at Carrington, 0.7 at CGREC and 0.3 at DREC, with operating funds, are needed to address the issues surrounding the growth of the livestock industry in the state. *(Complements Extension initiative 7)*

No. 11 ranked: Support Staff

\$880,000 Total General Fund Increase

\$280,000 salary and fringe benefits, 4.0 new FTE office staff, Main Station

\$600,000 salary and fringe benefits, 5.0 new FTE res. support staff, Main Station

Several Main Station units have critical need for additional support staff – both office and research staff. Continued decentralization of effort and an increase in recordkeeping for compliance issues, increased granting activities, regulations, accountability, data collection and management require increased efforts by current staff to do more with less help. Four office support staff will allow affected units to deal with the increased workload that has developed during the last several years. In addition, five research specialists to assist scientists in existing programs will carry out important research and will complete the research teams for maximum efficiency.

No. 12 ranked: Genetics of Bioproduct Research

\$820,000 Total General Fund Increase

\$420,000 salary and fringe benefits, 2.0 new FTE, Main Station

\$240,000 salary and fringe benefits, 2.0 new FTE, Main Station

\$160,000 operating, Main Station

Research is needed to improve the efficiency of production and conversion of plant feedstock (both traditional crops and new crops) for bioproduct development using genomics and molecular genetic techniques. Identification of desirable genes/gene products that will enhance crop productivity for biofuels and the development of novel high-value products will be critical as the state and nation continue to embark on energy self-sufficiency. Two scientists and two research specialists, with operating funds, will work with plant breeders at the Main Station (Plant Sciences Department) to direct novel genes into adapted materials for rapid adoption by the region's producers.

No. 13 ranked: Graduate Research Assistants

\$650,000 Total General Fund Increase

\$650,000 salary and fringe benefits, new 10 FTE, Main Station

Students involved in research projects are an important component of the activities of any research program. The value of these students working on research related to the overall program provide the scientist an opportunity to expand his/her research program or provide greater focus on segments of the project that are of high priority. These students generally work more than their half-time appointment and, for the funding provided, are an excellent investment in the scientist's research agenda. An investment by the state to provide funding for 20 GRAs would be an economical investment and provide great dividends to the state.

NDSU Main Research Station

North Dakota Agricultural Experiment Station

No. 14 ranked: Weed Science

\$252,000 Total General Fund Increase

\$126,000 salary and fringe benefits, 0.7 new FTE, HREC

\$126,000 salary and fringe benefits, 0.7 new FTE, WREC

Two scientists, one at Hettinger and one at Williston, focusing on chemical and cultural control of weeds in farming and grazing enterprises in western North Dakota. These scientists would conduct research on weed control in direct seeding systems and work with other staff on disease management for all no-till crops, field monitoring of crop insect/disease pressures under no-till, soil N, C-N crop residue ratios, water use efficiency and effect of alternative crops in no-till cropping systems for western North Dakota (*Complements Extension initiative 11*)

No. 15 ranked: Soil Microbiology

\$390,000 Total General Fund Increase

\$210,000 salary and fringe benefits, 1.0 new FTE, Main Station

\$120,000 salary and fringe benefits, 1.0 new FTE, Main Station

\$ 60,000 operating, Main Station

Understanding the microbial populations of soils allows greater utilization of nutrient cycling, degradation of plant residues and organic chemicals, and the important interaction between crops and the microbial populations, all important in maintaining healthy, productive soils. A scientist and research specialist at the Main Station (SNRS) are needed to investigate the interaction among microbial populations, soil health and plant growth.

No. 16 ranked: State Data Center

\$200,000 Total General Fund Increase

\$200,000 salary and fringe benefits, 1.5 new FTE, Main Station

The State Data Center focuses on issues surrounding business opportunities in the state and development of rural communities. These have been major efforts of state leaders for many years. Evaluating parameters that allow for enhanced growth in income and employment in rural areas of the state provides a critical analysis so that leaders make appropriate decisions. These evaluations will be conducted by one research support staff at the Main Station (Agribusiness and Applied Economics).

No. 17 ranked: Animal Health

\$1,700,000 Total General Fund Increase

\$420,000 salary and fringe benefits, 2.0 new FTE, Main Station

\$380,000 salary and fringe benefits, 3.0 new FTE, Main Station

\$420,000 salary and fringe benefits, 2.0 new FTE, DREC

\$280,000 salary and fringe benefits, 2.0 new FTE, DREC

\$200,000 salary and fringe benefits, 2.0 new FTE, DREC

To continue to enhance all aspects of livestock production in North Dakota, animal agriculture requires, among other things, access to qualified animal health care. All too often, animal health-care providers in some areas of rural North Dakota are nonexistent, thereby increasing the threat of rapid transmission of potentially severe diseases. A program involving scientists and technical support at the Main Station (Veterinary and Microbiological Sciences/Vet Diagnostic Lab) and Dickinson to identify and deter potential threats is of utmost importance to this crucial component of agriculture.

No. 18 ranked: Swine Research

\$80,000 Total General Fund Increase

\$80,000 salary and fringe benefits, 0.4 new FTE, Main Station

Because of its economic impact, interest exists to increase swine production in the state. Each dollar of return from pigs marketed turns over 3.49 times for feed, labor, trucking, vet services, utilities, etc. Also, because of the importance of remoteness to biosecurity issues in swine systems, North Dakota is being evaluated as a potential location for swine genetic companies. Consequently, an animal scientist at the Main Station (Animal Sciences) focusing on issues related to the swine industry is needed to identify appropriate management strategies and provide solutions to technical problems. (*Complements Extension initiative 13*)

NDSU Main Research Station

North Dakota Agricultural Experiment Station

No. 19 ranked: Multiple Land Use

\$240,827 Total General Fund Increase

\$ 40,000 salary and fringe benefits, 0.2 new FTE, Main Station

\$126,000 salary and fringe benefits, 0.7 new FTE, HREC

\$ 74,827 operating, Main Station and HREC

North Dakota is in a critical time period to address the future of the Conservation Reserve Program and the future of grazing on Forest Service lands. The co-use of these lands for recreation, wildlife, grazing and farming provide new dilemmas for the landowners and managers, specifically absentee landowners. Uncertainty about the future of these grazing lands not only affects individual landowners, but entire rural communities that may rely on these lands for long-term sustainability. Two specialists, one at the Main Station (SNRS) and one at Hettinger, with operating funds, are needed to assist landowners by using science-based land management principles to address multiple land-use issues. *(Complements Extension initiative 16)*

No. 20 ranked: Insect Vectors of Plant Diseases

\$210,00 Total General Increase

\$210,000 salary and fringe benefits, 1.0 new FTE, Main Station

They remain an important component of disease control. These vector-borne diseases are particularly important to many of the row crops grown in the state. A scientist at the Main Station (Entomology in SNRS) will lead a research effort to identify appropriate control measures to minimize disease development.

One-time extraordinary repairs/deferred maintenance

The estimated total outstanding of deferred maintenance for the Agricultural Experiment Station is \$4,429,700, per the most recent master plan. This amount of \$4,429,700 is only a best estimate at this time. This one-time request of \$2,214,850 would fund 50 percent of these items on the list.

LISTING OF PROPOSED CONFERENCE COMMITTEE CHANGES TO ENGROSSED SENATE BILL NO. 2020

Main Research Center

Proposed funding changes:

Description	FTE	General Fund	Special Funds	Total
1 Increases funding for salaries and wages (\$210,000) and operating expenses (\$40,000) for a wheat rust pathologist	1.00	\$250,000		\$250,000
Total proposed funding changes	1.00	\$250,000	\$0	\$250,000

Other proposed changes:

None

LISTING OF PROPOSED CONFERENCE COMMITTEE CHANGES TO ENGROSSED SENATE BILL NO. 2020

Main Research Center

Proposed funding changes:

Description	FTE	General Fund	Special Funds	Total
1 Decreases funding for salaries and wages (\$223,750) and operating expenses (\$33,000) to remove 1 FTE scientist position for pulse, oilseed, and wheat quality included in the executive recommendation	(1.00)	(\$256,750)		(\$256,750)
2 Decreases funding for salaries and wages (\$131,974) and operating expenses (\$33,000) to remove 1 FTE technician position for pulse, oilseed, and wheat quality included in the executive recommendation	(1.00)	(164,974)		(164,974)
Total proposed funding changes	<u>(2.00)</u>	<u>(\$421,724)</u>	<u>\$0</u>	<u>(\$421,724)</u>

Other proposed changes:

None

Main Research Station

2009-11 Major Capital Projects

Given to Senate

This general fund capital improvement project was ranked No. 1 by SBARE

Main Station - North Dakota Agricultural Experiment Station Research Greenhouse Complex - Final Phase

Total Project Costs:

\$16,800,000

Background Information:

- Phase I of the Main Station Research Center Greenhouse Complex appeared as priority No. 1 in the 2004 NDSU Campus Master Plan for the NDAES. The project was authorized in SB 2023: "The main research center may obtain and utilize federal funds and other funds to assist in the construction of a greenhouse complex at the main research center. There is appropriated to the main research center the sum of \$5,000,000, or so much of the sum as may be necessary, from any federal acts, private grants, gifts and donations, or other funds that may become available for this project for the biennium beginning the effective date of this Act and ending June 30, 2007."
- This project was authorized in SB 2023 for the 2005-2007 biennium in the amount of \$7,000,000 - \$2,000,000 million in state bonding and \$5,000,000 million in other and federal funds.
- NDSU further requested and was granted carryover authorization for the project at the January 18, 2007, SBHE meeting in order to continue to raise funds to meet the \$5,000,000 goal in special funding, with the remaining \$2,000,000 being provided by state bonding.
- The 2007-2009 appropriation in HB 1020 included an additional \$7,000,000 for the completion of Phase II of the three phase greenhouse project under the Main Research Center section and also carryover authority of \$7,000,000 in funding authorized in 2005-2007.
- The legislature also removed the designations of Phase I and II of the project, and furthermore, Section 14 of HB 1020 stated that the Main Research Center may use any funding available within the total appropriation authority for the Main Research Center Greenhouse project to begin construction of the greenhouse with total cumulative authorization of \$14 million.
- Contracts were let in the amount of \$11,575,713. (Picture below shows progress as of early January 2009.)
- AES continues to raise additional funds up to the goal of \$5,000,000 in special fund authorization that was approved for the project.

Project Description:

The North Dakota Agricultural Experiment Station (NDAES) is in critical need of secure, state-of-the-art greenhouses to conduct research on crops, using both conventional and novel techniques, in order to meet consumer demands, to study promising biofuels and bio-products, and to respond to the threat of bioterrorism.

Each greenhouse compartment shall have all of the necessary infrastructure to carry out the planned research, including de-ionized and regular water systems, heating, lighting, ventilation, and environmental controls. Independent room access is required for security and to minimize contamination of rooms by workers and transported plant material.

The head-house area will include laboratories, controlled environment seed storage rooms, a large storage room, propagating material room, freezer room, and large areas sufficient for locating growth chambers. The facility will also include restrooms and changing/locker rooms.

MAJOR CAPITAL PROJECTS: Main Research Station

The location of this facility will be in close proximity to other on-campus laboratory research facilities because of the need for access by faculty, graduate students, and undergraduate student labor; for transporting plant material between buildings in the winter; and for coordinating research among a number of faculty in various on-campus units.

Funding:

This request for \$16,800,000 is to complete the construction of the state-of-the-art facility, which, when completed, will have conventional (approximately 22,000 square feet), biosafety level II (approximately 15,000 square feet) and biosafety level III (approximately 750 square feet, if sufficient funds are available) greenhouses. Each biosafety level ensures an increased level of security and precision.

This final construction phase also will include a headhouse with laboratories and other facilities to facilitate efficient use of the greenhouses. Also, the headhouse provides the infrastructure backbone for mechanical, electrical and heating needs of the complex. The location of the facility is close to other on-campus laboratory research facilities.

■ ■ ■ ■ ■ Main Research Station

2009-11 Major Capital Projects

Given to SBARE

This general fund capital improvement project was ranked No. 1 by SBARE

Main Station - North Dakota Agricultural Experiment Station Research Greenhouse Complex - Final Phase

Total Project Costs:

\$16,800,000

Background Information:

- Phase I of the Main Station Research Center Greenhouse Complex appeared as priority No. 1 in the 2004 NDSU Campus Master Plan for the NDAES. The project was authorized in SB 2023: "The main research center may obtain and utilize federal funds and other funds to assist in the construction of a greenhouse complex at the main research center. There is appropriated to the main research center the sum of \$5,000,000, or so much of the sum as may be necessary, from any federal acts, private grants, gifts and donations, or other funds that may become available for this project for the biennium beginning the effective date of this Act and ending June 30, 2007."
- This project was authorized in SB 2023 for the 2005-07 biennium in the amount of \$7,000,000 including \$2,000,000 in state bonding and \$5,000,000 million in other and federal funds.
- NDSU further requested and was granted carryover authorization for the project at the January 18, 2007, SBHE meeting in order to continue to raise funds to meet the \$5,000,000 goal in special funding, with the remaining \$2,000,000 being provided by state bonding.
- The 2007-09 appropriation in HB 1020 included an additional \$7,000,000 for the completion of Phase II of the three phase greenhouse project under the Main Research Center section and also carryover authority of \$7,000,000 in funding authorized in 2005-07.
- The legislature also removed the designations of Phase I and II of the project, and furthermore, Section 14 of HB 1020 stated that the Main Research Center may use any funding available within the total appropriation authority for the Main Research Center Greenhouse project to begin construction of the greenhouse with total cumulative authorization of \$14,000,000.
- Contracts were let in the amount of \$11,575,713.
- The NDAES continues to raise additional funds up to the goal of \$5,000,000 in special fund authorization that was approved for the project.

Project Description:

The North Dakota Agricultural Experiment Station (NDAES) is in critical need of secure, state-of-the-art greenhouses to conduct research on crops, using both conventional and novel techniques, in order to meet consumer demands, study promising biofuels and bio-products, and respond to the threat of bioterrorism.

Each greenhouse compartment shall have all of the necessary infrastructure to carry out the planned research, including de-ionized and regular water systems, heating, lighting, ventilation, and environmental controls. Independent room access is required for security and to minimize contamination of rooms by workers and transported plant material.

The head-house area will include laboratories, controlled environment seed storage rooms, a large storage room, propagating material room, freezer room, and large areas sufficient for locating growth chambers. The facility also will include restrooms and changing/locker rooms.

MAJOR CAPITAL PROJECTS: Main Research Station

The location of this facility is near other on-campus laboratory research facilities because of the need for access by faculty, graduate students, and undergraduate student labor; for transporting plant material between buildings in the winter; and for coordinating research among a number of faculty in various on-campus units.

Funding:

This request for \$16,800,000 is to complete the construction of the state-of-the-art facility, which, when completed, will have conventional (approximately 22,000 square feet), biosafety level II (approximately 15,000 square feet) and biosafety level III (approximately 750 square feet, if sufficient funds are available) greenhouses. Each biosafety level ensures an increased level of security and precision.

This final construction phase also will include a headhouse with laboratories and other facilities to facilitate efficient use of the greenhouses. Also, the headhouse provides the infrastructural backbone for mechanical, electrical and heating needs of the complex.

GREENHOUSE (see p.79 in book)

Session

2005

2 million bond + #5 million authority for special funds

2007

7 million general funds

After 2007 session - total #14 million authority

Current construction: #11,575,000

(#2 million bond + #7 million gen funds + #2,575,000 special funds)

2009

Request to complete facility #16,800,000

Governor's recommendation - with Senate confirming

#11,450,400

Not funded

#5,350,600

* we continue to raise funds to fulfill the #5 million authority for special funds from 2005

TOTAL PROJECT AT COMPLETION
#30,800,000

Construction of Greenhouse Complex

NDSU Agriculture and University Extension
North Dakota Agricultural Experiment Station

*Given to
House*

FACILITIES

Main Station - North Dakota Agricultural Experiment Station **Research Greenhouse Complex**

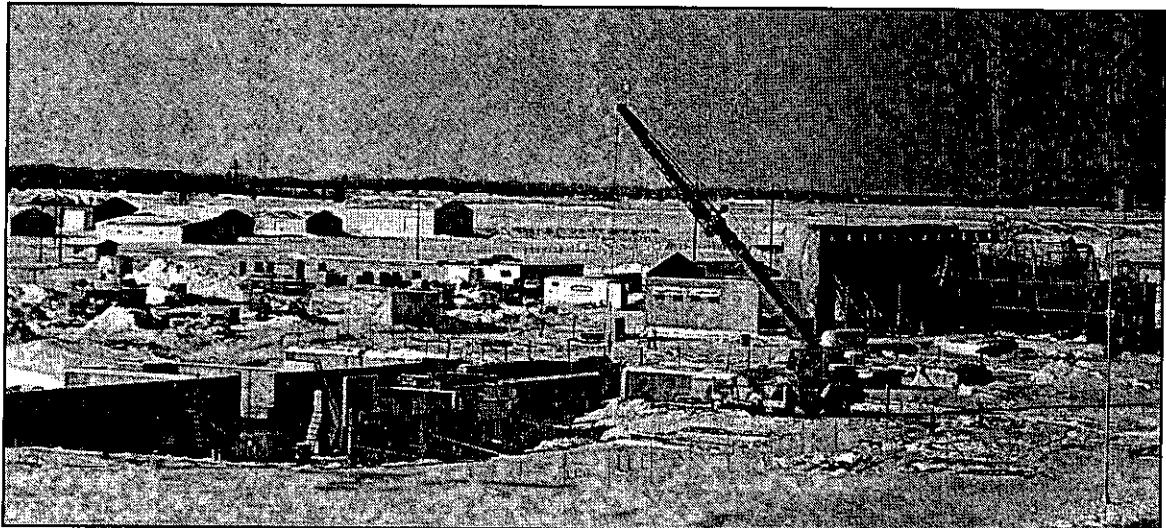
Total Legislative Authorized Amount:

\$14,000,000

An outline of the Main Station Research Greenhouse project process:

- Phase I of the Main Station Research Greenhouse Complex appeared as priority No. 1 in the 2004 NDSU Campus Master Plan for the Agricultural Experiment Station.
- This project was authorized in SB 2023 for the 2005-07 biennium in the amount of \$7,000,000 including \$2,000,000 in state bonding and \$5,000,000 in other and federal funds.
- NDSU further requested and was granted carryover authorization for the project at the Jan. 18, 2007, SBHE meeting to continue to raise funds to meet the \$5,000,000 goal in special funding, with the remaining \$2,000,000 being provided by state bonding.
- The 2007-09 appropriation in HB 1020 included an additional \$7,000,000 for the completion of Phase II of the three phase greenhouse project under the Main Research Center section and also carryover authority of \$7,000,000 in funding authorized in 2005-07.
- The legislature also removed the designations of Phase I and II of the project, and furthermore, Section 14 of HB 1020 stated that the Main Research Center may use any funding available within the total appropriation authority for the Main Research Center Greenhouse project to begin construction of the greenhouse with total cumulative authorization of \$14,000,000.
- Contracts were let in the amount of \$11,575,713. (Picture below shows progress as of early Jan. 2009.)
- The NDAES continues to raise additional funds up to the goal of \$5,000,000 in special fund authorization that was approved for the project.

The final component is included in the 2009-11 major capital projects request for \$16,800,000.



January 5, 2009

Beef Research in North Dakota

Beef research requires a range of approaches, from the fundamental to the applied and from the intensive laboratory to the pasture and range. North Dakota is fortunate to have facilities to meet these approaches. North Dakota State University invests considerable resources in beef research. These resources represent people, animals, facilities and land. Programs are conducted at the Main Station in Fargo, as well as at several of the Research Extension Centers. Carrington (CREC), Dickinson (DREC), Hettinger (HREC), Central Grasslands (CGREC) in Streeter have livestock facilities and scientists. Also, the USDA has a beef research presence in the state and USDA scientists collaborate with NDSU scientists. To make optimum use of these facilities and to have sufficient replication without unnecessary duplication, having close communication and good collaboration among scientists is important.

The various research stations have both independent and collaborative research programs. NDSU has numerous instances of direct collaboration among scientists at different locations. In addition, common themes of research can be found among the various stations, even in those instances where direct collaboration does not occur.

NDSU beef research falls into the basic disciplinary areas of nutrition, management, physiology and product. The nutrition and/or management area has several themes, which are:

- Use of coproducts
- Alternative feedstuffs
- Feedlot
- Range management and forage utilization
- Cow/calf

Each of these themes represents an aspect of the beef industry that is important to North Dakota. Research knowledge concerning these aspects of beef production is available from other states, but investigation under North Dakota conditions is a considerable need. Additionally, components of high-priority beef research are quite unique to the state. For example, North Dakota leads the nation in production of several crops, and the use of products from those crops for beef production is of unique importance in this state. Table 1 illustrates places where recent collaborative research that applies to the five themes has occurred.

The Beef Systems Center of Excellence is establishing a substantial research presence. The North Dakota Beef Commission has funded projects being conducted by several members of the beef research team and its contributions are appreciated. The NDSU facility, which is at the North Dakota Natural Beef plant in Fargo, is operational and activities associated with research, teaching and Extension will be expanding rapidly. In addition, Phase 1 of the new beef research facility has been completed. This facility, when Phase 2 is completed, will be a state-of-the-art facility where important research concerning growing/finishing cattle as well as cow/calf production will be conducted. This will form an important bridge between the extensive research, including that at the Research Extension Centers, and the highly intensive research at the Animal Nutrition and Physiology Center on campus.

High-quality beef research is important to the future of agriculture in North Dakota. Beef researchers associated with the North Dakota Agricultural Experiment Station across the state pledge to continue our tradition of providing such research for the benefit of the state of North Dakota and elsewhere.

Table 1. Station Participation in Beef Nutrition-Management Research Themes

Research Theme	Stations participating	Direct collaboration
Alternative feedstuffs	CREC Fargo	CREC-Fargo
Cow/calf	CREC DREC Fargo HREC	CREC-Fargo DREC-Fargo CREC-DREC-HREC
Feedlot	CREC DREC Fargo HREC	CREC-Fargo
Forage-range management	CGREC DREC Fargo HREC	CGREC-Fargo DREC-Fargo Fargo-HREC
Use of coproducts	CREC CGREC DREC Fargo	CREC-Fargo DREC-Fargo

Construction of Beef Research Facility

NDSU Agriculture and University Extension
North Dakota Agricultural Experiment Station

FACILITIES

*Given to
to ~~the~~
Senate*

Main Station - North Dakota Agricultural Experiment Station **Beef Research Facility - Phase I**

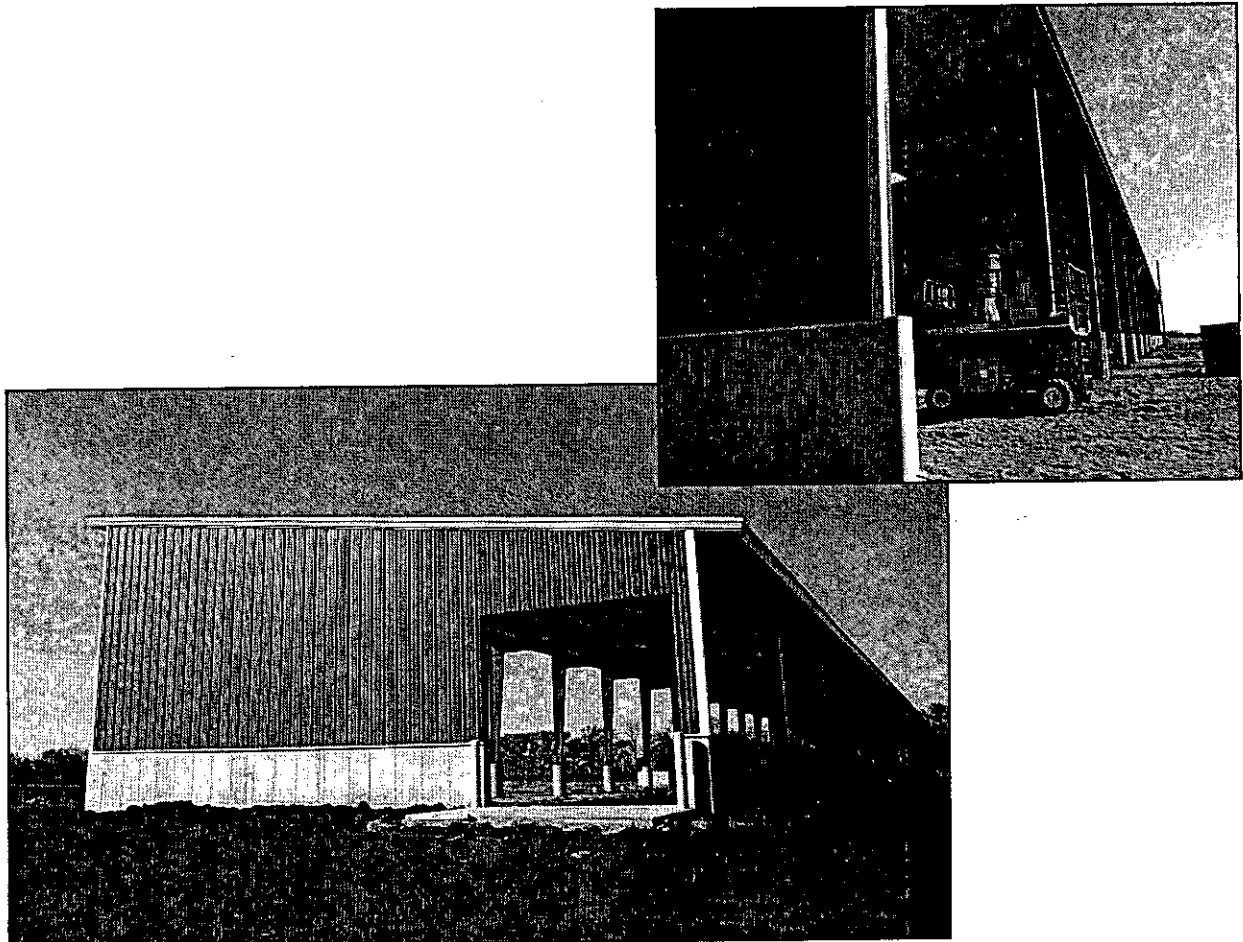
Total Project Costs:

Authorization for \$1million special funds

Phase I of the Beef Research Facility was authorized in the 2007 legislative session at \$1,000,000 of special funds and \$80,000 in general funds for planning and design of the facility. The NDAES let contracts totaling \$701,900 utilizing \$500,000 in federal funding and \$121,900 in other special funds to begin Phase I, which includes construction of six pens for experimental purposes and a cattle handling area.

This phase was completed late September 2008.

The final phase, which will complete construction, demolition of existing buildings, and purchase of equipment for the facility, is included in 2009–11 major capital projects at a cost of \$2,612,400



■ ■ ■ ■ ■ Main Research Station

2009-11 Major Capital Projects

This general fund capital improvement project was ranked No. 2 by SBARE

Main Station - North Dakota Agricultural Experiment Station Beef Research Facility - Final Phase

*Given to
H. H. H.*

Total Project Costs:

\$2,612,400

Background Information:

The beef research facility is needed to fully utilize the potential for beef research at NDSU and to better serve the state's beef producers. It will help fulfill a need for integrated research capabilities in the areas of beef cattle nutrition, reproduction, and management that will complement the Beef Systems Center of Excellence.

The proposed research facility would be approximately 58' X 720' and consist of 36 pens. The building itself would be 30' X 720' and would provide shelter for the cattle and a covered drive-through feeding alley. In addition an 80' X 58' building would be constructed on the end of the main building to house handling facilities, scales, chutes, and a feed preparation center. The facility would be designed to accommodate all aspects of beef cattle management, nutrition, and reproductive physiology research including cow-calf, backgrounding, and finishing.

Project Description:

Phase I of the Beef Research Facility originally was authorized in the 2007 legislative session at \$1,000,000 of special funds and \$80,000 in general funds for planning and design of the facility. The NDAES was able to obtain \$500,000 in federal funding and \$121,900 in other special funds to begin Phase I, which includes construction of six pens for experimental purposes and a cattle handling area.

Funding:

The Phase II request of \$2,612,400 would complete the research complex, allowing a highly precise data collection system of feed intake by individual animals. When completed, this facility will serve research needs in beef cattle nutrition, reproduction and management, including cow-calf, backgrounding and finishing at NDSU. In addition, it would include construction of a feed mixing and storage building and a commodity bay shed for feed storage (six bays). Also required is the demolition of existing buildings. This facility is critical to fully utilize the potential for beef research at NDSU and to better serve the state's beef producers. It also will help fulfill a need for integrated research capabilities in the areas of nutrition, reproduction and management that will complement the Beef Systems Center of Excellence.

SB 2020

Good afternoon, Chairman Holmberg and members of the Senate Appropriations Committee. For the record, my name is Julie Ellingson and I represent the North Dakota Stockmen's Association.

I appear before you in support of SB 2020, and, specifically, the funding included for Phase 2 of the Beef Research Facility being constructed on the North Dakota State University campus.

North Dakota Stockmen's Association members recognize that the state's economic well-being continues to heavily rest on increasing the efficiency and profitability of animal agriculture, and that advanced research techniques necessary to resolve increasingly complex production problems require state-of-the-art facilities and equipment, such as being planned in the Beef Research Facility. Our members identified this specific project as one of their priority issues in the policy resolutions passed at our annual convention in Minot in September.

With its advanced feeding system and innovative design, the Beef Research Facility will be able to accommodate research of both growing and finishing cattle and cowherds, and, therefore, will apply to multiple cattle sectors and a wide cross-section of our state's cattle producers. It will also be an important component in bridging the livestock research conducted at the research extension centers scattered across North Dakota to the university and back to beef producers, who put the findings into practice on their farms and ranches.

North Dakota is blessed with some of the finest animal scientists in the world – nationally recognized for their work in reproduction, nutrition and other disciplines. The Beef Research Facility will give these first-rate scientists a place to work and to live up to their full potential, as well as help retain their expertise in our state.

The North Dakota Stockmen's Association was grateful for the support of the Beef Research Facility during the last legislative session, and is happy to see full funding for its completion in the executive budget in this session.

In the optic world, the term "20/20" refers to perfect vision. I know that the bill number "2020" was probably assigned to this legislation only by chance, but we think it is a fitting name just the same, as the Beef Research Facility represents the perfect vision for livestock research in our state. I ask for your favorable consideration of this important project.

North Dakota



STOCKMEN'S ASSOCIATION

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Ph: (701) 223-2522
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e-mail: ndsa@ndstockmen.org
www.ndstockmen.org

SB 2020
March 11, 2009
attachment #11

SB 2020

I appear before you in support of SB 2020, and, specifically, the funding included for Phase 2 of the Beef Research Facility being constructed on the North Dakota State University campus.

North Dakota Stockmen's Association members recognize that the state's economic well-being continues to heavily rest on increasing the efficiency and profitability of animal agriculture, and that advanced research techniques necessary to resolve increasingly complex production problems require state-of-the-art facilities and equipment, such as being planned in the Beef Research Facility. Our members identified this project as one of their priority issues in the policy resolutions passed at our recent annual convention.

With its advanced feeding system and innovative design, the Beef Research Facility will be able to accommodate research of both growing and finishing cattle and cowherds, and, therefore, will apply to multiple cattle sectors and a wide cross-section of our state's producers. It will also be an important component in bridging the livestock research conducted at the research extension centers scattered across North Dakota to the university and back to beef producers, who put the findings into practice on their farms and ranches.

North Dakota is blessed with some of the finest animal scientists in the world – nationally recognized for their work in reproduction, nutrition and other disciplines. The Beef Research Facility will give these first-rate scientists a place to work and to live up to their full potential, as well as help retain their expertise in our state.

The North Dakota Stockmen's Association is grateful for your support of the Beef Research Facility during the last legislative session, and is hopeful to secure this final funding so the project can be completed.

In the optic world, the term "20/20" refers to perfect vision. I know that the bill number "2020" was assigned to this legislation only by chance, but we think it is a fitting name just the same, as the Beef Research Facility represents the perfect vision for livestock research in our state. I ask for your favorable consideration of this important project.

Section _____. Legislative Intent: Beef Systems Center of Excellence. It is the intent of the sixty-first legislative assembly that the Beef Systems Center of Excellence authorized by the fifty-eighth legislative assembly has met the funding requirements as outlined in Section 9, HB 1021, fifty-eighth legislative assembly, for collection of both federal and special funds by private contributions through the creation of the North Dakota Agricultural Innovation Center and the capitalization for the creation of North Dakota Natural Beef, LLC., which was approved by the Office of Management and Budget when it released \$800,000 to North Dakota state university agricultural experiment station in 2006 pursuant to section 8, House Bill 1021, fifty-eighth legislative assembly. It is also the intent of the sixty-first legislative assembly that this center is subject to requirements outlined in Chapter 136, Senate Bill 2334 of the fifty-eighth legislative assembly, and not those enacted later as part of the Center of Excellence program administered by the Department of Commerce, pursuant to chapter 15-69, North Dakota century code.

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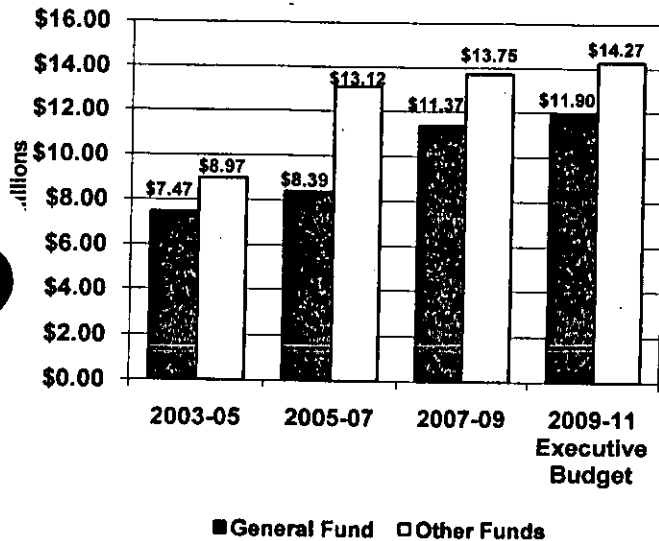
Department 628 - Branch Research Centers
Senate Bill No. 2020

	FTE Positions	General Fund	Other Funds	Total
2009-11 Executive Budget	95.56	\$11,902,190	\$14,266,816	\$26,169,006
2007-09 Legislative Appropriations	95.56 ²	11,368,311	13,745,204	25,113,515 ¹
Increase (Decrease)	0.00	\$533,879	\$521,612	\$1,055,491

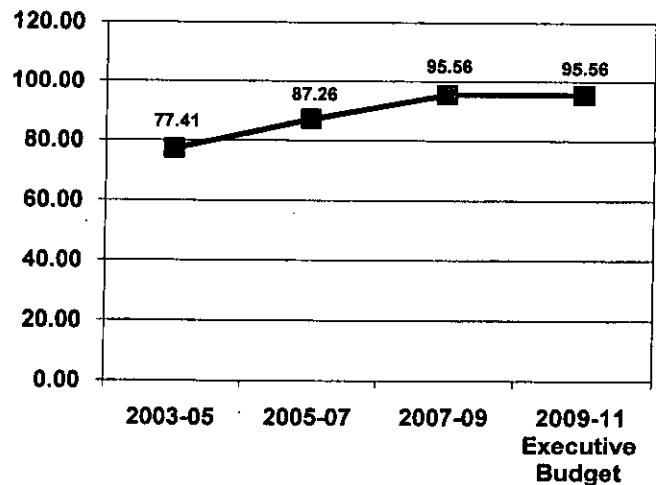
¹The Legislative Assembly appropriated \$829,669, of which \$438,129 is from the general fund and \$391,540 is from special funds, to the Main Research Center to provide agricultural research and extension agency employees an additional 1 percent per year salary increase each year of the biennium. The Main Research Center was to allocate the funding between the Main Research Center, branch research centers, North Dakota State University (NDSU) Extension Service, Northern Crops Institute, and Agronomy Seed Farm. The total salary increase provided is 5 percent effective July 1, 2007, and 5 percent effective July 1, 2008, which is the same increase provided to the North Dakota University System. The 2007-09 legislative appropriation amounts for the branch research centers include \$96,496, of which \$66,803 is from the general fund, for the agency's share of the funding appropriated to the Main Research Center for the additional salary increase. The 2007-09 appropriation amounts do not include a reduction to the carryover general fund appropriation of \$2,120 nor do they include \$366,623 of additional special funds carryover authority. The 2007-09 appropriation amounts do not include \$450,000 of special funds authority transferred from the Main Research Center.

²The 2007-09 appropriation was based on 97.86 FTE positions. Section 6 of House Bill No. 1020 (2007) authorizes the State Board of Higher Education to adjust FTE positions as needed. A total of 2.30 FTE positions were removed pursuant to this section and reported to the Office of Management and Budget.

Agency Funding



FTE Positions



Ongoing and One-Time General Fund Appropriations

	Ongoing General Fund Appropriation	One-Time General Fund Appropriation	Total General Fund Appropriation
2009-11 Executive Budget	\$11,902,190	\$0	\$11,902,190
2007-09 Legislative Appropriations	10,668,311	700,000	11,368,311
Increase (Decrease)	\$1,233,879	(\$700,000)	\$533,879

First House Action

The Senate did not change the executive budget recommendation for the branch research centers. Attached is a summary of first house changes.

Executive Budget Highlights

	General Fund	Other Funds	Total
McIntosh Research Center			
1. Removes 2007-09 biennium capital projects, including headquarters facility parking lot and landscaping (\$350,000) and waste management facility (\$351,000)		(\$701,000)	(\$701,000)
2. Removes 2007-09 biennium funding for equipment over \$5,000		(\$590,000)	(\$590,000)

- 3. Provides funding for equipment over \$5,000 \$100,000 \$315,942 \$415,942
- 4. Decreases funding for selected expenditures as follows: (\$1,000,000) (\$1,000,000)

	Increase (Decrease)	Total Provided
Travel	(\$100,000)	\$121,093
Supplies - Information technology software	(\$20,000)	\$8,704
Food and clothing	(\$10,000)	\$17,099
Building, grounds, and maintenance	(\$100,000)	\$33,480
Miscellaneous supplies	(\$300,000)	\$189,132
Printing	(\$40,000)	\$5,150
Information technology equipment under \$5,000	(\$10,000)	\$19,027
Other equipment under \$5,000	(\$50,000)	\$59,661
Utilities	(\$100,000)	\$56,208
Information technology communications	(\$40,000)	\$12,515
Operating fees and services	(\$200,000)	\$194,499
Fees - Professional services	(\$30,000)	\$11,653

- 5. Provides reauthorization of one-time funding for Dickinson headquarters facility parking lot and landscaping \$350,000 \$350,000

Central Grasslands Research Center

- 1. Provides funding for capital bond payments \$56,908 \$56,908
- 2. Removes 2007-09 biennium funding for equipment over \$5,000 (\$100,000) (\$110,000) (\$210,000)
- 3. Provides funding for equipment over \$5,000 \$14,952 \$14,952

Hettinger Research Center

- 1. Increases funding for selected expenditures as follows: \$311,786 \$311,786

	Increase (Decrease)	Total Provided
Miscellaneous supplies	\$160,716	\$579,792
Operating fees and services	\$128,620	\$234,620
Fees - Professional services	\$22,450	\$111,150

- 2. Removes 2007-09 biennium funding for equipment over \$5,000 (\$100,000) (\$30,000) (\$130,000)
- 3. Provides funding for equipment over \$5,000 \$100,000 \$100,000

Langdon Research Center

- 1. Increases funding for selected expenditures as follows: \$171,675 \$171,675

	Increase (Decrease)	Total Provided
Building, grounds, and maintenance	\$23,500	\$63,200
Miscellaneous supplies	\$77,969	\$136,253
Operating fees and services	\$62,006	\$82,506
Miscellaneous expenses	\$8,200	\$8,200

- 2. Removes 2007-09 biennium funding for equipment over \$5,000 (\$100,000) (\$20,000) (\$120,000)
- 3. Provides funding for equipment over \$5,000 \$184,500 \$184,500

North Central Research Center

- 1. Removes 2007-09 biennium capital projects, including agronomy laboratory and greenhouse and storage and maintenance shop (\$697,880) (\$697,880)
- 2. Provides funding for capital bond payments \$92,726 \$92,726
- 3. Removes 2007-09 biennium funding for equipment over \$5,000 (\$100,000) (\$130,000) (\$230,000)
- 4. Provides funding for equipment over \$5,000 \$644,440 \$644,440

Williston Research Center

- 1. Decreases funding for selected expenditures as follows: (\$540,800) (\$540,800)

	Increase (Decrease)	Total Provided
Travel	(\$37,250)	\$147,450
Building, grounds, and maintenance	(\$28,380)	\$127,720
Miscellaneous supplies	(\$149,813)	\$55,310
Operating fees and services	(\$191,367)	\$75,133
Fees - Professional services	(\$133,990)	\$54,110

- 2. Removes 2007-09 biennium funding for equipment over \$5,000 (\$200,000) (\$200,000)
- 3. Provides funding for equipment over \$5,000 \$100,000 \$112,000 \$212,000

Carrington Research Center

1. Removes 2007-09 biennium funding for equipment over \$5,000		(\$281,213)	(\$281,213)
2. Provides funding for equipment over \$5,000	\$100,000	\$636,334	\$736,334

Other Sections in Bill

Branch research center renovations - Section 2 provides \$2,937,000 of one-time funding from the general fund included in the Main Research Center's appropriation for renovations and additions to the North Central Research Center (\$624,000), the Williston Research Center (\$1,680,000), the Langdon Research Center (\$144,000), and the Dickinson Research Center (\$489,200). Section 9 of the bill declares the branch research center renovations to be an emergency measure.

Additional income appropriation - Section 3 provides that, in addition to the amount appropriated as other funds, any other income from federal acts, private grants, gifts, and donations, or from other sources received by the branch research centers, is appropriated for the purposes designated in the act, grant, gift, or donation for the 2009-11 biennium.

Transfer authority - Section 5 authorizes the transfer of appropriation authority between the Main Research Center, the branch research centers, NDSU Extension Service, and Northern Crops Institute and provides that any transfers be reported to the Office of Management and Budget.

FTE position adjustments - Section 6 authorizes the State Board of Higher Education to adjust or increase FTE positions for the branch research centers and provides that any adjustments be reported to the Office of Management and Budget.

Unexpended general fund - Excess income - Section 7 authorizes the continuation of any unexpended general fund appropriation and excess income received by the branch research centers to the 2011-13 biennium.

Continuing Appropriations

No continuing appropriations for this agency.

Major Related Legislation

No major legislation is currently under consideration affecting this agency.

ATTACH:1

SB 2020
March 16, 2009
2009-11

CARRINGTON RESEARCH CENTER

Recommendation

Air screen seed conditioning mill	General Fund	0
	Federal Funds	0
	Special Funds	17,000
		<hr/> 17,000
Double alley chute	General Fund	0
	Federal Funds	0
	Special Funds	11,000
		<hr/> 11,000
Forage dryer and assoc lab accessories	General Fund	0
	Federal Funds	0
	Special Funds	12,000
		<hr/> 12,000
Grain conveyer	General Fund	0
	Federal Funds	0
	Special Funds	15,000
		<hr/> 15,000
Gravity box (450 bu)	General Fund	0
	Federal Funds	0
	Special Funds	9,500
		<hr/> 9,500
Hydraulic silencer chute	General Fund	0
	Federal Funds	0
	Special Funds	12,834
		<hr/> 12,834
Lawn mower	General Fund	0
	Federal Funds	0
	Special Funds	9,500
		<hr/> 9,500
Loader tractor (120-140 HP)	General Fund	0
	Federal Funds	0
	Special Funds	150,000
		<hr/> 150,000
Manure spreader	General Fund	0
	Federal Funds	0
	Special Funds	21,000
		<hr/> 21,000
Plot sample dryer	General Fund	0
	Federal Funds	0
	Special Funds	32,000
		<hr/> 32,000
RFID reader and data recording for electronic ID	General Fund	0
	Federal Funds	0
	Special Funds	7,500
		<hr/> 7,500
Research plot combinew/automated scale	General Fund	100,000
	Federal Funds	0
	Special Funds	175,000
		<hr/> 275,000

**2009-11
Recommendation**

Roller packer	General Fund	0
	Federal Funds	0
	Special Funds	17,000
		<u>17,000</u>
Rotary mower for roadway & plot maintenance	General Fund	0
	Federal Funds	0
	Special Funds	14,000
		<u>14,000</u>
Soil sampling probe unit	General Fund	0
	Federal Funds	0
	Special Funds	13,000
		<u>13,000</u>
Utility tractor (65-70 HP)	General Fund	0
	Federal Funds	0
	Special Funds	75,000
		<u>75,000</u>
Utility vehicle	General Fund	0
	Federal Funds	0
	Special Funds	45,000
		<u>45,000</u>
Total Equipment > \$5,000	General Fund	100,000
	Federal Funds	0
	Special Funds	636,334
	Total	<u><u>736,334</u></u>

WILLISTON RESEARCH CENTER

Automatic Variable Rate Nozzle Applicator System	General Fund	35,000
	Federal Funds	0
	Special Funds	1,000
		<u>36,000</u>
Belt Conveyor Auger	General Fund	0
	Federal Funds	0
	Special Funds	15,000
		<u>15,000</u>
Field Sprayer	General Fund	0
	Federal Funds	0
	Special Funds	20,000
		<u>20,000</u>
Forklift	General Fund	0
	Federal Funds	0
	Special Funds	22,000
		<u>22,000</u>
Granule Applicator Attachment for Chisel Plow	General Fund	0
	Federal Funds	0
	Special Funds	7,500
		<u>7,500</u>
Hopper Bottom Bin, 1000-2000 bushels	General Fund	0
	Federal Funds	0
	Special Funds	9,000
		<u>9,000</u>

**2009-11
Recommendation**

Hopper Bottom Bin, 1000-2000	General Fund	0
	Federal Funds	0
	Special Funds	9,000
		<u>9,000</u>
Plot Tractor	General Fund	25,000
	Federal Funds	0
	Special Funds	0
		<u>25,000</u>
Screen Separator	General Fund	0
	Federal Funds	0
	Special Funds	12,000
		<u>12,000</u>
Seedbed Cultivator	General Fund	0
	Federal Funds	0
	Special Funds	8,000
		<u>8,000</u>
Self-Propelled Swather, 24-30' w/Pickup Reel	General Fund	40,000
	Federal Funds	0
	Special Funds	0
		<u>40,000</u>
Tilt Bed Trailer - 30'	General Fund	0
	Federal Funds	0
	Special Funds	8,500
		<u>8,500</u>
Total Equipment > \$5,000	General Fund	100,000
	Federal Funds	0
	Special Funds	112,000
	Total	<u><u>212,000</u></u>

NORTH CENTRAL RESEARCH CENTER

45' Sprayer 3point attached w/meter controllers	General Fund	0
	Federal Funds	0
	Special Funds	6,000
		<u>6,000</u>
Almaco cone seeder with grooved non-slip cone belt	General Fund	0
	Federal Funds	0
	Special Funds	7,000
		<u>7,000</u>
Finishing 16' cultivator w/drag and rolling basket	General Fund	0
	Federal Funds	0
	Special Funds	9,000
		<u>9,000</u>
Forklift	General Fund	0
	Federal Funds	0
	Special Funds	35,000
		<u>35,000</u>
GPS autosteer system for Almaco planter w/RTK base	General Fund	0
	Federal Funds	0
	Special Funds	32,000
		<u>32,000</u>

**2009-11
Recommendation**

Hopper bins for seed storage	General Fund	0
	Federal Funds	0
	Special Funds	37,552
		<u>37,552</u>
Loader tractor	General Fund	0
	Federal Funds	0
	Special Funds	40,000
		<u>40,000</u>
Planter upgraded for auto-dumping system (GPS etc)	General Fund	0
	Federal Funds	0
	Special Funds	25,500
		<u>25,500</u>
Rational sample seed cleaner (LSN3)	General Fund	0
	Federal Funds	0
	Special Funds	8,000
		<u>8,000</u>
Seed plant air screen machine	General Fund	0
	Federal Funds	0
	Special Funds	45,000
		<u>45,000</u>
Seed plant conveyors	General Fund	0
	Federal Funds	0
	Special Funds	75,000
		<u>75,000</u>
Seed plant precision sizer	General Fund	0
	Federal Funds	0
	Special Funds	34,388
		<u>34,388</u>
Small Plot Combine	General Fund	0
	Federal Funds	0
	Special Funds	200,000
		<u>200,000</u>
Tractor 80HP	General Fund	0
	Federal Funds	0
	Special Funds	70,000
		<u>70,000</u>
Tractor (less than 60 inches wide)	General Fund	0
	Federal Funds	0
	Special Funds	20,000
		<u>20,000</u>
Total Equipment > \$5,000	General Fund	0
	Federal Funds	0
	Special Funds	644,440
	Total	<u><u>644,440</u></u>

**2009-11
Recommendation**

LANGDON RESEARCH CENTER

25' to 30' heavy disc	General Fund	0
	Federal Funds	0
	Special Funds	20,000
		<u>20,000</u>
Air seeder	General Fund	0
	Federal Funds	0
	Special Funds	45,000
		<u>45,000</u>
Forklift	General Fund	0
	Federal Funds	0
	Special Funds	25,000
		<u>25,000</u>
Gator w/spray rig	General Fund	0
	Federal Funds	0
	Special Funds	12,000
		<u>12,000</u>
Lawn tractor	General Fund	0
	Federal Funds	0
	Special Funds	7,500
		<u>7,500</u>
Planter/row seeder	General Fund	0
	Federal Funds	0
	Special Funds	20,000
		<u>20,000</u>
Plot tractor	General Fund	0
	Federal Funds	0
	Special Funds	30,000
		<u>30,000</u>
Remove Base Funding for Equipment over \$5,000	General Fund	0
	Federal Funds	0
	Special Funds	0
		<u>0</u>
Remove Base Funding for Rotating Equipment Pool	General Fund	0
	Federal Funds	0
	Special Funds	0
		<u>0</u>
Skid steer loader	General Fund	0
	Federal Funds	0
	Special Funds	25,000
		<u>25,000</u>
Total Equipment > \$5,000	General Fund	0
	Federal Funds	0
	Special Funds	184,500
	Total	<u><u>184,500</u></u>

CENTRAL GRASSLANDS RESEARCH CENTER

V-Hay Rake	General Fund	0
	Federal Funds	0
	Special Funds	14,952
		<u>14,952</u>
Total Equipment > \$5,000	General Fund	0
	Federal Funds	0
	Special Funds	14,952
	Total	<u>14,952</u>

DICKINSON RESEARCH CENTER

Bale processor	General Fund	0
	Federal Funds	0
	Special Funds	6,942
		<u>6,942</u>
Field demonstration weigh wagon	General Fund	0
	Federal Funds	0
	Special Funds	20,000
		<u>20,000</u>
Grain/seed cleaner (seed house)	General Fund	0
	Federal Funds	0
	Special Funds	25,000
		<u>25,000</u>
Landscape tractor mower	General Fund	0
	Federal Funds	0
	Special Funds	20,000
		<u>20,000</u>
Large livestock trailer	General Fund	25,000
	Federal Funds	0
	Special Funds	64,000
		<u>89,000</u>
Mobile cattle working system, chute and scale	General Fund	0
	Federal Funds	0
	Special Funds	60,000
		<u>60,000</u>
No till crop drill, 20'	General Fund	75,000
	Federal Funds	0
	Special Funds	0
		<u>75,000</u>
Off set plot disk	General Fund	0
	Federal Funds	0
	Special Funds	10,000
		<u>10,000</u>
Ranch Feed Wagon	General Fund	0
	Federal Funds	0
	Special Funds	60,000
		<u>60,000</u>

**2009-11
Recommendation**

Ultrasound machine, repro and carcass probes	General Fund	0	
	Federal Funds	0	
	Special Funds	50,000	
		50,000	

Total Equipment > \$5,000	General Fund	100,000	
	Federal Funds	0	
	Special Funds	315,942	
	Total	415,942	

HETTINGER RESEARCH CENTER

Bale Wagon	General Fund	20,000	
	Federal Funds	0	
	Special Funds	0	
		20,000	

Forage Chopper	General Fund	20,000	
	Federal Funds	0	
	Special Funds	0	
		20,000	

Grinder/Mixer	General Fund	30,000	
	Federal Funds	0	
	Special Funds	0	
		30,000	

Plots Row-Crop Drill	General Fund	20,000	
	Federal Funds	0	
	Special Funds	0	
		20,000	

Snow blower	General Fund	10,000	
	Federal Funds	0	
	Special Funds	0	
		10,000	

Total Equipment > \$5,000	General Fund	100,000	
	Federal Funds	0	
	Special Funds	0	
	Total	100,000	

Agency Totals

General Fund	400,000	
Federal Funds	0	
Special Funds	1,908,168	
Agency Total	2,308,168	

Branch Research Centers

2009-11 Major Capital Projects

Research Extension Centers

Headquarters Additions/Renovations - Final Phase

Total Project Costs:

\$2,937,200

This request would complete the renovations/additions of the REC headquarters buildings. The projects would involve:

- Given to Senate*
- A) The completion of the **North Central REC** addition as described and authorized in the 2007-09 legislative session. All offices in the current building are fully occupied, with overflow occurring in the existing library. Videoconferencing and other uses of the computer cluster in the conference room have caused congestion and scheduling problems. Completion of this project was delayed due to a reduction in funding (\$200,000) for the overall project by the Legislature. Due to increased construction costs and inflation, approximately **\$624,000** is needed to complete the facility renovation. The addition will increase the operating cost approximately \$2,700 per year with no deferred maintenance being addressed with the project.
- B) A building addition to the **Williston REC's Ernie French Center (EFC)**. This addition is needed to provide additional office space and to house a research laboratory for agronomy, soils and horticulture research. The cost of renovating the entire facility of 8,700 square feet would be **\$1,680,000**. All offices in the EFC are occupied. Four additional staff members have been or will be hired in 2008 to conduct horticulture, malt barley and irrigation research. Temporary workstations for employees are being used in a room utilized for videoconferencing and as an electronics library.
- Contiguous with the EFC would be expanded laboratory facilities, which would house a seed sample processing lab, a soils lab and a horticultural crops lab. With growth in traditional crop research and expansion of research into value-added alternative crops and high-value irrigated crops, the number of crop seed samples to process from dryland and irrigated research plots has increased tremendously in the last 10 years. The current building used for seed sample processing lacks the space needed to condition, weigh and store all of these samples and seed processing equipment. A soils laboratory would allow 1) proper processing of soil samples for analysis (grinding and drying), 2) soil procedures to be conducted, 3) analysis of plant parts such as leaves and petioles for nutrient analysis and 4) space for soil testing equipment and soil sample storage. The center also needs laboratory space for high-value irrigated crops, grape research and other horticulture crops research that would allow proper sampling, processing and laboratory analysis of samples of these crops. The addition will increase operating costs by approximately \$4,500 per year and will address about \$14,500 in deferred maintenance costs.
- C) Renovating the current heating and cooling system in the **Langdon REC** headquarters building by installing an energy-efficient geothermal heating and cooling pump system as a cost-effective method of heating and cooling. This was an alternate during the bidding process at the time of initial construction but was not included due to limited funding. The cost to heat and cool the facility using the forced-air heating and air conditioning using electricity averages about \$15,000 per year. The geothermal heating and cooling pump system is estimated to cost **\$144,000** and would pay for itself in approximately eight years. With the addition of the more efficient geothermal heating system, operating costs will be reduced by approximately \$8,000 per year.
- D) Remodeling the former headquarters building at the **Dickinson REC** in the amount of **\$489,200**. The proposed Dickinson REC headquarters improvement plan involved two phases. The original concept was developed to meet the needs of the center and interest of the area and included 18,500 square feet of new construction and 3,500 square feet of construction involving the existing office building.
- Phase I is complete and encompasses 10,560 square feet of new space, including 24 offices, a student office, three small group meeting/conference rooms, a small videoconference room, a medium meeting room (50-person capacity) and associated storage, lobby, restrooms, locker rooms, mechanical and work rooms. The new construction was completed at \$1,400,000 and is functioning at nearly full capacity. Phase II is being proposed to continue toward the original need. This includes the 3,500 square feet of construction associated with the existing office building. The building is structurally sound and is a significant landmark within the local area. Phase II remodeling would include an office and data center, a medium-sized conference room, data storage, grounds service hub and associated facilities needed for efficient use of the space. The project will save approximately \$1,200 in operating costs per year and will address \$63,000 in deferred maintenance for the building.

Branch Research Centers

2009-11 Major Capital Projects

Research Extension Centers

Headquarters Additions/Renovations - Final Phase

Total Project Costs:

\$2,937,200

This request would complete the renovations/additions of the REC headquarters buildings. The projects would involve:

- A) The completion of the **North Central REC** addition as described and authorized in the 2007-09 legislative session. All offices in the current building are fully occupied, with overflow occurring in the existing library. Videoconferencing and other uses of the computer cluster in the conference room have caused congestion and scheduling problems. Completion of this project was delayed due to a reduction in funding (\$200,000) for the overall project by the Legislature. Due to increased construction costs and inflation, approximately **\$624,000** is needed to complete the facility renovation. The addition will increase the operating cost approximately \$2,700 per year with no deferred maintenance being addressed with the project.
- B) A building addition to the **Williston REC's Ernie French Center (EFC)**. This addition is needed to provide additional office space and to house a research laboratory for agronomy, soils and horticulture research. The cost of renovating the entire facility of 8,700 square feet would be **\$1,680,000**. All offices in the EFC are occupied. Four additional staff members have been or will be hired in 2008 to conduct horticulture, malt barley and irrigation research. Temporary workstations for employees are being used in a room utilized for videoconferencing and as an electronics library. Contiguous with the EFC would be expanded laboratory facilities, which would house a seed sample processing lab, a soils lab and a horticultural crops lab. With growth in traditional crop research and expansion of research into value-added alternative crops and high-value irrigated crops, the number of crop seed samples to process from dryland and irrigated research plots has increased tremendously in the last 10 years. The current building used for seed sample processing lacks the space needed to condition, weigh and store all of these samples and seed processing equipment. A soils laboratory would allow 1) proper processing of soil samples for analysis (grinding and drying), 2) soil procedures to be conducted, 3) analysis of plant parts such as leaves and petioles for nutrient analysis and 4) space for soil testing equipment and soil sample storage. The center also needs laboratory space for high-value irrigated crops, grape research and other horticulture crops research that would allow proper sampling, processing and laboratory analysis of samples of these crops. The addition will increase operating costs by approximately \$4,500 per year and will address about \$14,500 in deferred maintenance costs.
- C) Renovating the current heating and cooling system in the **Langdon REC** headquarters building by installing an energy-efficient geothermal heating and cooling pump system as a cost-effective method of heating and cooling. This was an alternate during the bidding process at the time of initial construction but was not included due to limited funding. The cost to heat and cool the facility using the forced-air heating and air conditioning using electricity averages about \$15,000 per year. With the addition of the more efficient geothermal heating system, operating costs will be reduced by approximately \$8,000 per year. In addition, the Langdon REC farm shop, residence, and office/dry lab complex would be upgraded to geothermal heating and cooling. The cost to heat and cool these facilities using the forced-air heating and air conditioning using electricity averages about \$11,500 per year. With the addition of the more efficient geothermal heating system, operating costs will be reduced by approximately \$6,000 per year.* The geothermal heating and cooling pump system is estimated to cost **\$144,000** and would pay for itself in approximately ten years. With the addition of the more efficient geothermal heating system, operating costs will be reduced by approximately \$14,000 per year.
- D) Remodeling the former headquarters building at the **Dickinson REC** in the amount of **\$489,200**. The proposed Dickinson REC headquarters improvement plan involved two phases. The original concept was developed to meet the needs of the center and interest of the area and included 18,500 square feet of new construction and 3,500 square feet of construction involving the existing office building. Phase I is complete and encompasses 10,560 square feet of new space, including 24 offices, a student office, three small group meeting/conference rooms, a small videoconference room, a medium meeting room (50-person capacity) and associated storage, lobby, restrooms, locker rooms, mechanical and work rooms. The new construction was completed at \$1,400,000 and is functioning at nearly full capacity. Phase II is being proposed to continue toward the original need. This includes the 3,500 square feet of construction associated with the existing office building. The building is structurally sound and is a significant landmark within the local area. Phase II remodeling would include an office and data center, a medium-sized conference room, data storage, grounds service hub and associated facilities needed for efficient use of the space. The project will save approximately \$1,200 in operating costs per year and will address \$63,000 in deferred maintenance for the building.

**this portion of the project was mistakenly omitted in previous printings of this book.*

Branch Research Centers

Reconciliation of 2007-09 Original Appropriation to 2009-11 Executive Recommendation (SB 2020)

	(1) Dickinson	(2) Central Grasslands	(3) Hettinger	(4) Langdon	(5) North Central	(6) Williston	(7) Carrington	(8) Total
General Fund:								
2007-09 Original								
General Fund Appropriation	\$1,985,394	\$1,187,332	\$1,229,171	\$1,203,817	\$2,062,702	\$1,593,865	\$2,039,227	\$11,301,508
Less amount used in 2005-07, per emergency clause					(2,120)			(2,120)
Reallocation of revolving equipment pool	100,000	(100,000)	-	(100,000)	(100,000)	100,000	100,000	-
Transfer from Main Research Center to Extension Service and Branch Research Centers (1% Salary Increase)	15,542	7,519	7,163	7,184	7,584	7,781	14,030	66,803
2007-09 Adjusted Appropriation-GF	2,100,936	1,094,851	1,236,334	1,111,001	1,968,166	1,701,646	2,153,257	11,366,191
Base Adjustments:								
2007-09 One-time funding, net of emergency clause					(697,880)			(697,880)
2007-09 Adjusted Appropriation, Less Base Adjustments	2,100,936	1,094,851	1,236,334	1,111,001	1,270,286	1,701,646	2,153,257	10,668,311
Increases (decreases) included in base budget request:								
Cost to continue FY2007 salary increases	45,334	20,952	20,208	14,651	7,473	34,467	34,689	177,774
Cost of 2009-11 capital bond payments		56,908			92,726			149,634
2009-11 Base General Fund Request	2,146,270	1,172,711	1,256,542	1,125,652	1,370,485	1,736,113	2,187,946	10,995,719
Executive Recommendation Increases (Decreases):								
Compensation package (5% per year) and health insurance increases	207,501	93,717	93,107	91,527	115,626	121,070	183,923	906,471
Total Increases (Decreases)	207,501	93,717	93,107	91,527	115,626	121,070	183,923	906,471
2009-11 Executive Recommendation - General Fund	\$2,353,771	\$1,266,428	\$1,349,649	\$1,217,179	\$1,486,111	\$1,857,183	\$2,371,869	\$11,902,190

Continued

Branch Research Centers

Reconciliation of 2007-09 Original Appropriation to 2009-11 Executive Recommendation (SB 2020) - Continued

	(1) Dickinson	(2) Central Grasslands	(3) Hettinger	(4) Langdon	(5) North Central	(6) Williston	(7) Carrington	(8) Total
Other Funds:								
2007-09 Original								
Other Funds Appropriation	\$4,090,972	\$1,079,816	\$1,211,655	\$493,146	\$1,761,632	\$1,540,179	\$3,538,111	\$13,715,511
2005-07 Capital projects carryover					366,623			366,623
Transfer authority from Main Research Center Branch Research Centers (1% Salary Increase & Permanent Oil Trust)	459,036	1,384	4,310	2,156	5,224	1,255	6,328	479,693
2007-09 Adjusted Appropriation-OF	4,550,008	1,081,200	1,215,965	495,302	2,133,479	1,541,434	3,544,439	14,561,827
Increases (decreases) included in budget request:								
Costs to continue FY2009 salary increases	455,050	80,079	102,249	14,074	145,874	87,366	187,316	1,072,008
2005-07 Capital projects carryover					(366,623)			(366,623)
2007-09 Capital projects	(701,000)							(701,000)
2009-11 Capital projects	350,000							350,000
Other changes in estimated income	(1,724,058)	(95,048)	281,786	336,175	514,440	(628,800)	355,121	(960,384)
Total requested increases (decreases)	(1,620,008)	(14,969)	384,035	350,249	293,691	(541,434)	542,437	(605,999)
2009-11 Other Funds Request	2,930,000	1,066,231	1,600,000	845,551	2,427,170	1,000,000	4,086,876	13,955,828
Executive Recommendation								
Increases (Decreases):								
Compensation package (5% per year) and health insurance increases	78,809	7,943	45,506	28,842	60,671	-	89,217	310,988
Total Increases (Decreases) to Budget Request	78,809	7,943	45,506	28,842	60,671	-	89,217	310,988
2009-11 Executive Recommendation-Other Funds	\$3,008,809	\$1,074,174	\$1,645,506	\$874,393	\$2,487,841	\$1,000,000	\$4,176,093	\$14,266,816

March 25, 2009

LISTING OF PROPOSED CHANGES TO SENATE BILL NO. 2020

Branch Research Centers

Proposed funding changes:

Description	FTE	General Fund	Special Funds	Total
1 Provide funding from the permanent oil tax trust fund for an operating pool for the Dickinson Research Center			\$925,000	\$925,000
Total proposed funding changes		\$0	\$925,000	\$925,000

Other proposed changes:

- 1 Provide a legislative intent section as follows:
LEGISLATIVE INTENT - OPERATING POOL FUNDING. It is the intent of the sixty-first legislative assembly that the appropriation from the permanent oil tax trust fund as provided in subdivision 4 of section 1 of this Act is to be available only for providing funding for operations of the Dickinson research center and the amount provided is to be limited to \$925,000 for the biennium beginning July 1, 2009, and ending June 30, 2011.

LISTING OF PROPOSED CONFERENCE COMMITTEE CHANGES TO ENGROSSED SENATE BILL NO. 2020

Branch research centers

Proposed funding changes:

Description	FTE	General Fund	Special Funds	Total
1 Increases funding for salaries and wages (\$140,000) and operating expenses (\$40,000) for a .7 FTE plant pathologist position located at the Carrington Research Center	0.70	\$180,000		\$180,000
2 Increases funding for salaries and wages (\$180,000) and operating expenses (\$40,000) for 1 FTE forage agronomist position at the Central Grasslands Research Center	1.00	220,000		220,000
3 Increases funding for the irrigation scientist position at the Williston Research Center		65,000		65,000
4 Provides one-time funding from the permanent oil tax trust fund for an operating pool for the Dickinson Research Center			925,000	925,000
Total proposed funding changes	1.70	\$465,000	\$925,000	\$1,390,000

Other proposed changes:

- 1 Provide a legislative intent section as follows:

LEGISLATIVE INTENT - OPERATING POOL FUNDING. It is the intent of the sixty-first legislative assembly that the appropriation from the permanent oil tax trust fund as provided in subdivision 4 of section 1 of this Act is to be available only for providing funding for operations of the Dickinson research center and the amount provided is to be limited to \$925,000, for the biennium beginning July 1, 2009, and ending June 30, 2011.

AGENCY OVERVIEW

Carrington Research Extension Center

North Dakota Agricultural Experiment Station

Agency Statutory Authority

North Dakota Century Code Chapter 4-05.1

Agency Description

The Carrington Research Extension Center was established in 1960. The initial focus of the program was an irrigation research effort to support the Garrison Diversion Project plan to divert Missouri River water for irrigation. The center's scope expanded significantly in the mid-1960s, adding responsibilities for dryland crop production research for central and south-central North Dakota, and again in 1972 to include livestock research. The central location of the Carrington center is important in that the research program can address crops and issues that represent a significant part of agriculture in North Dakota.

The research effort at the Carrington center focuses on these general program areas: traditional crop variety evaluation, crop production and 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 center's 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.

The Carrington center maintains a strong Extension program; three area Extension specialists base their educational programming from the center. The Extension program emphasis areas addressed by these specialists include agronomy (crop production and crop pest management), livestock (livestock systems) and livestock waste-nutrient management. The Extension specialists develop educational programs that are delivered to regional county Extension staff, individual producers and agribusinesses. Through their efforts, the latest research results and refined crop and livestock management guidelines are shared with all agricultural constituencies as their needs and concerns are identified.

The Carrington center operates on a land base of about 1,550 acres. Of this total, about 750 acres are leased or rented to supplement the research, seed and feed production needs of the center. The Carrington center 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.

Carrington center facilities include the headquarters unit with buildings and equipment for processing and storage of foundation seedstocks, equipment maintenance and storage, a research laboratory and a residence. The headquarters building has offices for research and Extension staff and large meeting rooms for university, community and industry educational meetings. The livestock unit includes research facilities that can accommodate about 750 head. It includes feed and forage storage, a feed mill, pole barns, equipment storage, a residence and extensive pens and feedlots.

NDSU
North Dakota State University
**ND Agricultural
Experiment Station**

Agency Mission Statement

The Carrington Research Extension Center conducts research that will lead to the enhancement of agriculture and improve the quality of life across the central region of North Dakota. Specifically, the Carrington center conducts research on both dryland and irrigated crop production methods and systems, improved crop cultivars, feeding of beef cattle, cow-calf nutrition and 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 ongoing Extension educational program.

Agency Performance Measures

Per NDCC 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 19, 2008. The report it 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.

Agency Future Critical Issues

A secure (owned or long-term leases) land base is critical to sustain the current and future research mission of the Carrington center. The CREC attains a significant portion of necessary land base from annual rental agreements. The acreage of land that is owned by the state relative to the total land base required to implement the current programs at Carrington is about 50 percent. For many years, the Carrington REC has operated on a land base of about 1,550 acres. Of this total, just more than 700 acres are secured through annual rental arrangements with multiple landlords. This heavy reliance upon a willing group of landowners to annually rent significant acreage to the CREC 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 significantly reduce or eliminate program contributions that are basic to our department mission.

Additional scientist-level faculty are needed to sustain the level of agronomy (crops and soils) research that farmers, commodity groups and agricultural industry expect from the Carrington center. These high expectations only will increase as the center is viewed by industry as effectively representing so many of the crops and problematic issues facing agriculture in the state. Scientist-level researchers in plant pathology, soil science and bioproduct-based agriculture are among the most critical needs.

Construction of a combination animal care-office-shop-laboratory-equipment storage facility is needed at our Livestock Unit. The CREC has a critical need for a facility at the livestock unit that would have combined functions for animal care, laboratory, office space, equipment storage and a shop. The current facilities that attempt to serve the purposes of the proposed facility are condemned as unsafe for staff, do not exist or are scattered among multiple buildings that were put in place nearly 40 years ago. The number of animals managed and cared for now are more than 10 times greater than when the existing facilities were built. The current facilities are inadequate to support the widely known beef feedlot research program of this center.

An 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 field research on more than 30 crops across 250 to 300 experiments annually. The seeds, plants, soils and other samples associated with these experiments are processed in a 1962 potato warehouse of 2,400 square feet. This current laboratory has limited space for experiment preparation and processing, sample cleaning, dryers and field sample storage, and lacks appropriate temperature-controlled seed storage. Additionally, the present facility is not designed to accommodate appropriate worker protection features, including dust handling and air exchange requirements. The innovative and proactive research efforts of CREC agronomists are compromised because the current facility has zero laboratory space for growth chambers, no greenhouse, limited dryer capacity, no cold storage for germplasm and lacks modern worker protection features.

An expansion in the number of beef feedlot pens and associated waste containment is required to satisfy the many projects related to utilizing the diverse feeds of North Dakota and beef feedlot management. The addition of 16 pens would allow the CREC to conduct one additional experiment per feedout period. A development of a full set of an additional 32 pens would maximize the unit's research capability. Pen expansion must include the associated waste containment facilities to remain compliant with state law.

AGENCY OVERVIEW: Carrington Research Extension Center

Base funding is needed to support technical and operational expenses associated with cooperating with the high number of collaborating NDSU faculty who utilize the Carrington site to conduct their research. The location and environment represented by the CREC make the site highly desirable among scientists who conduct field research. The center has a strong history of assisting scientists who wish to utilize this important research site. However, without additional resources, we cannot sustain, much less expand upon, our desire to provide assistance to fellow researchers.

The rapid escalation in operating and equipment costs is of significant concern to this center. The Carrington center's program diversity with both crops and livestock research has many positives for impacting agriculture in the state. However, this diversity requires a large investment in equipment and associated operating costs. A major portion of Carrington's operating and equipment budget is secured through funds generated from competitive research grant opportunities. Purchasing equipment with grant-based funding has become a limited option because very few agencies allow for this category of cost.

The center has a series of building projects or physical plant improvements beyond those previously mentioned. Examples of other important facility needs include a combination shop and equipment storage building for large-scale equipment, bulk feed storage shed and seed conditioning plant. Physical plant improvement priorities include renovation of existing feedlot pens, improved animal working facilities, parking lot and driveway paving, residence modernization and furnace replacements.

Cow-calf production, beef cattle feeding, feedlot management, livestock waste and nutrient management are the focus of many research projects at the Carrington Research Extension Center.



■ Carrington Research Extension Center

- Initiated a series of corn research projects at Carrington and the Oakes site to investigate corn production strategies that optimize nitrogen fertilizer use efficiency, evaluate no-till and strip-till planting techniques, and corn rotation options with the objective of improving the ability of farmers to satisfy the increasing demand for corn utilized as food, feed and fuel.
- Selected for project leadership in a national research initiative to investigate biomass crops for cellulosic ethanol production, with responsibility to coordinate the assessment of best management practices of conservation reserve plantings for biomass production at research sites across the United States.
- Maintained leadership and support of more than 35 plant pathology studies annually in an effort to reduce or eliminate plant disease losses due to diseases including scab, sclerotinia, rust, ascochyta, tan spot, septoria, anthracnose, pythium and fusarium.
- Continued beef feedlot research using a diversity of feeds and contributed information on feeding cattle and utilizing North Dakota feeds to individual producers, feedlots operators, crop commodity organizations, feed manufacturers, export trade organizations and others.
- Enhanced cattle producers' understanding of their herd genetics, feeding and nutrition, carcass quality, feedlot management and marketing from their experiences cooperating in feedlot research trials that utilize cattle from producer herds from across the state.
- Established the Discovery Farms educational and research project that is established on farm operations to demonstrate and evaluate the effectiveness of various practices on reducing environmental impacts from livestock or crop operations while maintaining their profitability.
- Supplied a record demand of foundation seed for North Dakota seedsmen who secured their seed needs from the center totaling more than 25,000 bushels of wheat, durum, barley, oats, flax, field peas, soybeans and buckwheat in 2008 from the program that produced, managed, harvested and conditioned 100 percent of this total.
- Conducted site-specific research to evaluate crop variety performance, disease control strategies, planting-tillage systems and organic farming practices at off-station research sites near the communities of Oakes, Fingal, LaMoure, Ayr, Dazey, Wishek, Robinson, Cathay, Rugby and Newburg.
- Facilitated interest in expanding the livestock feed processing industry in North Dakota for both domestic and export trade by fostering understanding and appreciation of the opportunity associated with being a producer and source of the many feed grains and coproducts produced in the state.
- Provided research-based information on livestock waste containment, nutrient management, and livestock facility design and location to a growing number of livestock producers, economic developers, citizen groups, and governmental planning and zoning boards.
- Established a series of crop fertility studies that have identified significant value and renewed interest in applying livestock manure for crop production and thereby impacting change where livestock manure is being looked at as a valuable resource for crop fertility and as a soil amendment instead of a waste product.
- Established field nurseries to evaluate and select improved lines of switchgrass and prairie cordgrass that will have the biomass yield and quality attributes for use in cellulosic ethanol production.
- Developed through innovative construction and modification a set of specialized field plot research equipment that allows our researchers to investigate emerging crop fertility and tillage issues related to fertilizer placement, no-till fertilizer application and efficiency of fertilizer formulations.
- Completed additional beef feeding trials using distillers grains from corn processed for ethanol that has resulted in additional knowledge of using distillers grains in livestock rations, including best inclusion level for a number of compound feeds and use at different levels in barley-based finishing diets.
- Established a new series of strip-tillage trials to evaluate the performance of this conservation tillage and planting system with each of the crops of corn, dry beans, soybeans and sunflowers.
- Continued as a research leader in the USDA's National Sclerotinia Initiative. The environment and capabilities at the Carrington center make it the only site across the nation where sclerotinia disease control is investigated on all crops — sunflowers, canola, dry beans, soybeans and dry peas — in this initiative.

AGENCY OVERVIEW

Central Grasslands Research Extension Center - Streeter

North Dakota Agricultural Experiment Station

Agency Statutory Authority

North Dakota Century Code Chapter 4-05.1

Agency Description

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 that extends from Divide and Burke counties in northwestern North Dakota in a southeasterly direction through Dickey County.

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. The CGREC's primary focus is management of grassland acreage that occupies about one-third of the agricultural land in the state. The center also aims to improve production and increase returns to cattle producers.

The CGREC is surrounded by numerous small towns and communities, many of which are thriving and prosperous. In addition, the CGREC is between two counties that rank in the top 10 counties for the production of livestock and forages. This area served by the CGREC contains 5 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.

Agency Mission Statement

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

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

NDSU
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Agency Performance Measures

Per NDCC 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 19, 2008. The report it 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.

Agency Future Critical Issues

The CGREC administers more than 5,000 acres of native rangeland, tame pastures and crop acreages. The center has a commercial herd of 400 cow-calf pairs and 100 yearling heifers. The CGREC has the capability to become a major player in the growth and enhancement of the livestock industry; however, lack of professional and technical staff is becoming a critical hindrance to the growth and development of this center's potential.

New opportunities are developing in the area of sustainable alternative value-added beef markets. The CGREC must be able to partner with local and regional producers in areas that will include whole-systems management of organic, natural, grass-fed and conventional beef raising systems. Livestock numbers in all segments need to grow to better utilize available resources, including the opportunities presented by emerging industries (for example, biofuel). The CGREC must have the necessary staff to be able to serve the Coteau region as a leader in the livestock industry.

Area producers have many questions about new forages and how they may be developed and sustained to insure maximum livestock performance. An agronomist will be needed to assist the director with the demands of the new statewide biofuel study that was implemented in spring 2006.

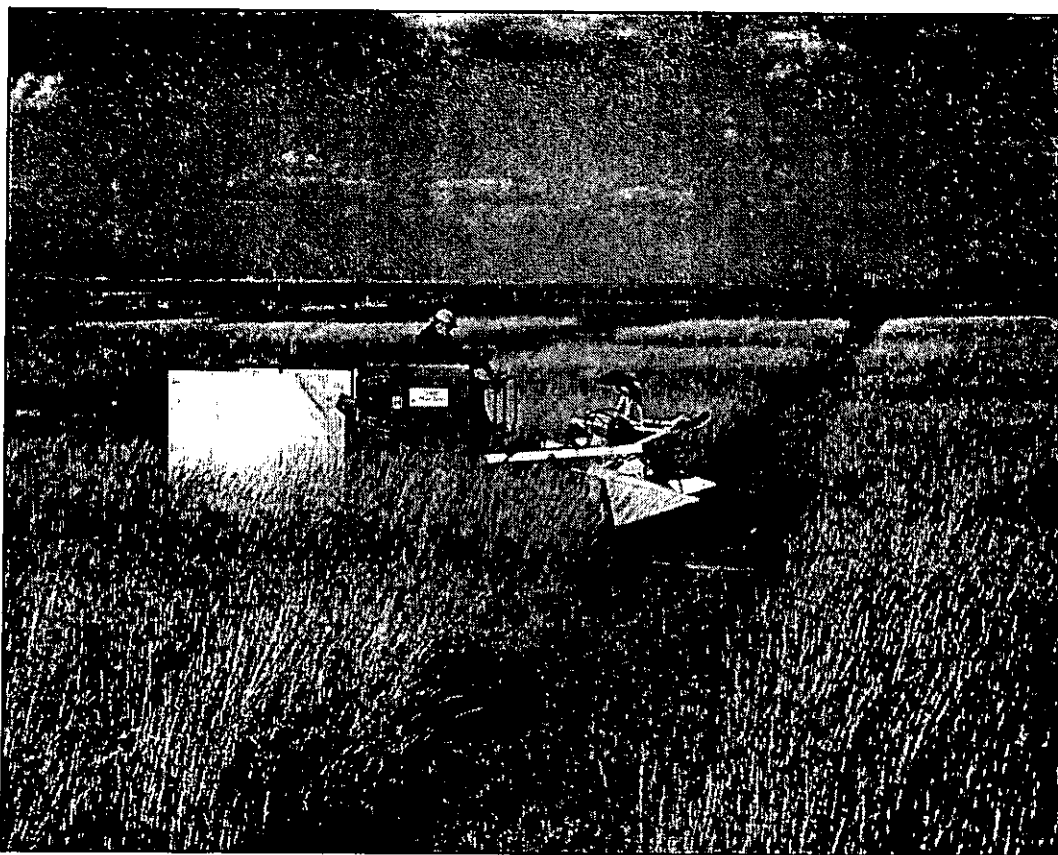
The Medina and Tappen areas, both within 17 miles of the center, have emerged as centers for sustainable and organic crop and livestock production. The Central Grasslands REC is working closely with the Foundation for Agricultural and Rural Resources Management and Sustainability (FARRMS) board to partner with it to increase sustainable and organic crop production in the area.

A forage agronomist and another livestock scientist at Central Grasslands would develop the potential for rural economic development in the area of organic crop and livestock production.

The most critical limitation to the accomplishment of the above goals is the work force at the center. We remain critically short-handed. The costs to continue have depleted our funds for hiring seasonal help and in paying overtime.

■ Central Grasslands Research Extension Center - Streeter

- Received legislative approval for \$350,000 for an addition to the CGREC office building. The addition was completed by Jan. 1, 2007.
- Was awarded a grant to coordinate and develop a biofuel study at six sites across North Dakota. All sites were seeded in spring 2006.
- Developed a whole-ranch management system and range monitoring program.
- Completed a two-year investigation (funded in part by Sweetpro) on the use of ethanol byproducts in first-calf heifer and steer finishing rations.
- Initiated a cooperative research project with Main Station scientists to evaluate swath grazing of three forage species on beef cow performance.
- Cooperated on a research project on vaccine interference with Main Station scientists and Pfizer Co.
- Renewed the memorandum of understanding with the Chinese Academy of Science, Institute of Botany, for a scholar exchange program.
- New animal scientist began work at the CGREC in March of 2008. The scientist will develop a livestock program which will include research on grass fattened beef.
- The CGREC has developed a field plot scale study linking plant photosynthesis to rangeland carbon sequestration. This will provide site-specific data that account for the vegetation's contribution to rangeland carbon sequestration and ultimately to more income for producers.



Paul Nyren, director of the Central Grasslands Research Extension Center, harvests wheatgrass as part of an NDSU study to evaluate perennial grasses for biofuel production.

SD 2020
March 16, 2009
attachment #4

Testimony to the House Budget Committee on SB2020
Representative Robert Skarphol, Chair
February 11, 2009 Paul E. Nyren, Director
NDSU Central Grasslands Research Extension Center

Chairman Skarphol, members of the committee, my name is Paul Nyren and I am the Director of NDSU's Central Grasslands Research Extension Center. I would like to take this opportunity to thank the members of this committee and the North Dakota Legislature for the past support of the Ag. Experiment Station and the Central Grasslands. 2009 will mark the 28th year of operation for the Central Grasslands. Our mission is to study ways to improve the income from livestock grazing native mixed grass prairie while preserving it for future generations. We are continually encouraged by the Administration and our producer Advisory Board to look for ways to improve the quality of life for our constituents through improving and protecting the natural resources of the Coteau region. Towards this end in 2008 we hired Dr. Gregory Mantz as our animal scientist and he has begun work on the economic impacts of forage fattened beef. Range scientists continue to evaluate the impacts of grazing intensity on native mixed grass prairie and to study the economics of annual forages creep grazed in the fall and early winter to lengthen the grazing season.

Studies on carbon sequestration are showing that under moderate grazing the levels of stored carbon in the soil are higher than previously thought which should translate into higher carbon payments for producers. The Center has entered into a cooperative agreement with the USDA-ARS in Mandan and we are working with them to expand our research in range and forages. We continue to host visiting scholars from China each summer. These young graduate students and professors work with us on ongoing research at the center. This arrangement allows us to have graduate level assistants that bring their knowledge and training to work on research that will benefit all North Dakotans.

I am here today to speak in support of the initiative list as prioritized by SBARE. Two of those initiatives involve the Central Grasslands. Number 7 on the ND Ag. Exp. Station priority list would provide funding for a forage agronomist, technician and operating for the Central Grasslands. While the estimates of total number of acres in perennial forages vary, most reliable sources put the number at slightly over 44% of the state's farm acres or 17.6 million acres. There are 11,700 beef, 830 sheep and 550 dairy operations in North Dakota and all rely on pasture, range and forage acreages for a majority of their feed requirements. At this time NDSU does not have a forage agronomist.

In 2006 the Central Grasslands took the lead on a statewide research study to evaluate cool and warm season perennial grasses and legumes for biofuels production. Plots are located at five REC's in central and western North Dakota. This work is funded through a grant administered by the ND Natural Resources Trust and will be a 10 year \$1 million project. The recent agreement with the USDA/ARS and a grant from Ducks Unlimited will allow the expansion of this research to include the Mandan field station and the DU Coteau ranch. To date, this research has been totally grant funded however, this important research work need a source of stable

funding which can only be provided by general fund money.

While a biofuel plant that relies entirely on biomass for its feedstock is still some time away it is now time for NDSU Ag. Exp Station, the research and development arm for North Dakota agriculture, to begin evaluating the agronomics of producing biofuel crops. Recently a company proposed building a multimillion dollar plant in the Jamestown area that would utilize cattails for making paper pulp. Their business plan calls for 400,000 tons of cattails annually to produce 100,000 tons of paper pulp and 50,000 gallons of ethanol. We know very little about harvesting cattails for their biomass. What is the annual yield, how would we harvest them, what is the sustainability of an annual harvest, the transportation issues, total harvestable acres, environmental impact, etc.?

In addition to their value for livestock feed and future energy requirements, perennial forages have a important role in soil health. The highly productive soils around the world are found on areas previously supporting perennial grasslands. The decomposition of roots of perennial grasses and forbs leaves behind valuable organic matter and nutrients and stores organic carbon of interest to those concerned with CO² as a greenhouse gas. In addition, and perhaps as important to North Dakota is the ability of perennial forages to remove soil water from a depth of three feet or more preventing the formation of saline seeps. Saline seeps are most often caused by water moving downslope through the soil until it comes to the surface where it evaporate leaving dissolved salts behind. The deep roots of perennial grasses and forbs, such as alfalfa, can utilize this through flow to produce valuable forage thus leaving the dissolved salts deep in the soil.

Seventh on the Extension list and 10th on the Ag. Exp. Station list is an initiative to enhance livestock development in the state. This initiative would provide funding for a joint research/extension appointment at Central Grasslands to work with the producers of the state to look for new ways to expand and enhance livestock operations. The work begun by Dr. Mantz on forage fattened beef will become much more critical if biofuel processing starts competing with livestock not only for grain but also for forages. We need to know how livestock producers can minimize their needs for expensive feeds and how we might increase lower cost forages in their livestock rations.

Regardless of the outcome of this year's legislative funding I would like to again take this opportunity to thank you for your consideration of these needs and pledge, as always, to do our best to spend the funds appropriated to us in a wise and productive manner. Thank you for your time. Are there any questions?

SB 2020
March 16, 2009
attachment # 4a

2008 Grass & Beef

DECEMBER 2008

RESEARCH REVIEW

"Improving and Enhancing the Natural Resources of the Coteau Region Through Research and Outreach"

Director's Comments *Paul Nyren, Director, CGREC*

Welcome to the 2008 Grass & Beef Research Review. As you may have noticed, this year's report has a different format. We have chosen to shorten the articles, giving the highlights of the research, with the full-length articles on our Web site at www.ag.ndsu.edu/streeter.

Range and Livestock Research ❶

We welcomed our new animal scientist, Greg Mäntz, early this year. Greg received his B.S. degree from Kansas State University in Animal Science and his M.S. and Ph.D. degrees in Range Science from Utah State University. Greg will initiate a livestock research program at the center and is working on a project to evaluate the performance of two frame sizes of yearling animals on grass.

The creep grazing research utilizing late-seeded annual forages continued in 2008, with the cattle turned out on the pastures in mid-October and remaining until Nov. 26.

Also continued in 2008 was the grazing intensity trial evaluating plant and animal response to five levels of grazing. This project completed its 20th year and has become an important research study due to its length and detailed data collection and analysis. This project is being rewritten with plans to continue into the foreseeable future. The study has become an outdoor laboratory and is the platform on which numerous other research studies are being conducted on plant eco-physiology, soil morphology and hydrology.

Cooperative International Research ❷

We hosted two exchange scholars from China again this year. Jinzhi Wang and Jinhui Wang, both from the Chinese Academy of Science in Beijing, arrived in late May and remained at the center until early October. They worked on studies of root decomposition, photosynthesis and how plants respond to drought.

Climate Change Observations and Research ❸

This year saw the construction of an automated weather station northeast of Salt Lake. The weather station is part of the U.S. Climate Reference Network (USCRN) being developed as part of a National Oceanic and Atmospheric Administration (NOAA) initiative. Its primary goal is to provide long-term observations of temperature and precipitation that can be coupled to historical observations for the detection of present and future climate change. Data from the USCRN will be used in operational climate monitoring activities and for placing current climate anomalies into an historical perspective.

In the spring of 2008, the center began working with researchers from the University of Nebraska and Brown University in Rhode Island to sample water from Salt Lake (Lake George) near Streeter, North Dakota. These



samples were sent to a lab at Brown University and analyzed for algae that produce a protein preserved for many years in lake sediments. By knowing the water temperature that promotes this algal growth, past climate changes can be calculated.

The center continues to evaluate carbon sequestration through plant root CO₂ exchange and root decomposition.

Economic Development ❹

The CGREC is working with Nanotex Tech, a company from Korea. Nanotex is proposing the construction of a plant in the Coteau area to process common cattails into paper pulp. This process will utilize up to 400,000 tons of cattails per year to produce 100,000 tons of high-quality paper and, in addition, 50,000 gallons of ethanol. The company holds four patents on the processes used in this technology, with two more submitted. In September, cattails were harvested from a wetland on the center and baled, using conventional haying equipment. Approximately 2.5 tons (3.5 bales) were transported to North Carolina State University to be processed through its pilot pulping mill. Cattails have an advantage over wood in that the pulp developed from them does not need to be bleached and the final paper product is of a high quality.

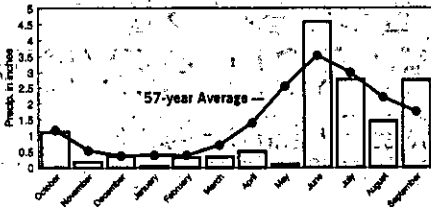
Natural Resources Outreach ❺

In 2008, the CGREC was awarded a grant from the Natural Resources Trust to continue the rangeland monitoring project started a few years ago with a grant from the USDA. The center was fortunate to hire Chuck Lura, a professor of Biology at Minot State University, Bottineau. Chuck completed his research toward his Ph.D. here at the center in the early 1980s. Chuck continued with ranch visits and revisited some of the ranches we had worked with earlier. In addition to his work with individual ranchers, Chuck developed an interactive Web site titled the Range Managers Forum, where producers and agency personnel can log on and ask and/or answer questions pertaining to natural resource issues. For more information on this Web site, see the article on rangeland monitoring in this publication.

Biofuels Research ❻

In 2006, the center, in cooperation with the USDA-ARS in Mandan, began a research study at five of the Research Extension Centers across central and western North Dakota. This study will evaluate the production and longevity of 10 perennial grass and grass-legume mixtures for biomass production. Researchers at the ARS in Mandan are studying the carbon sequestration of each of the species in the study. This research is funded by a grant from the North Dakota Natural Resources Trust. The plots are at Hettinger, Williston, Minot, Carrington and Central Grasslands. Plans are under way to establish plots at the Northern Great Plains Field Station in Mandan in the spring of 2009.

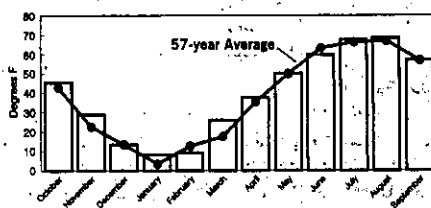
Total Monthly Precipitation (Inches) at CGREC for the 2007-08 Crop Year



Month	2007-08 Precip. (Inches)	57-year Average Precip. (Inches)	Deviation from Average (Inches)	2007-08 Accumulated Precip. (Inches)	2007-08 Percent 57-year Accumulated Average
October	1.09	1.16	-0.07	1.09	93.91
November	0.16	0.52	-0.36	1.25	74.25
December	0.34	0.35	-0.01	1.59	78.26
January	0.03	0.38	-0.35	1.62	67.29
February	0.29	0.38	-0.09	1.91	68.59
March	0.32	0.67	-0.35	2.23	64.63
April	0.50	1.39	-0.89	2.73	56.42
May	0.09	2.53	-2.44	2.82	38.29
June	4.59	3.53	1.06	7.41	67.99
July	2.76	2.97	-0.21	10.17	73.35
August	1.42	2.18	-0.76	11.59	72.25
September	2.73	1.73	1.00	14.32	80.58
Total	14.32	17.77	-3.45	14.32	80.58

Total inches of snow in reporting period = 25.00

Average Monthly Temperature (degrees F) at CGREC for the 2007-08 Crop Year



Month	2007-08 Maximum Temp.	2007-08 Minimum Temp.	2007-08 Average Temp.	1951-2008 Average Temp.	2007-08 Deviation from 57-year Average
October	75	19	45.6	42.7	2.9
November	60	-21	28.6	22.9	5.7
December	45	-15	13.6	13.3	0.3
January	44	-24	8.3	3.2	5.0
February	40	-34	9.0	12.6	-3.6
March	53	-15	25.6	17.2	8.4
April	84	12	37.5	35.4	2.1
May	82	18	49.7	50.0	-0.3
June	82	39	59.6	63.0	-3.4
July	93	42	67.6	66.1	1.6
August	91	46	68.2	67.2	1.0
September	86	32	56.9	57.1	-0.2

Last Spring Frost: May 27, 2008 - 30 degrees (57-year Avg. Last Spring Frost: May 14)
 First Fall Frost: Oct. 13, 2008 - 31 degrees (57-year Avg. First Fall Frost: Sept. 22)
 139 Frost-free Days (57-year Avg. Frost-free days: 131 Days)

The Effect of Climate on the Production of Long Chain Alkenones in Lake George (Salt Lake), N.D., as an Indicator of Climate Change

Jaime L. Toney and Paul E. Nyren

In the spring of 2008, we were contacted by a Ph.D. student at Brown University in Rhode Island, who was using lake records from the northern Great Plains to reconstruct drought through geologic time in the hope of discovering the climate mechanism that causes drought. Researchers there have been working on a sediment record from Brush Lake in eastern Montana and surface sediments from a number of lakes in Montana, North Dakota and South Dakota. They were especially interested in Lake George (Salt Lake) because it has a special type of algae that produces organic compounds that are used as biomarkers to reconstruct climate parameters (potentially temperature, precipitation, H-isotopes and hydrology). Since not much is known about this specific algae in terms of when it blooms or its growth habitat, they were interested

in determining when the compounds of interest are produced. Each week from June through the middle of August, we made our way out into Salt Lake to a depth of 80 feet or more and took water samples from the surface and at depths of 15 feet and 30 feet. We recorded the water temperature, then filtered the sample and placed the filters in a freezer.

Ribosomal DNA sequencing indicates that the three lakes have the same haptophyte strain as found in Ace Lake, Antarctica. We also found that cold conditions with high concentrations of sodium and sulfate promote high concentrations of alkenones. Salinity serves as a threshold control on the C37:4 alkenone such that C37:4 is only found in lakes with salinity above 2.74 g/L.

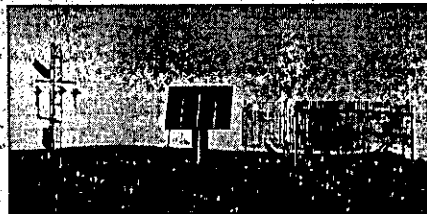
The team of scientists plans to come to Salt Lake in February 2009 and core the bottom sediments when the lake is frozen and they can take their equipment out of the lake.

A New Weather Station Will Assist NOAA in Monitoring Climate Change

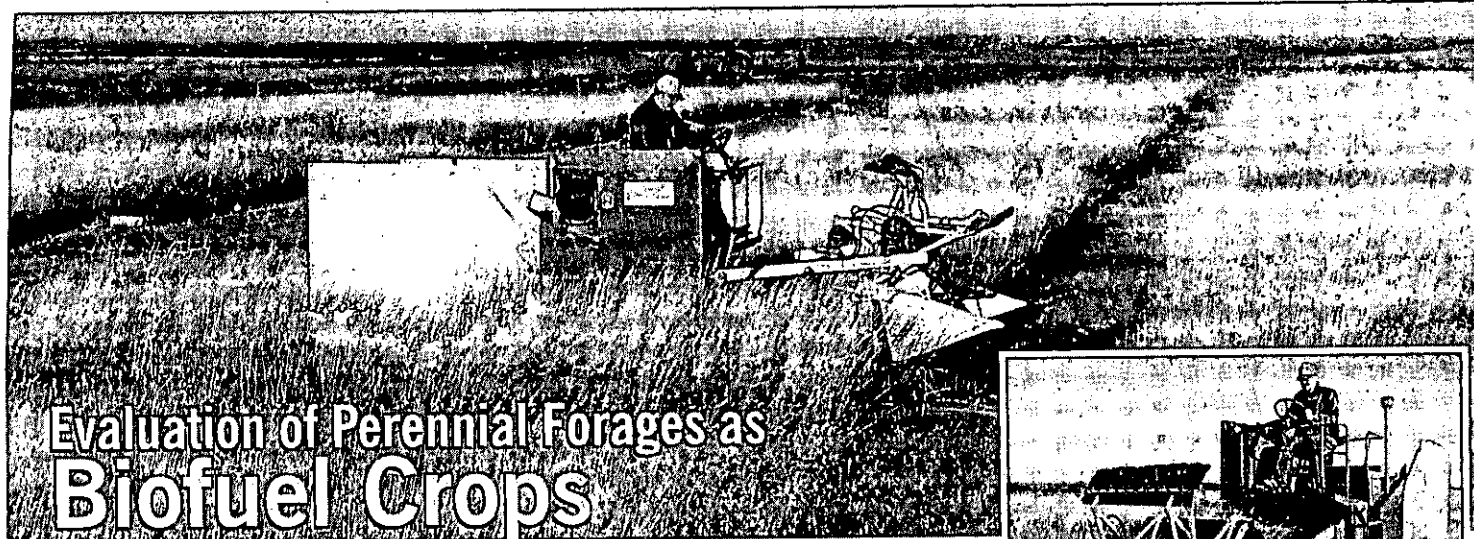
In the summer of 2008, construction was completed on a new weather station at the CGREC as part of the U.S. Climate Reference Network (USCRN). The USCRN is a network of climate stations being developed as part of a National Oceanic and Atmospheric Administration (NOAA) initiative. Its primary goal is to provide long-term homogeneous observations of temperature and precipitation that can be coupled to long-term historical observations for the detection of present and future climate change. Data from the USCRN will be used in climate monitoring activities and for placing unusual occurrences in climate into an historical perspective. The USCRN also will provide the United States with a reference network that meets the requirements of the Global Climate Observing System (GCOS). If fully implemented, the network will consist of about 110 stations nationwide. Each location will be selected carefully to capture the representative climate regions of the nation. A communications network will link each

location to the National Climatic Data Center (NCDC), where the observations will be quality controlled, archived and made readily available with their metadata to a worldwide clientele.

The primary CRN measurement parameters are air temperature and precipitation accumulation. Measurement of these two parameters is essential for the climate record and is required at all CRN field sites. Secondary measurement parameters include wind speed, solar radiation and ground surface (skin) temperature. Future parameters may include relative humidity, soil moisture and soil temperature. The supporting parameters provide concurrent information about the environment in the immediate vicinity of the field site and aid the development of inter-site and inter-network transfer functions. The development of such transfer functions will provide a statistical relationship between measurements at a CRN site and similar measurements taken by other sites and other surface observing networks. The transfer functions are critical for examining changes in the climate signal from and among different observing sites and networks, and will more effectively and more confidently quantify the uncertainty among them. Collecting secondary parameter data also will support new and on-going research endeavors regarding the interrelationship between surface wind speed, global solar radiation, radiative surface (skin) temperature and air temperature. For data collected from the CRN site at the CGREC, see the following Web site: www.ncdc.noaa.gov/crn/hourly?station_id=1611



For more information, visit the CGREC Web site at www.ag.ndsu.edu/streeter.



Paul E. Nyren, Director/Range Scientist, NDSU-CGREC

A good deal of discussion has occurred in the past year or two about the use of grain crops for fuel, primarily ethanol. The use of cellulosic materials, including crop aftermath, small-grain straw, corn stover and perennial forages dedicated to biofuel crops, seems to be a more viable long-term solution. In the area of perennial forages for biofuels, switchgrass has received a lot of attention. Is switchgrass the best choice as a biofuel crop for North Dakota? What will the sustained production be when harvested? What type of husbandry, such as fertilizer, weed control, etc., will be needed? These are questions that need to be addressed before recommendations can be made to producers trying to make these cropping decisions. The NDSU Research Extension Centers at Hettinger, Williston, Minot, Carrington and Streeter are evaluating perennial forages for use as biofuel crops. This 10-year study will evaluate 10 species and species combinations for total yield, stand longevity, fertilizer requirements, weed control, annual vs. biennial harvest and carbon sequestration.

Results for 2008

Hettinger: Due to the dry weather in 2006 and the poor condition of the subsequent stands, the plots at Hettinger were reseeded in May 2008.

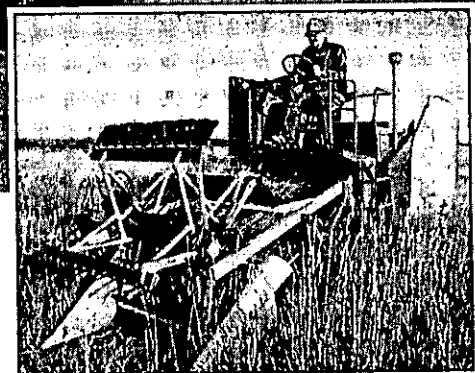
Williston: Yields on the dryland plots at Williston were down from 2007. In 2008, Haymaker intermediate wheatgrass had the highest yield of 0.79 ton/acre. Sunburst switchgrass yielded lowest at 0.50 ton/

acre. On the irrigated plots, Sunburst and Dakota switchgrass increased their yield from 2007 with 7.28 and 4.91 tons/acre, respectively.

Minot: The top yielding plot at Minot this year was Haymaker intermediate wheatgrass with 4.13 tons/acre, followed closely by Alkar tall wheatgrass with 4.10 tons/acre and Sunburst switchgrass combined with tall wheatgrass with 4.09 tons/acre. For the most part, all yields at Minot were down from 2007.

Carrington: All plots at Carrington had lower yields than in 2007. In 2008, Sunburst switchgrass was the top producer, yielding 5.13 tons/acre, down slightly from 5.41 tons/acre in 2007. The top yielding plot in 2007, Trailblazer switchgrass, was down from 6.06 tons/acre to 4.57 tons/acre in 2008. Yields at Carrington ranged from a high of 5.13 tons/acre to a low of 3.12 tons/acre for Magnar basin wildrye in combination with Mustang Altai wildrye.

Streeter: The highest yielding plot at the CGREC in 2008 was again Sunburst switchgrass in combination with tall wheatgrass with 3.09 tons/acre, down 0.58 ton/acre from 2007. The only plots that increased their yield in 2008 were Sunburst switchgrass combined with Mustang Altai wildrye with 2.10 tons/acre, up 0.45 ton/acre, and Sunburst switchgrass combined with Sunnyview big bluestem with 1.98 tons/acre, up 0.41 ton/acre. Because of the poor switchgrass stands, these yields are mainly due to the species seeded in combination with the Sunburst switchgrass.



Biomass plots at the CGREC being harvested in 2008.

- All the plots except those at Hettinger were harvested the week of Sept. 15
- A trend is beginning to emerge indicating that in areas with adequate precipitation, switchgrass has the highest yield. However, on areas with lower precipitation or droughty soils, the wheat grasses yield best.
- The plots on all sites had fewer weeds than in 2007.
- The switchgrass stands on the dryland plots at Williston were very poor.
- The switchgrass plots at the CGREC were reseeded in the spring of 2008 in an attempt to improve the poor stands.
- The overall decrease in plot yields in 2008 can be attributed to lower than normal rainfall across the region.
- Hettinger received adequate early spring precipitation and we are hopeful that the new stands there will have better yields.

For more information, visit the CGREC Web site at www.ag.ndsu.edu/streeter.

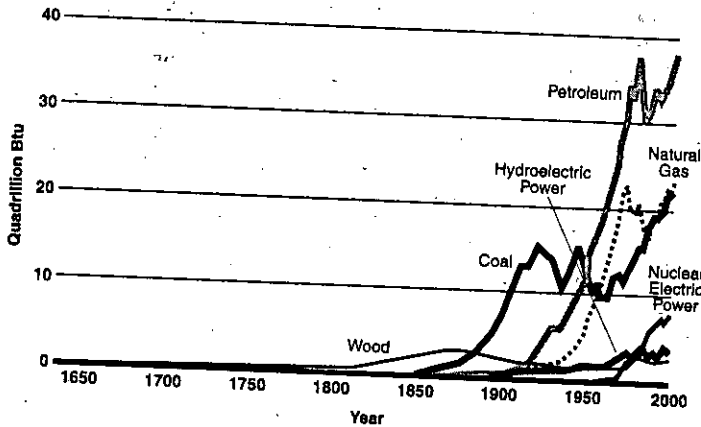
This project was funded in part by grants from ND Natural Resources Trust and ND Ag Products Utilization Commission.

Changing Energy Sources: Development and Conversion

Janet Patton, CGREC

The history of civilization is linked to energy and its sources. The simplest forms of inanimate power — combustion, water and wind — are now transformed into new, more efficient energy sources. The coal that once heated homes and ran steam engines now generates 49 percent of the electricity used in the U.S. and also is used to produce synthetic natural gas. The windmills that milled grain have been transformed into huge power-generating wind turbines.

Energy consumption in the United States by source.



From: The Energy Information Administration, U.S. Department of Energy. Annual Energy Review, 2000.

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A free booklet on the history and research of the CGREC over the past 25 years is available by contacting:

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The dramatic change from the use of draft animals and fuel wood to coal spurred the Industrial Revolution in the latter half of the 1800s. In the U.S., energy production quadrupled between 1880 and 1918. The petroleum industry grew quickly with the discovery of vast oil fields in 1901, and the increased production of automobiles in the 1910s and diesel locomotives in the 1930s and 1940s. The consumption of natural gas, first used for lighting and later for heating, rose quickly after World War. Throughout this time, the demand for coal remained fairly steady until rising in the 1950s.

Another major development in the early 20th century was the ability to transmit power over long distances using alternating current. Starting with hydroelectric dams in the 1890s, large electrical generating plants could be located far from manufacturing plants and consumers. The major sources of electrical energy in the U.S. today are coal (49 percent), natural gas (20 percent), nuclear energy (19 percent) and hydropower (12 percent).

Fossil fuels, forms of converted sunlight, are likely to dominate our energy mix well into the future. Worldwide supplies of petroleum, coal and natural gas are predicted to last at least 200 years at two times the current rate of use. Eventually, however, these fuels will become more difficult to extract or their use may be curtailed by environmental concerns. New ways of utilizing the sun's energy more directly in the form of biofuels and solar power are being developed. The 600 million gallons of petroleum per day that runs the transportation system in the U.S. eventually may be replaced by biofuels, electricity, natural gas and/or hydrogen.

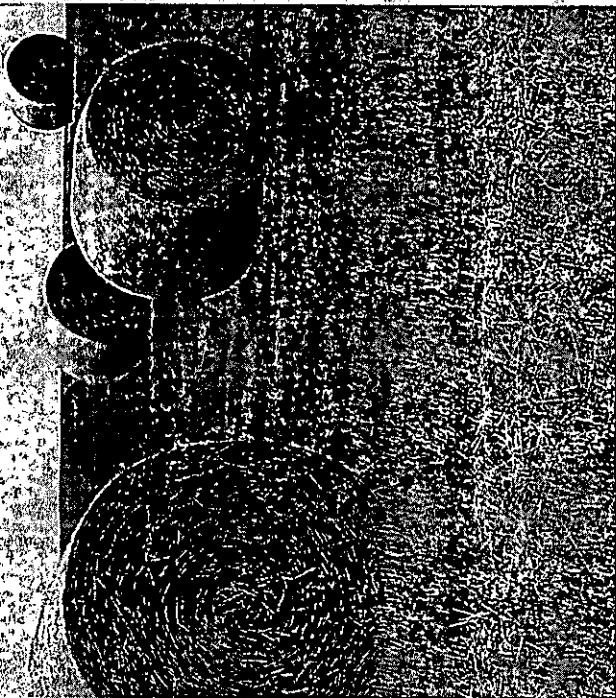
Extending the graph to 2007, wood and wood-derived fuels still contribute 2.2 quadrillion Btu to the energy total. However, other biomass sources should be added: Energy from all biomass sources accounted for 3.6 percent of the 101.6 quadrillion Btu consumed in the U.S. in 2007.

New, promising sources of biomass — perennial grasses, crop residues, trees, algae and animal wastes — are being researched. According to David Bransby, Auburn University, 30 percent of the oil imported yearly (about 17 percent of the total oil used) could be replaced with biofuels. Switchgrass, for example, has been shown to produce up to five times more energy than it takes to grow, and can yield up to 1,150 gallons of ethanol per acre. As a perennial species, switchgrass stores carbon in its roots, improves soil health and reduces erosion. Other grasses, such as those found on the native prairies of North Dakota, have potential for ethanol production and may yield as much ethanol per acre as corn in some areas. Crop residues and hay from CRP and marginal lands may provide feedstock for a cellulosic ethanol plant. Biodiesel from single-celled algae also is being studied because algae have the fastest growth rate of all plants and oil can make up to 60 percent of their biomass.

Our selection of energy sources must be based on many factors: economic, technological, political and environmental. The pros and cons of each source change through time as we have seen in the incredible progression of energy sources in the past 100 years. Our demand for energy is unabated. History has shown that with ingenuity, we can find new and innovative ways to produce energy in the future.

For more information, visit the CGREC Web site at www.ag.ndsu.edu/streeter.

Evaluation of Break-even Farm-gate Switchgrass Prices in South-central North Dakota



Switchgrass, a warm-season perennial grass native to the region, has received considerable interest for its potential role as a dedicated feedstock for cellulosic-based biofuels. As part of the NDSU Biomass Feedstocks Project, the Department of Agribusiness and Applied Economics worked with researchers at the Central Grasslands Research Extension Center in Streeter to examine the farm-gate price needed for switchgrass to provide per-acre net returns equal to those obtained from traditional crops in south-central North Dakota.

A primary focus of the research was to examine how break-even farm-gate prices for switchgrass vary based on soil productivity. Crop budget generators and soil data were used to estimate crop revenues, production expenses and net returns on three classes of soil productivity, holding all other parameters constant (e.g., managerial skill, producer profitability). The budgeting process used forecasted crop prices, trends in regional crop yields and annual changes in per-acre costs to forecast net returns from traditional crops from 2008 through 2017. Prices for switchgrass were calculated using an annualized equivalent analysis of switchgrass production costs and net returns from traditional crops during the 10-year period. Break-even prices for switchgrass covered production expenses and provided for a net return equal to what a producer would expect to obtain from raising traditional crops in each soil productivity group.

Specific Findings

- Switchgrass yields were estimated at 2.7 tons per acre on marginal soils, 3.0 tons per acre on average-productivity soils and 3.5 tons per acre on high-productivity soils.
- Switchgrass production costs, which included an annual charge for establishment but excluded land expenses, ranged from around \$40 per ton on marginal soils to about \$35 per ton on highly productive soils.
- Break-even switchgrass prices ranged from \$47 per ton in the low-productivity soils to \$76 per ton in the most productive soils.

A key economic criterion influencing switchgrass prices will be the forgone net revenue from displaced traditional crops. On marginal soils, just less than one-third of the break-even price was derived from the level of forgone net returns from traditional crops, whereas more than 80 percent of the break-even price was derived from the level of forgone net returns from traditional crops on the most productive soils. If switchgrass is expected to compete with traditional crops as a cash crop, the cost of acquiring biomass from switchgrass will be higher than previously estimated.

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This project was funded in part by a grant from ND Ag Products Utilization Commission.

For more information, visit the CGREC Web site at www.ndsu.edu/cgrec

Rangeland Monitoring Program

Chuck Lura, Program Coordinator, CGREC

The objective of the Rangeland Monitoring Program is to assist range managers with monitoring and improving rangeland health, thereby increasing their subsequent profits. The program was implemented during the summer of 2006 under the direction of Amanda (Hancock) Gearhart and was funded with a grant from USDA Sustainable Agriculture Research and Education (SARE) program. Some common techniques for monitoring rangeland health were explained and producers had the option to choose techniques that met their time and technical constraints. Permanent photoplots often were chosen to observe changes in plant composition and production because they are practical and require a minimum of plant identification. Rangeland monitoring materials and technical assistance were provided to approximately 20 cooperators in North and South Dakota. The project continued in 2008 with a grant from the North Dakota Natural Resources Trust (NRT).

During the summer of 2008, telephone follow-up conversations were conducted with producers first contacted in 2006. The major effort during 2008 was to expand the program to more cooperators over a wider geographic area. To achieve that goal, Extension agents were contacted in counties in the Missouri Coteau regarding potential cooperating producers. That effort resulted in the expansion of the program to several new counties and resulted in 20 new contacts, bringing the total number of participants to 40. The

levels of participation in the program are variable, but an extensive network of producers is being established.

An attempt was made to provide each new cooperator with individualized on-site assistance to explain the program offerings and how to initiate an ongoing monitoring program. Although time needed for visitation with a cooperator varied considerably, between one and two hours generally was used to explain the program and procedures. In some cases where individualized on-site visits were not feasible, e-mail or letter was sent to the producer outlining the program and monitoring procedures, and providing of information.

At the on-site visits, cooperators received a book bag with a three-ring binder including: 1) a menu of monitoring techniques, 2) a notebook for record keeping, 3) information on selected cost-share and technical assistance programs available to producers, 4) a list and description of Web sites of interest to range and grassland managers, 5) portions of the Natural Resources Conservation Service ecological site description (state and transition model, production) for loamy ecological sites on the Missouri Coteau and 6) a copy of Perspectives in Grazing, a document produced by the North Dakota Grazing Lands Coalition profiling 10 innovative producers in North Dakota who have volunteered to serve as resources for other producers. The bag also contained a dry eraser board for use in photoplot monitoring, along with a ruler, flags and per monitor plant growth and regrowth.

Cooperators were encouraged to keep written records of their management activities and set up permanent photoplots for monitoring pasture health. Those cooperators who chose to establish plots receive materials and assistance to set up the photoplots and take the first round of photographs.

The CGREC is committed to range monitoring. Follow-up visits with cooperators will be conducted in 2009.

An enhancement to the monitoring program was to provide more relevant information for producers on the research center's Web site. This included the establishment of the Range Managers Forum, now in cooperation with the North Dakota Grazing Lands Coalition. Also on the site is information on cost-share and technical assistance available to producers and links to other useful Web sites. This information can be accessed at www.ag.ndsu.nodak.edu/streeter.



Chuck Lura visits with ranchers about proper rangeland monitoring.

Photos by Britt Jacobson, Project Coordinator, FARRMS

Long-term Grazing Intensity Research in the Missouri Coteau of North Dakota

Bob Patton, Paul Nyren, Greg Mantz and Anne Nyren, CGREC

A season-long grazing intensity study was started at CGREC in 1989. The objectives are to determine the effect of grazing intensity on livestock performance and profitability, and the sustainability of forage production. Five treatments are included: no grazing, and light, moderate, heavy and extreme grazing. Our goal is to stock the pastures so that at the end of the season, 65 percent, 50 percent, 35 percent and 20 percent of the forage remains on the light, moderate, heavy and extreme treatments, respectively.

Livestock Response

Since 1990, average daily gain and animal body condition scores have decreased with increasing grazing intensity. From 1991 to 2008, the average daily gain has been 1.35, 1.24, 1.08, and 0.77 pounds/head/day on the light, moderate, heavy and extreme treatments, respectively. The corresponding average gain/acre each year during this same period has been 28.42, 54.46, 75.10 and 79.61 pounds/acre, and average body condition scores from 1994 to 2008 were 5.47, 5.36, 5.23 and 4.91 respectively. These averages vary greatly from year to year due to variation in forage, weather, cattle weights and their potential to gain.

Initially, gain/acre increases as the stocking rate increases, but there comes a point when gains/acre decline. We cannot predict which stocking rate will give the maximum gain/acre in a particular year. However, at 2.15 animal unit months (AUM)/acre, gain/acre from 1991 to 2008 would have averaged 74.6 pounds/acre, with a range of -45.3 pounds/acre in 2002 to 149.1 pounds/acre in 1993. Average gain/acre at the average moderate stocking rate, 1.09 AUM/acre, from 1991 to 2008 would have been 54.50 pounds/acre.

If cattle prices were constant, then return/acre would peak at a stocking rate somewhere below maximum gain/acre, with the exact point depending on

Forage Production and Utilization

The average peak forage production on silty range sites from 1992 to 2008 was 2,683, 3,116, 2,892, 2,391 and 2,152 pounds/acre on the ungrazed, light, moderate, heavy and extreme grazing intensity treatments, respectively. The average peak forage production on overflow range sites from 1993 to 2008 under the same treatments was 3,305, 4,104, 4,141, 3,934 and 2,616 pounds/acre. For both types of range sites, the extreme grazing treatment produced the least forage. Also, the ungrazed treatment is not the most productive. The light treatment is the most productive on silty range sites. On overflow range sites, the light, moderate and heavy treatments show little difference, but moderate grazing treatment tends to be the most productive.

Plant Community Dynamics

Changes in the plant community are monitored by sampling frequency, density and basal cover of all plant species, as well as estimating dry weight. A total of 160 species have been found on the silty range sites and 62 have shown a response to grazing based on frequency, density or basal cover. Of the 175 species on the overflow range sites, 51 have responded to grazing. These responses include increasing or decreasing with increased grazing pressure, benefiting from moderate grazing or invading (only appearing after heavy grazing). Of the species responding to grazing (30 percent to 40 percent of the total), the majority are favored by a moderate or heavy level of grazing.

Recommendations

The results of this study indicate that for the past 18 years, the optimum stocking rate would have been 2.09 AUM/acre. However, we feel this stocking rate may be too high to recommend. The extreme and heavy



Yield on the grazing intensity trial is determined by clipping inside a 1/4-meter-square frame.



Frequency data being collected on the extreme grazed pasture. Note this picture was taken in June 2007 when above-average precipitation resulted in a greater than usual growth. Note also that much of the vegetation is forbs such as western yarrow.



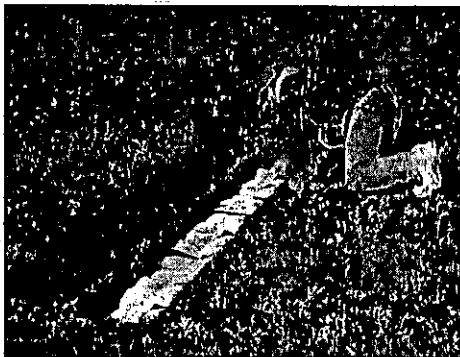
Carbon Sequestration on Rangelands:

The Role of Plants

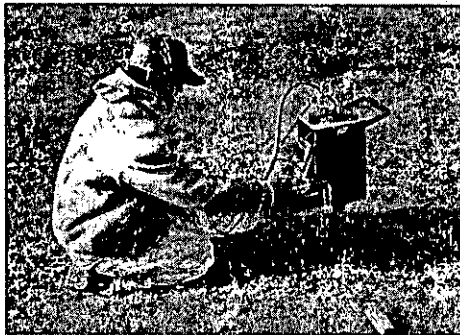
Xuejun Dong, Ecophysiologicalist, CGREC

In terrestrial ecosystems, carbon sequestration is defined as the uptake of carbon through photosynthesis followed by storage in plants and soil. Photosynthesis is the process by which plants create their own food using water, sunlight and carbon dioxide (CO₂). This type of carbon storage plays an important role in reducing the rise of atmospheric CO₂.

In past decades, more ecological studies on carbon sequestration were carried out in forests and croplands than in rangelands. Because rangelands occupy about one-half of the world's land area, more scientists are studying the potential of rangeland carbon sequestration.



Xuejun Dong places root-filled nylon net bags in the soil to study carbon sequestration.



Xuejun Dong takes soil moisture readings using a neutron moisture meter.

However, the high variability in floristics, soil types and topography pose many challenges to this research. Current studies are focused on soil organic carbon dynamics or the overall balance of carbon exchange (carbon sink or sequestration vs. source or net release of CO₂ from the soil) on rangelands through time and under different management regimes. However, a scarcity of data on key ecophysiological mechanisms is hindering further understanding on this topic important for both the general public and rangeland managers.

At the CGREC, we have developed a field plot-scale study linking plant photosynthesis to rangeland carbon sequestration. After two years of field-plot preparation and plot measurements, full-scale measurements started in 2008 and will continue for five years. The main objective is to document plant photosynthetic activity and the components of soil respiration on pastures subjected to both grazing and drought treatments. This will provide site-specific data that account for the vegetation's contribution to rangeland carbon sequestration. In particular, this study considers the following issues:

- Identification of the origins of the rangeland carbon flux, such as photosynthetic input, live root respiration, dead root decay or soil mineral respiration, along with the phenology (different stages of plant growth) of vegetation. This provides opportunities for improving management of rangelands both as an agricultural production system and as a carbon sink.
- Some carbon release from soil to the atmosphere is necessary in a healthy ecosystem. Respiration during the growth of plant roots, for instance, releases CO₂.
- The formation of below-ground plant biomass (roots) increases the life-time of newly sequestered carbon, but also releases nutrients back to the soils for plant use.

This study provides opportunities for observing the behavior of the rangelands in terms of water use and carbon flux as a function of grazing intensity and drought. Three types of manipulations are used:

- Simulated grazing at two grazing intensities: moderate and heavy. Grazing is the most common type of range management in this area.

- Simulated drought using rain-out shelters. The range ecosystem in this area is highly altered due to the widespread introduction of species such as smooth brome and Kentucky bluegrass. Thus, the ecosystem could be vulnerable under prolonged climatic drought which is not uncommon in this semiarid area.
- Soil trenching around each plot to exclude live root growth. This is required to separate live root respiration from mineral soil respiration.

Results from 2008

- Differences in water use and photosynthetic capacity between western wheatgrass (a native species) and Kentucky bluegrass (an introduced species): Kentucky bluegrass needs more water to survive and creates more biomass when adequate water is available. Grazing increases Kentucky bluegrass's photosynthetic potential, but also makes it more susceptible to drought. Western wheatgrass is tolerant to both grazing and drought in terms of leaf physiology.
- The calibration of a stomatal conductance model for use in range plants (see report by Jinzhi Wang), which is a key to calculate both photosynthesis and transpiration in range plants.
- The observation that even in a drought year, about 75 percent of the total plant biomass production is below-ground on rangelands of the mixed-grass prairie.
- The observation that the decomposition of fine roots takes about four years in the mixed-grass prairie and that the root decomposition rate (and therefore the nutrient release rate) in the winter months (October to April) is about 50 percent of that in the summer months (May to September).

The outcome of this study will:

- Provide more accurate accounting of the contribution of plants to carbon sequestration on the mixed-grass prairie rangelands. This will be useful for updating the current reward system for proper range management that sequesters carbon.
- Update and elaborate our current understanding of the inter-dependencies of photosynthesis and soil respiration in rangelands.

For more information, visit the CGREC Web site at www.ag.ndsu.edu/streeter.



Jinzhi Wang (left) and Jinhui Wang at work in the lab at CGREC.

Root Decomposition: Does Species Composition Affect Rate?

Jinhui Wang with Janet Patton

Knowing the rate at which various plant roots decompose is important in understanding how nutrients and organic matter are returned to soils under grassland ecosystems.

Roots alive and in their decomposition affect not only nutrient cycling, but also water movement, microbial activity and carbon sequestration. Many studies have been conducted on root decomposition, but due to the tedious work of separating roots by species, few examine root decomposition of individual species and their interactions.

A study on root decomposition was conducted at the CGREC by Jinhui Wang, a participant in the Visiting Scholars program in cooperation with the Chinese Academy of Science. He collected roots of seven common plant species. Six of them were grasses: Kentucky bluegrass, blue grama, western wheatgrass, needle-and-thread, little bluestem, and smooth brome. The other was a perennial forb, Maximilian sunflower. Roots were washed, dried and weighed and then buried in flat nylon bags. Samples of single species and 14 combinations were included, with five replications. Each bag was buried separately 4 inches deep in an ungrazed native mixed-grass prairie. Bags remained in the ground from July 5 to Sept. 30, 2008. The bags then were collected, carefully washed, dried and weighed.

Wang found that the amount of Kentucky bluegrass root decomposition was the lowest, while Maximilian sunflower root decomposition was much higher than the others. Nearly all species combinations with sunflower roots decomposed more than those without.

Wang will conduct a full data analysis and a nutrient analysis of the roots this winter. With this information, we will have a better understanding of the interactions between species and the relationship between root decomposition and species composition.

Estimating Stomatal Conductance with Computer Modeling

Jinzhi Wang with Janet Patton

To understand how various plants handle drought, we need to measure the rate at which water moves from the roots, through the plant, and back into the atmosphere.

During transpiration, water vapor is released from the plant through tiny pores on the underside of the plant leaf called stomata. The carbon dioxide required for photosynthesis also enters the plant through these openings. Therefore, a reliable computer model of stomatal conductance is useful in analyses involving both photosynthesis and transpiration. This information is useful in ecosystem simulation.

Several stomatal conductance models have been developed, but one described by Gao et al. (2002) seems to be the simplest because it only requires soil water potential, relative vapor pressure deficit and photosynthetically active radiation values. Jinzhi Wang, a Visiting Scholar from the Chinese Academy of Science, tested this model on plants in a native mixed-grass prairie at the CGREC.

Wang used a LI-6400 Portable Photosynthesis System to measure the photosynthetic rate and stomatal conductance of seven dominant plant species in both moderately and heavily grazed pastures under natural rainfall conditions, as well as under rain-out shelters that simulate drought. These species were: smooth brome, Kentucky bluegrass, green needlegrass, western snowberry (buckbrush), rigid goldenrod, white sage and Frodman's thistle. Weekly measurements of photosynthetically active radiation, relative humidity, soil moisture, and air temperature and pressure also were made.

The predicted values of stomatal conductance fit the measured ones quite well for green needlegrass, Kentucky bluegrass and buckbrush. However, predicted values were not close to the measured values for the other species. Further data analysis, along with more field data to be collected next year, will be used to better calibrate the model for use in the mixed-grass prairie.

For more information visit the CGREC Web site at www.ag.ndsu.edu/streeter.

Effects of Grazing on Soil Properties

G.J. Wang and K.K. Sedivec, NDSU Natural Resources Management
P.E. Nyren and A.C. Nyren, NDSU CGREC, Streeter, N.D.



Graduate student Guojie Wang works with David Hopkins to classify soils types on the research pastures.

The Missouri Coteau region of North Dakota is a highland of rock, gravel and soil deposited in a broad band across the state by a receding glacier some 10,000 years ago. The land is characterized by rolling, grassy hills and rocky soils. Potholes and lakes are common. This is an important region for forage and livestock production.

Scientifically managing pastures in this region is a key factor affecting soil properties, water cycling, and ecological and economic productivity. Overgrazing by animals can alter soil physical and chemical properties due to trampling and defoliation, thus reducing productivity. Furthermore, soil properties can influence the region's water cycle and balance, directly altering wetland dynamics and wildlife habitats. The soil is considered a more stable constituent in an ecosystem compared with others such as vegetation. We are studying some important soil properties affected by grazing and are trying to find the key to understanding the "black box" of the ecosystem — soil.

This study was designed to determine the long-term effects (greater than 20 years) of different livestock grazing systems on selected soil properties such as soil profile, bulk density, organic matter, texture, aggregate size distribution and stability, water characteristics, infiltration rate, calcite carbonate equivalent and saturated hydraulic conductivity.

At the CGREC, four grazing treatments were studied: no-use to long-term light, rotational, seasonlong moderate and seasonlong extreme grazing. Each treatment was replicated three times in three different pastures. In 2006, each replicate pasture was stratified by soil series with the same soil type/ecological site. A location with a slope of 6 percent to 9 percent was selected and a transect was established parallel with the slope. The topographic locations of each transect included summit, backslope and toe.

The first soil property we recorded was the soil profile. Soil horizon arrangement and depths are indicators of the soil formation, quality and health. The A (or black) horizon can tell us about soil erosion, soil organic matter content and so on.

Trampling by grazing animals can impact soils, and bulk density is related to this phenomena. Compacted soil has a lower infiltration rate, a higher surface runoff and, accordingly, more erosion.

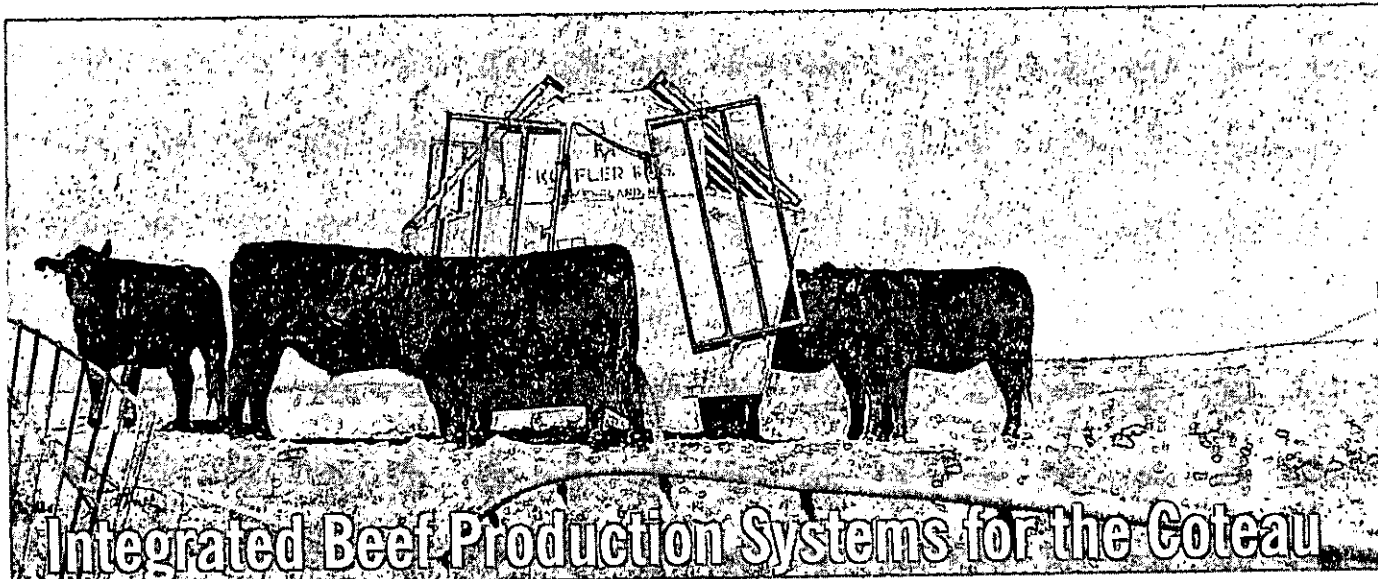
Soil organic matter is a very important component of the soil. Inorganic nutrients, soil structure and soil water movement are influenced by soil organic matter.

Soil aggregate size distribution and stability are quantitative measurements of soil structure. Several factors, such as soil texture, especially clay types and content, and organic matter, can influence these properties.

Water is the most constraining ecological factor in grasslands, so water movement in the soil is the most important soil property to understand. Grasslands receive water from precipitation, and if the rainfall rate is higher than the infiltration rate, runoff and erosion occur. The position of the calcic horizon in the soil profile is also an indicator of water movement in the soil.

Preliminary results show that the soils are indeed a stable constituent of the grassland ecosystem. The different grazing managements do not influence the selected soil properties consistently, but some subtle trends have been observed that will be examined in more detail next year. The soil in this region is extremely variable, making statistically accurate sampling difficult. Topography appears to be the most important source of variation in the soil properties.

For more information, visit the CGREC Web site at www.ag.ndsu.edu/streeter.



Greg Mantz, CGREC Animal Scientist

All phases of the beef production chain in North Dakota have unique challenges:

1. Cow-calf producers are faced with the challenge of maintaining cow body condition and reproduction in a high-cost feed environment. They also are faced with the challenge of finding sires that minimize calving difficulty in first-calf heifers while still producing profitable calves.
2. As the early maturing cool-season grass species smooth brome and Kentucky bluegrass have invaded the native rangelands, cow-calf and stocker operators are challenged by a seasonal forage imbalance of having too much forage available in the spring and too little available in the late summer.
3. The feedlot sector faces a seasonal imbalance of feeder cattle supplies. Supplies are abundant during the fall and winter, but short during the spring and

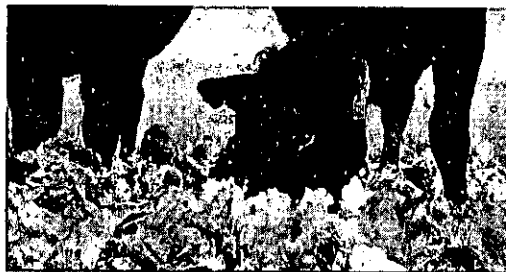
2. Utilizing the early flush of cool-season pasture grasses to put weight on cattle before placing them in the feedlot in mid- to late June may be possible with an intensive early stocking regimen. This would utilize the excess grass and place cattle in the feedlot at a time when feeder cattle in North Dakota are in short supply. Research in Kansas indicates that all frame sizes of cattle can be managed successfully in a winter backgrounding, spring grazing and summer feedlot-finishing regimen. A large compensatory gain often occurs when cattle in this regimen enter the feedlot.

The integrated beef systems research just initiated at the CGREC has three facets:

1. Evaluate the role of frame size and milking ability on fleshing ability and rebreeding in range beef cows.
2. Study the interaction of heifer frame size and sire

The research progress in 2008 at the CGREC was as follows:

1. This past spring, 109 heifers were stratified by frame size and weight, then randomly assigned to medium and small-frame sires. Birthweight, calving ease and calf growth rates will be measured in 2009.
2. Forty-four steer calves from the 2008 calf crop are being backgrounded through the winter for the 2009 integrated stocker-finishing study.
3. A pilot experiment that pasture finished small-frame yearling steers and heifers with and without a pasture supplement was conducted this summer and fall.
 - No difference in daily gain was noted between steers and heifers.
 - No difference in daily gain was noted between supplemented and nonsupplemented yearlings
 - No difference in intramuscular fat (marbling)



Cows grazing turnip foliage on the creep grazing trial at CGREC.

Table 1. Species composition (% of total DM) of café treatment pastures through time at Central Grasslands Research Extension Center, Streeter, N.D., in 2007.

	Date				
	7-Sept ¹	4-Oct ¹	16-Oct ²	31-Oct ²	11-Nov ²
Cowpea (%)	1.8	1.5	0.3	0.0	0.1
Foxtail Millet (%)	45.0	52.5	45.8	57.0	30.0
Other Forbs (%)	13.5	3.8	2.0	1.0	0.0
Radish (%)	5.0	3.6	5.9	1.8	0.3
Soybean (%)	7.0	3.7	3.8	0.0	0.5
Sunflower (%)	13.7	8.3	6.4	10.8	5.6
Turnip Tops (%)	14.0	9.1	17.8	10.6	8.3
Turnip Bulbs (%)	-	17.5	18.1	18.8	55.3

¹Samples collected prior to grazing (n=10/paddock).

²Samples collected during grazing study (n=3/paddock).

Table 2. Forage quality of annual forages and native range at the initiation of grazing (Oct. 16) at Central Grasslands Research Extension Center, Streeter, N.D., in 2007.

	Treatment			
	Café	Foxtail Millet	Native Range	Turnips
Crude Protein (%)	10.13	12.02	8.15	13.61
NDF (%)	41.92	61.74	65.26	21.58
ADF (%)	23.83	33.02	36.16	16.98
Calcium (%)	1.46	0.45	0.54	1.47
Phosphorus (%)	0.38	0.25	0.15	0.38

Utilizing Annual Forages to Extend Grazing

B.W. Neville, D.L. Whitted, G.P. Lardy and K.K. Sedivec, NDSU Department of Animal Sciences, Fargo, N.D. P.E. Nyren, Central Grasslands Research Extension Center, Streeter, N.D.

The objective of this research was to determine the effects of annual forage type on beef cow performance under grazing conditions during the fall and early winter in North Dakota.

- Treatment forages at CGREC: foxtail millet, turnips, a forage mix (café) and standing dormant native range.
- The café mixture consisted of turnips, forage radish, cowpeas, soybeans, sunflowers and foxtail millet (Table 1).
- Forage production at the time stocking rates were calculated was 5,013; 5,225, 2,305 and 2,400 pounds/acre for foxtail millet, turnips, café and native range, respectively. Table 2 shows the forage quality.
- Desiccation and, to a lesser extent, grazing by wildlife decreased the amount of cowpeas, soybeans and sunflowers present in the café pastures as the grazing season progressed.
- Table 3 shows the cow performance. Cow body weight increased 2.0 ± 0.35 pound/head/day; however, these average daily gains did not differ

($P = 0.29$) between treatments. (P -values larger than 0.10 generally mean that the difference between the treatments is likely due to chance rather than a real treatment effect.)

- This data indicates that any of these annual forages would be an acceptable alternative to grazing native range during the early winter.
- Grazing costs were \$0.75, \$0.83, \$1.80 and \$1.27/head/day for foxtail millet, turnips, café and native range, respectively.
- Given that both the foxtail millet and turnips produced more forage than café and that no statistical differences were observed in cow performance, producers could benefit from increased stocking rates when utilizing these annual forage crops in their livestock production systems.

Further research is needed to find more cost-effective forage mixtures to make them more economically feasible.

For more information, visit the CGREC Web site at www.ag.ndsu.edu/streeter.

Table 3. Performance of beef cows grazing annual forages and native range at Central Grasslands Research Extension Center, Streeter, N.D., in 2007.

	Treatment				SE	P-value
	Café	Foxtail Millet	Native Range	Turnips		
Initial BW, lb	1176 ^{ab}	1182 ^a	1168 ^b	1168 ^b	2.22	0.005
Initial BCS	5.27	5.30	5.38	5.22	0.04	0.15
Final BW, lb	1258	1251	1255	1263	9.55	0.85
Final BCS	5.63	5.57	5.47	5.48	0.06	0.31
ADG, lb	1.94	1.65	2.07	2.27	0.22	0.29
ΔBCS	0.36	0.26	0.10	0.26	0.06	0.10

*Numbers in the same row followed by the same letter are not significantly different ($p < 0.05$).

^aBW = body weight; BCS = body condition score; ADG = average daily gain; ΔBCS = change in body condition score.

Cows grazing the cafeteria treatment on the creep grazing study.



Cows grazing turnips: After consuming turnip tops the cows later returned to consume a portion of the bulbs.

AGENCY OVERVIEW

Dickinson Research Extension Center

North Dakota Agricultural Experiment Station

Agency Statutory Authority

North Dakota Century Code Chapter 4-05.1

Agency Description

The Dickinson Research Extension Center (DREC) has an established relationship of harmony and trust with the people in the 13-county region south and west of the Missouri River. The DREC assists agricultural producers in solving production problems with agronomy, animal science and range science while integrating changes in developing technology. Eight major areas are served: agronomy, beef management, biosecurity, cropping systems, horticulture, range management, sustainable agricultural practices and waste management. The uniqueness of each research discipline has been evident. Faculty and staff are committed to engaging people of the region and assist in identifying current economic opportunities while sustaining natural resources for future generations. Research data and producer ideas are continually compared so the DREC can leverage the latest knowledge to benefit the people of North Dakota. 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. This is a continuation of what has taken place for more than 100 years.

Agency Mission Statement

The Dickinson Research Extension 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 dryland 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 dryland 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.

NDSU
North Dakota State University
**ND Agricultural
Experiment Station**

Agency Performance Measures

Per NDCC 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 19, 2008. The report it 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.

Agency Future Critical Issues

Success in prairie agriculture comes from good decisions made by farmers and ranchers. These families know the land and their stewardship is evident as they work to stay profitable, preserve resources and build good lives for themselves. The challenges facing them are many, beginning with the prospect of producing food in a semiarid environment. Innovation, education and transportation remain the keys that allow prairie farmers and ranchers to succeed for themselves and as an industry. The Dickinson Research Extension Center is committed to the adoption of management techniques that maintain profitability, natural resources and our quality of life. We consider the big questions daily as we debate the merits of the many options before us. We will continue to develop and extend relevant and accurate information to help prairie farm and ranch families find sensible solutions to the problems they face and to alert them to new opportunities as they develop. Together we will continue the gains this partnership has provided for a century.

Awareness is growing about the need to monitor and respond to health, sanitary and food safety issues related to cattle and other livestock and the inability of current services to meet this need. Making effective and functional resources available is critical to maintaining effective preventative and, to the extent needed, responsive health programs. The industry, by way of our producers, well-qualified veterinary professionals and impeccable industry standards, needs the centralized services of a prairie animal health center (PAHC) to meet these challenges.

Health and veterinary diagnostic service and research into disease pathogenesis, epidemiology and diagnostics are ongoing and will continue to expand. Research that clarifies how pathogens cause disease and the enhancement of rapid diagnostic capabilities, including concurrent epidemiologic surveillance and modeling of disease transmission, is critical. Development of the PAHC facility and commercial partnerships in western North Dakota is critical. This facility would provide resources for field diagnostic sample collection and processing, animal health education and outreach, expanded student training and field education opportunities, and Extension education. Educational and service opportunities also would exist for various services in beef marketing integrating research on ultrahigh frequency cattle identification tags. Refinement of data management software will continue with electronic animal ID systems. Systems that interact with ultrahigh frequency ID tags, the North Dakota data depository and the USDA national data depository are under development and essential to improved biosecurity.

Science and experience tell us that water supply is the major factor limiting yield in North Dakota and that soil fertility is the second. Producers are not alone in showing that healthy soil captures and holds more water and provides more fertility for higher yields and quality in western North Dakota. No-till and organic farmers and ranchers are calling for more research and support for the use of better crop rotations, adapted cover crops, new marketing opportunities and other tools that are building superior farming systems based on healthy soil. To improve and increase the use of these systems to reach greater profitability and quality of life, the center needs to be able to provide leading research in this most promising area.

The center needs to support farmer innovation and adoption in this area by providing new research to help 1) increase water use efficiency and soil fertility by increasing soil organic matter, 2) prevent soil erosion with cover crops and no tillage, 3) reduce use of nonrenewable resources, 4) control weeds, insects and diseases with better crop rotations, management practices and varieties and 5) obtain the best possible returns. Integrating livestock for greater soil health and profit is critical. The ranchers using no-till forage production and managed grazing report integrated crop and livestock production builds soil and increases profit. Organic farmers tell us the same thing. Center research has shown that cattle can graze corn and other forage crops profitably while reducing the need to harvest and store the feed. The center needs to further this research to bring the highest profits from both enterprises and refine biofuel systems that evaluate locally grown, processed, delivered and utilized feedstuffs.

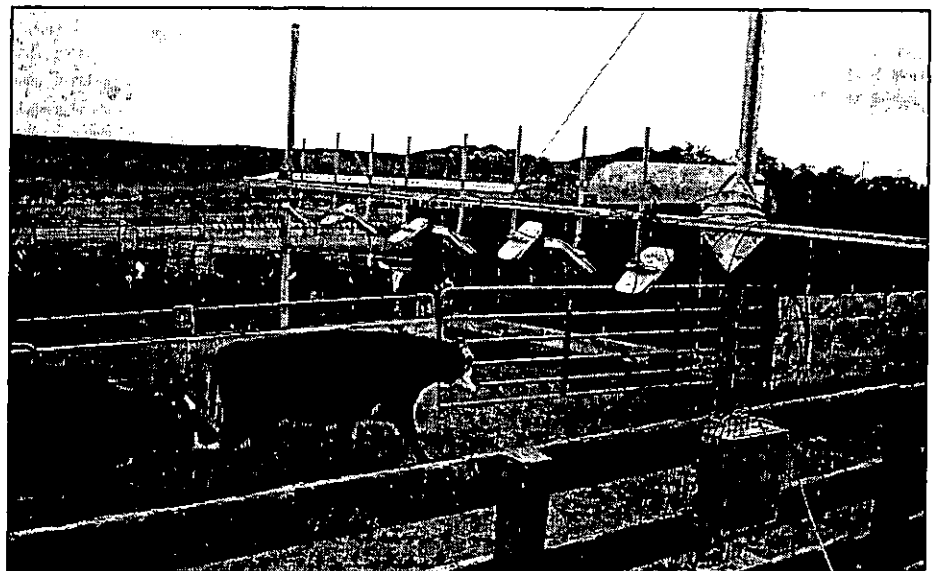
New implementation and refinement of systems of raising crops that build the soil need better tools so that biological science can be turned into profitable farming reality. Tools needed to work in high-residue conditions have not been fully evaluated and, for some situations, the best tools are not available. Tools for measuring or monitoring in real-time changes in field conditions are needed.

■ Dickinson Research Extension Center

- The center continues to plan, develop and implement a relationship with the people primarily in the 13-county region south and west of the Missouri River, although many of the center's programs extend throughout the state, nation and world as well. For example, one center agronomist has been involved in programs in Eastern Europe.
- Programming efforts involve a combination of annual and perennial plants and includes monitoring how plants and animals impact each other. Producers and researchers review management concepts that optimize resource usage and preserve the air, soil and water quality for future economic opportunity.
- No-till and organic research efforts are expanding to improve and increase the use of these systems to reach greater profitability and quality of life for the people the center serves.
- The center, in cooperation with USDA – Natural Resource Conservation Service and Soil Conservation Districts, is demonstrating the benefits and challenges of a zero-tillage system with crop rotations, cover crops and managed grazing.
- The center continues efforts to monitor and respond to health, sanitary and food safety issues related to cattle and other livestock and the inability of current services to meet this need. The DREC is collaborating with the North Dakota Board of Animal Health, NDSU, Dickinson State University, Center for Nanoscale Science and Engineering, Department of Electrical and Computer Engineering, Hettinger Research Extension Center, North Dakota Stockmen's Association, North Dakota Beef Cattle Improvement Association and Veterinary and Microbiological Sciences, and has cooperative efforts with Michigan State University, Kansas State University, University of Minnesota and Iowa State University.
- The center's agronomic research program continues to work with variety development and cooperates with the Plant Pathology department, the School of Natural Resource Sciences and other departments on campus.
- In 2008, the center evaluated 25 varieties of barley, 45 varieties of durum, 49 varieties of spring wheat, 33 varieties of oats, 23 varieties of winter wheat and 22 varieties of white wheat.
- Fifteen-plus acres are committed to a three-year rotation to support variety development.
- The center continues to assist Main Station project leaders in variety development and provides the grain samples for quality analyses (milling/baking) on campus.

Continued

Cattle wearing ultrahigh frequency identification ear tags that NDSU researchers developed pass under scanners that read the tags.




■ Dickinson Research Extension Center (continued)

- In cooperation with NDSU entomologists, work has been expanded on wheat stem sawfly and wheat stem maggot projects, and seed treatment screening will continue involving winter wheat and spring wheat.
- Center Extension efforts include a soil fertility trial and off-site winter wheat variety trial. Golden Valley and Dunn Counties are cooperating in alfalfa variety trials under saline conditions. Golden Valley County is also cooperating in a double crop annual forage demonstration and corn variety trial.
- The center is leading the grass reseeding effort at the Schnell Recreation Area involving the cross slot drill.
- The DREC serves as the host for the North and South Dakota agricultural sustainability program coordinator and has extensive programming efforts in that area.
- The center's beef program is cooperating with the new Animal Sciences Department and the Veterinary and Microbiology Department to expand work regarding cattle reproduction to include heifer development, cow longevity, and E. coli O157:H7 control at the farm level. Multistate efforts include South Dakota, Wyoming, and Nebraska in a coordinated effort to develop strategies for drought management that integrate early weaning, native pasture forage saving, and annual forage grazing. Wintering methods have shown procedures to reduce hay waste and wintering cost.
- The range management program is heavily involved in the implementation of twice-over grazing systems to evaluate the defoliation effects on the structure and dynamics of grassland ecosystems for improved grazing systems for beef cattle production. The DREC cooperates with the Bureau of Land Management, a federal agency, and has a 10-year agreement to facilitate and implement the work that is being developed at the DREC.
- The DREC is cooperating with the State Department of Health, the Dakota West Resource Conservation and Development and the many other agencies involved with livestock waste management issues.
- The DREC Manning Ranch has an existing feeding operation that covers approximately 36 to 40 acres of land. The operation averages 800 head of cattle and horses. An approved waste system is nearly completed that will meet mandatory regulatory specifications from the North Dakota Department of Health for the protection of water quality in nearby water bodies in a manner that would be both environmentally beneficial and cost effective for the producer and the state.
- Center extension efforts in precision agriculture have helped producers reduce fertilizer inputs resulting in savings of up to \$30 per acre.
- The coordinator for the USDA Sustainable Agriculture Research and Education (SARE) program in the Dakotas is based at the DREC. This program brings information about sustainable agriculture to educators and the public in these two states. Last year the program began "Circle of Sustainability" listening sessions at seven reservations across the Dakotas which opened new relationships among residents, Extension and the SARE program.

SUSTAINABILITY

OUR BUSINESS IS FOOD



*"Agriculture is the mother of
all the arts and the foundation
of all civilized society. The
farmer stands close to nature,
he obtains from the earth the
bread and the meat. The food
which was not, he causes to be."
~ Ralph Waldo Emerson*

North Dakota Families



Stewards
of the prairies



Working
shoulder to shoulder
from dawn to dusk



Protecting
our air, land
and water



Caring for
assets of
another, in
this case
those who
follow us!

Creating Sustainable Sensible Solutions

AGRONOMY

The Dickinson Research Extension Center continues research in reduced tillage, variety evaluations, crop rotations, precision agriculture and certified organic production.

BEEF SYSTEMS

Research on integration of crop and livestock enterprises continues. The focus on quality expands through the use of science, research and education initiatives.

BIOSECURITY

The DREC is the only National Incident Management System (NIMS) and Incident Command System (ICS) certified First Responder Team in North Dakota. The DREC is developing animal identification systems that provide the source and age verification encouraged by consumers for beef products.

CROPPING SYSTEMS

Cropping systems are being developed utilizing cover crops and diverse rotations to optimize plant water use and improve soil health.

ENVIRONMENTAL QUALITY

The DREC is working with producers to minimize the impact of livestock manure and capture the nutrient, soil, and economic values of livestock manure.

HORTICULTURE

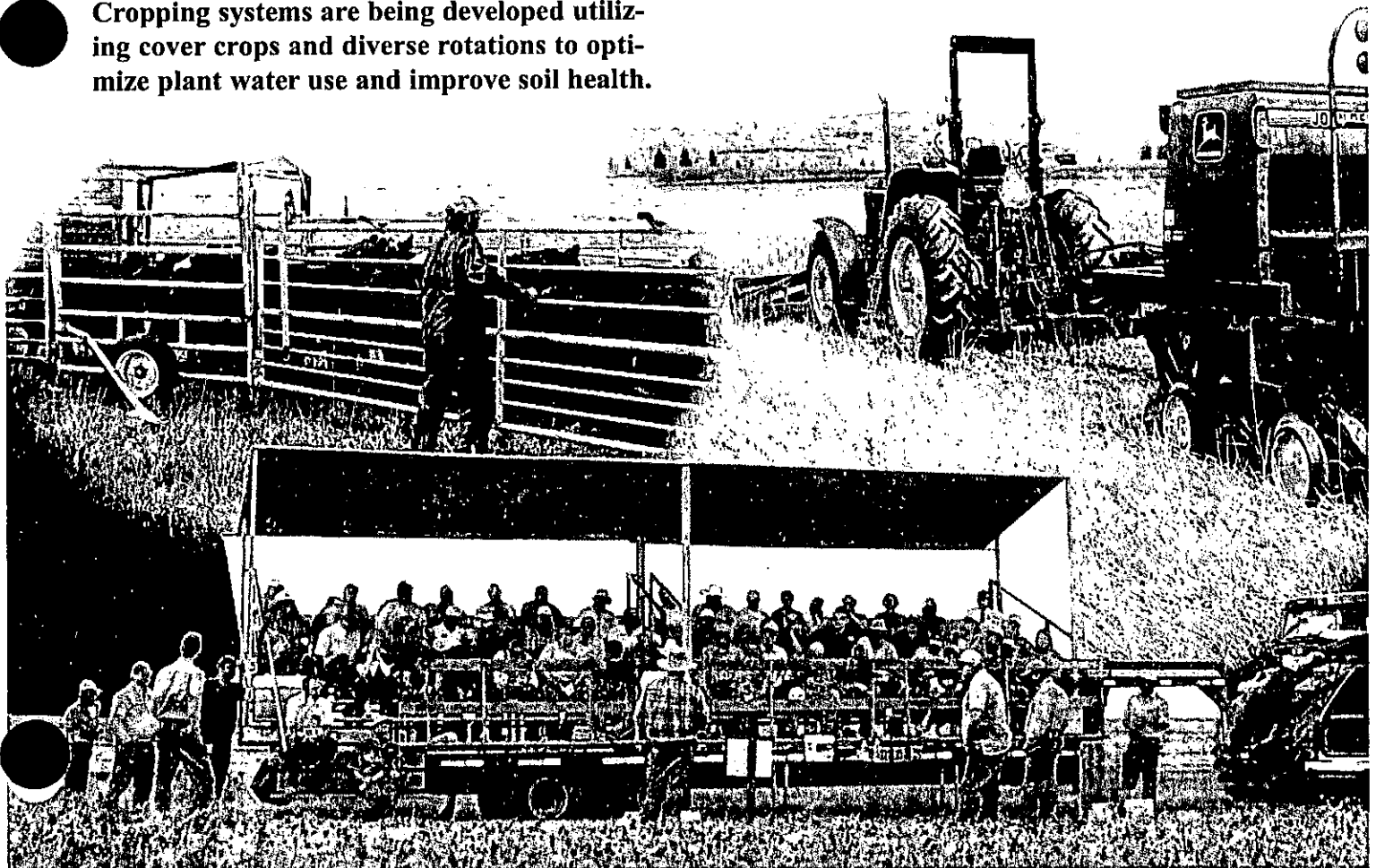
Evaluation of many varieties of plants and demonstrations of management methods that local residents can use in lawns, gardens, and shelterbelts is ongoing.

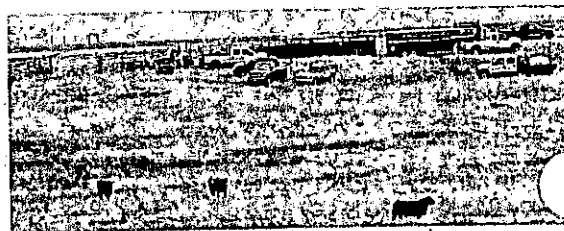
RANGELAND SYSTEMS

The DREC has developed an optimal system of grazing based on animal-plant-microbe interactions. Research results on restoration of native grassland using grazing and no-till methods are promising.

SUSTAINABLE AGRICULTURE

Ways to simultaneously meet economic, social and environmental needs through agriculture are being studied.





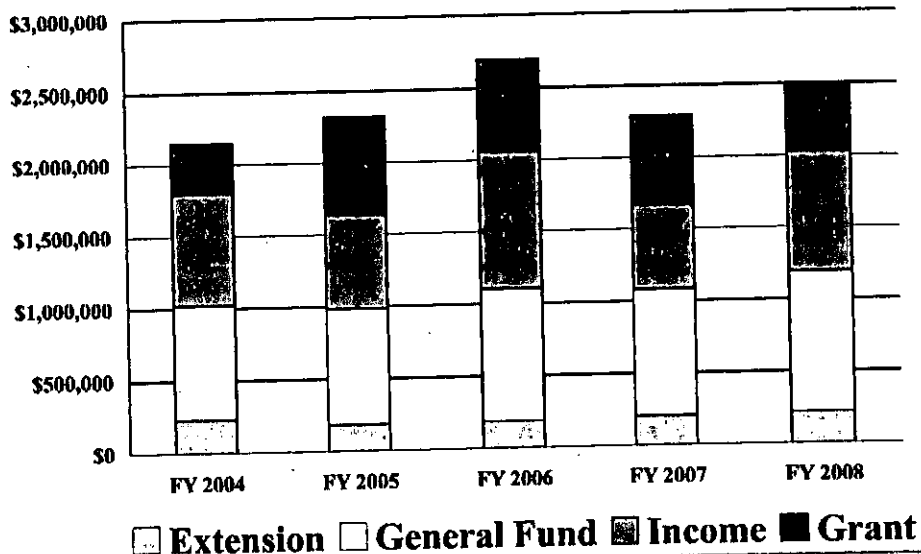
Presented by:

K.A. Ringwall, Ph. D.
Director, DREC

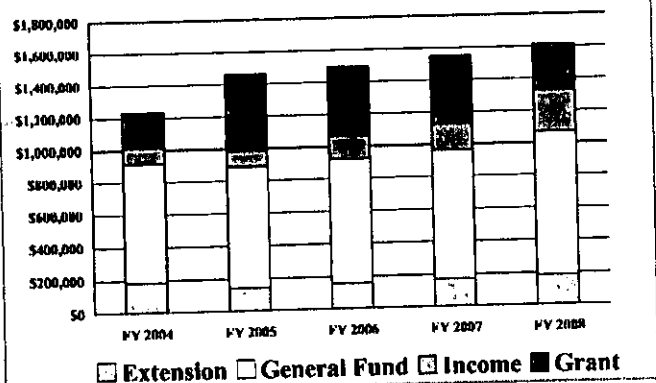
March 11, 2009

ND House Appropriations Committee

Total Expenses



Salary Expenses



Our Objective:

Research and report on agricultural methods that are **SENSIBLE**,
are **SUSTAINABLE**, and advance **STEWARDSHIP**.

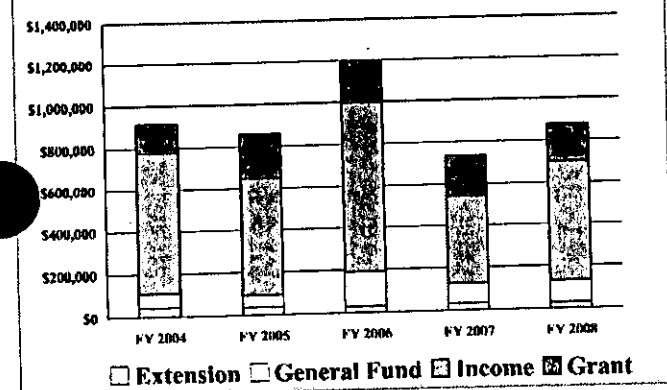
Our Goal:

Use science-based research to achieve **SOLUTIONS**

Serving Agriculture & Rural North Dakota

Agronomy *Biosecurity*
Beef Systems *Cropping Systems*
Environmental Quality *Horticulture*
Rangeland Systems *Sustainable Agriculture*

Operating Expenses



Creating Sustainable Sensible Solutions

• ADAPTATION

Superior legume, pulse, oilseed and small grain plant genetics to resist weed, insect and disease encroachment in our climate.

•• FIELD TO FORK

Integration of production practices with family nutritional food specialists to create high quality consumer friendly diets that utilize and diversify our land base to encourage entrepreneurial efforts.

•• FOOD SAFETY

Fiber-based co-products are sought to provide animal dietary solutions that may reduce shedding of negative pathogens. Improved animal health and care meets today's requirements for wellness.

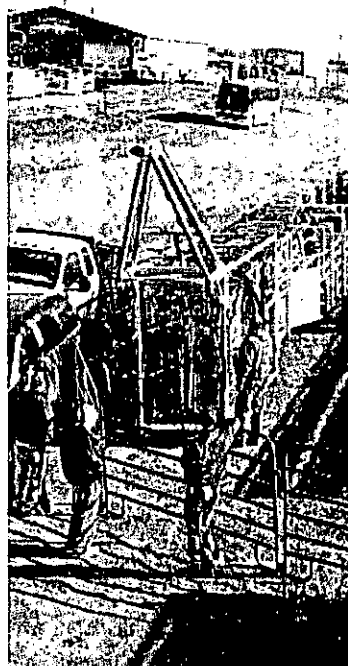
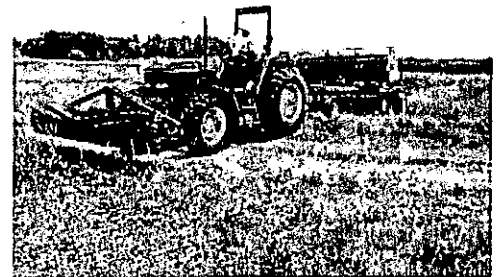


•• RESOURCE PROTECTION

Soil health research, water quality testing and NDAWN are components that contribute to North Dakota's quality of place. These efforts protect natural resources, which are the engines for encouraging new cropping systems and help to manage and minimize risks caused the weather in the prairie biome.

• RENEWABLE ENERGY

Biomass, wind and manure management systems connect the agriculture and energy industries. Efficient integration of systems can improve profits, and stimulate rural economies through research, education and cooperation.

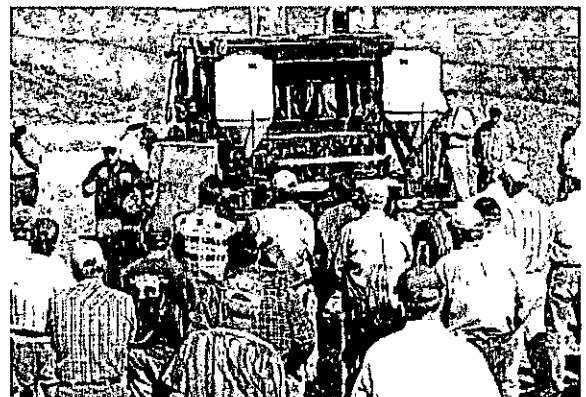


•• RANGELAND RENEWAL

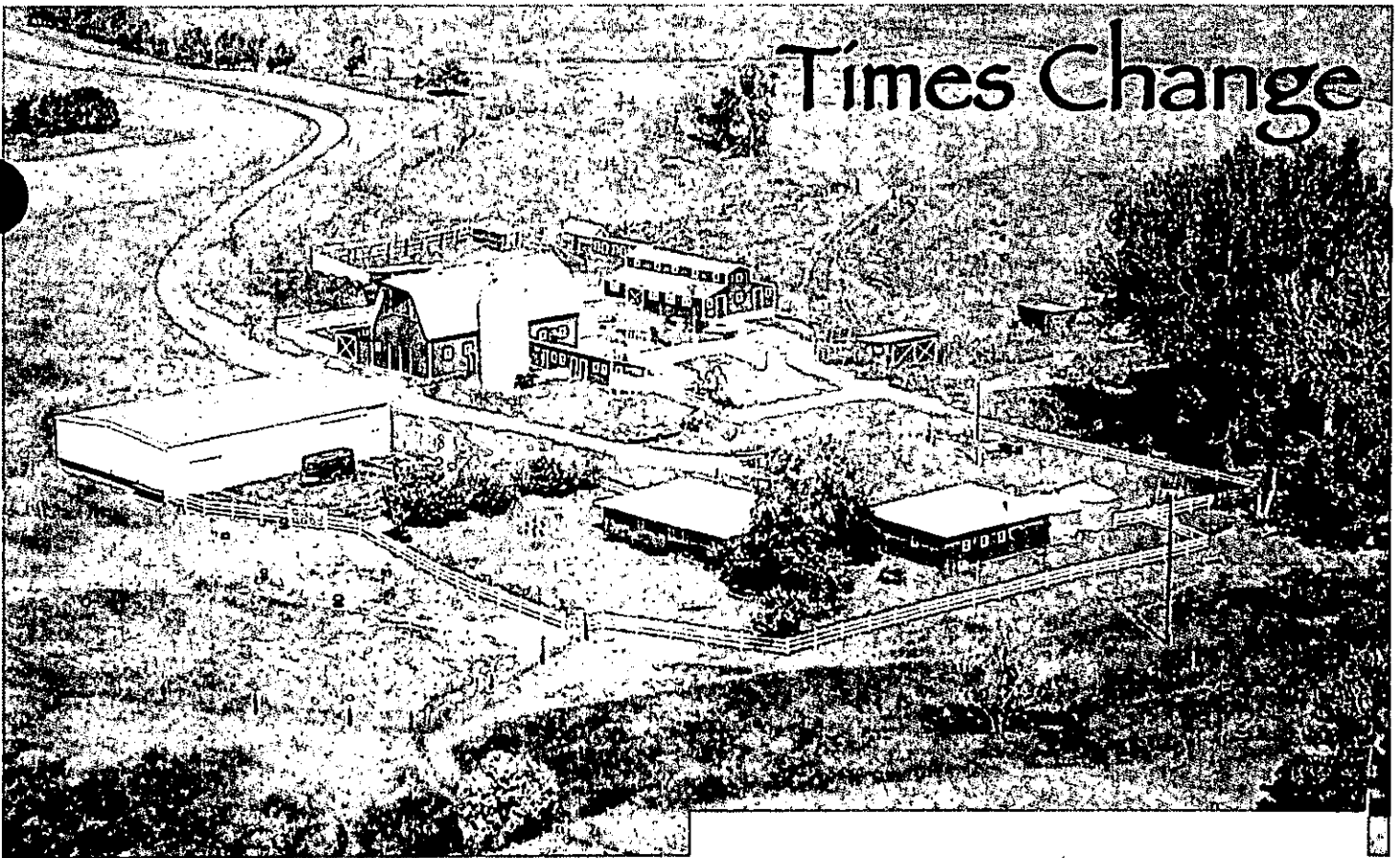
Create microbial ecosystems that improve the health and carrying capacity of forage systems and provide profits to livestock, forage and crop operators.

•• TECHNOLOGY

Rural stewards implement precision practices that help reduce inputs and conserve energy. Technology expands agronomic and livestock management flexibility to compete in today's world.



Times Change

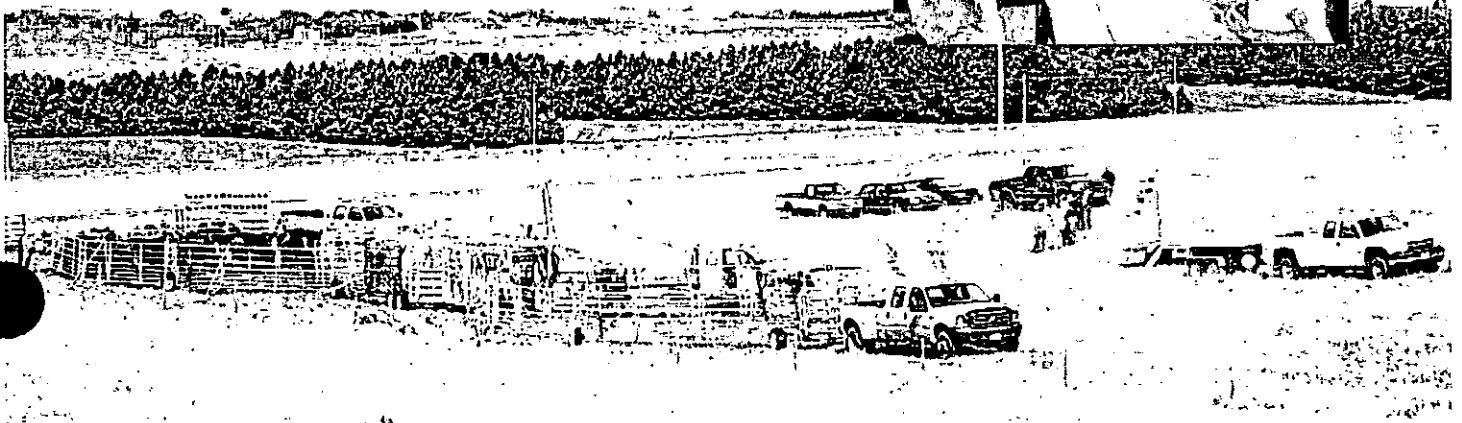


Dickinson Research Extension Center

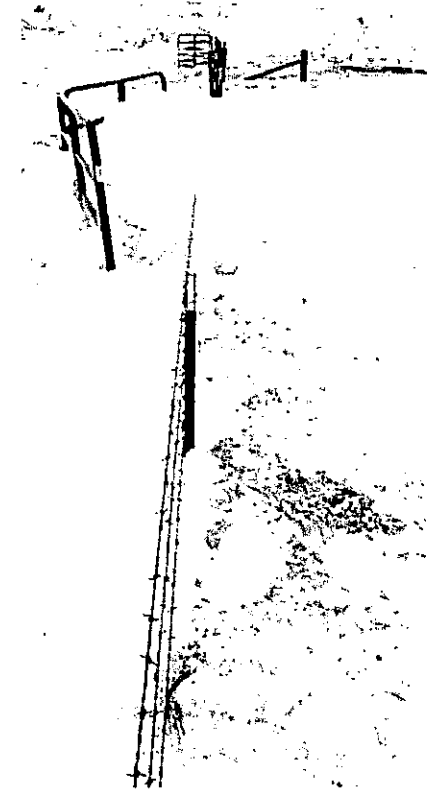
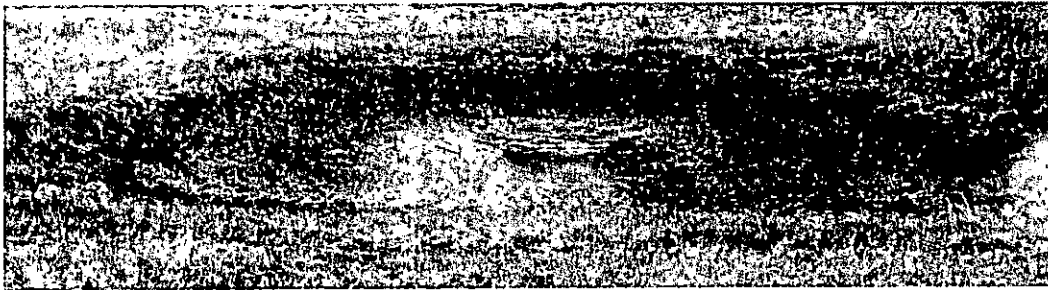
Direct and Overhead Costs

(Avg of FY 2000 - FY 2007)

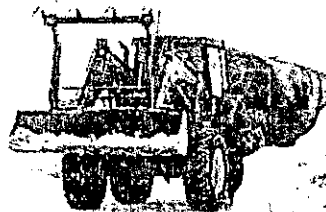
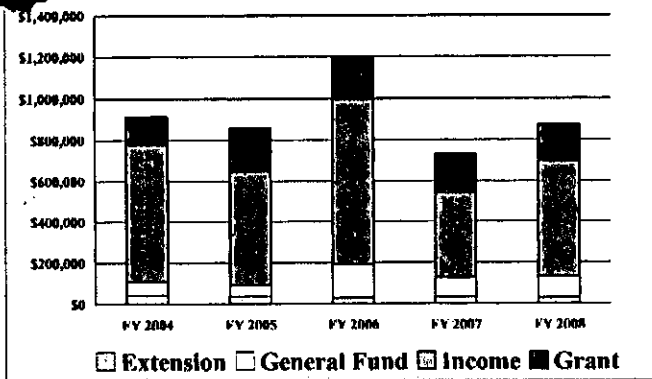
	Avg. No	Costs
BOVINE		
Cow/Calf pairs	330	\$521.11
Replacement Heifer	101	\$359.27
Background	41	\$224.81
Finish	71	\$286.95
EQUINE		
Mare/Foal pairs	23	\$764.68
Maturing Foals	33	\$893.75
Gelding & Draft	13	\$829.43



As the world goes, we go!



Operating Expenses



Wald, Francis J.

From: Phyllis [Phyllis.Okland@ndsu.edu]
Sent: Tuesday, March 17, 2009 1:04 PM
To: Wald, Francis J.
Cc: 'Kris Ringwall'
Subject: Oil Income

Frank:

Here is the information that you requested from Kris concerning our oil revenue....

January 2009.....\$20,056.54

February 2009....\$13,930.19

March 2009.....\$14,144.59

These figures are our best estimate to date.

Phyllis Okland, Administrative Assistant
Dickinson Research Extension Center
1041 State Avenue
Dickinson, ND 58601
(701) 483-2348 Ext 101 Fax (701) 483-2005

PAGE 31

Dickinson Oil Revenue

'07-09 "Actual" Mineral Royalty	1,330,800 *
'07-09 "Actual" Section 11 Transfer	750,000
<u>Total '07-09 "Estimated Actual" *</u>	<u>2,080,800</u>

Dec. '08 Oil Revenue \$ 22,441

× 24 Months

538,584

'09-11 Shortfall Based on

December '08 Receipts

1,542,216

* estimated Feb. 2009

Additional Information:

2007-2009 Budgeted Mineral Royalty	\$ 2,213,609
2009-2011 Budgeted Mineral Royalty	\$ 1,200,000

DSU NORTH DAKOTA STATE UNIVERSITY

College of Agriculture, Food Systems,
and Natural Resources

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Bruce Bollinger

Director

AGENCY OVERVIEW

Hettinger Research Extension Center

North Dakota Agricultural Experiment Station

Agency Statutory Authority

North Dakota Century Code Chapter 4-05.1

Agency Description

The Hettinger Research Extension Center, formally known as the Hettinger Substation, was established from a gift of 160 acres by the residents of Adams County and the city of Hettinger in 1909. Original work at the Hettinger Substation involved converting native prairie to farmland for the purpose of agronomic research. In 1912, through cooperation with the U.S. Department of Agriculture, a dryland farming trial began. In 1913, a herd of Guernsey and Jersey cows and bulls was purchased to aid local producers in the production of replacement dairy cattle. Following a brief closure during the Depression, the Hettinger Substation continued to grow the research programs, focusing on agronomy and sheep breeding. In 1947, an option was secured for the purchase of an extra quarter of land to continue and expand sheep and agronomy research. In the 1980s, the research programs were solidified with the addition of land, bringing the total owned land to 1,130 acres, and the hiring of an agricultural economist and an agronomist.

The HREC is a semiarid site in southwestern North Dakota, providing the most southerly NDSU location in the nonglaciated portion of North Dakota as a site for its agronomy research program. The HREC also is at the center of the North Dakota sheep industry, the focus of one of its animal research programs, and is in an area of rapidly growing livestock feeding ventures, another focus of animal research at the HREC. Additionally, the HREC is in a region where much of the land base is in the Conservation Reserve Program and Forest Service lands, 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 has resulted in a significant increase in the quantity of rangeland, livestock and wildlife interaction research conducted at the HREC throughout the western Dakotas. Research at the HREC involves the disciplines of animal science, range and wildlife science, agronomy, and agribusiness and applied economics. Collaboration is with Main Station scientists; Branch Station scientists; the U.S. Forest Service; grazing associations; university scientists from Wyoming, South Dakota and Montana; and USDA research entities in these research disciplines to improve productivity of livestock and cropping systems and economic development of the region. Through these efforts, the center's research program has gained a national reputation for its involvement with sheep production systems and a strong regional and state reputation for its research in agronomy, multiple-land use and applied economics.

The HREC operates on a land base of approximately 4,700 acres. Of this total, about 3,500 acres are leased or rented to supplement the research, seed and forage production needs of the center. The Hettinger center facilities include the headquarters unit with buildings and equipment for storage of foundation seedstocks, equipment maintenance and storage, research laboratory and bunkhouse, and two residences. The headquarters building was built in 1991 and expanded in 2008-09 and

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AGENCY OVERVIEW: Hettinger Research Extension Center

has offices for research and county Extension staff and large meeting rooms for university, community and industry educational meetings. The livestock unit includes a research feedlot that can accommodate 192 head of calves and 840 head of lambs, in addition to lambing and calving pens and barns.

Agency Mission Statement

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

Agency Performance Measures

Per NDCC 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 19, 2008. The report it 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.

Agency Future Critical Issues

Increases in fuel, fertilizer, equipment, and animal and personal safety compliance necessitate an increase in the equipment and operating pool.

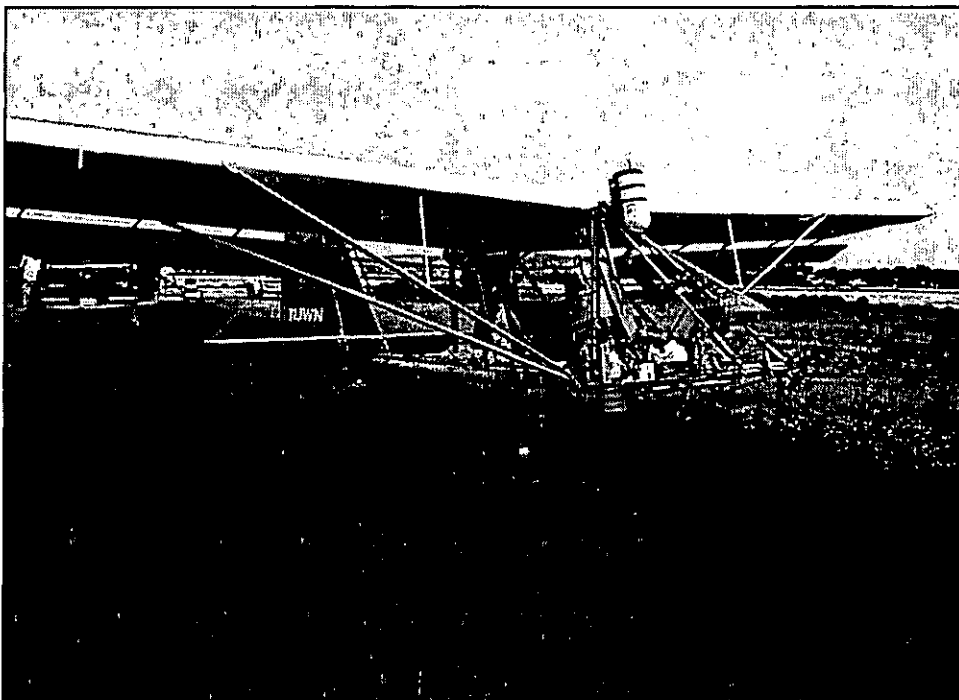
Additional state funding for the core program at the HREC is needed to adequately support and conduct our baseline research programs, specifically weed science, rangeland science and animal science.

Facilities are in need of deferred maintenance funding - specifically fencing, frontage road, water/well maintenance, ventilation in barns, and general office and bunkhouse maintenance.

New facility construction and expansion of existing facilities is needed (agronomy lab, lambing barn, lamb feedlot).

■ Hettinger Research Extension Center

- Distributed foundation seed produced at NDSU research centers, making new varieties available to southwestern North Dakota producers.
- Conducted 79 crop trials, four forage trials, two plant disease trials, two plant growth enhancer trials and 12 herbicide trials, as well as off-station variety testing at Regent, Scranton, New Leipzig, Selfridge, Reeder and Mandan.
- Began evaluating new varieties and technologies for growing drought-tolerant corn and wheat.
- Conducted trials across western North Dakota to evaluate remote sensing technologies on the Grand River National Grasslands, McKenzie National Grasslands and Medora Ranger District with the USDA-Forest Service and the respective grazing associations.
- Conducted multiple research projects evaluating environmental and economic consequences of multiple-use management of agricultural lands in the northern Great Plains, including nesting success of upland birds, telemetry of upland chicks and land transfer patterns in the region during the past 20 years.
- Continued research in "Value Added Animal Production," a research program focused on evaluating forage, grain, byproduct and marketing alternatives in calf backgrounding and lamb finishing. New projects are targeting "natural"-based production of meats, contributing to research for the Beef Systems Center of Excellence.
- Conducts two producer ram tests annually. The spring performance ram test targets terminal sire type rams for a 111-day test and the Dakota fall performance ram test targets the 140-day Rambouillet Certificate of Merit program, one of three Rambouillet ram tests in the nation.
- Conducts annually the HREC Beef Day, Shepherd's Clinic, Crops Tours, Crops Day and Sportmen's Night Out.
- Continued support of the HREC video conference facility and 21st Century Learning Centers, and computer desktop support in southwestern North Dakota.
- Completed "Expanding Ruminant Livestock Production in the Northern Great Plains: An Assessment of Resources, Opportunities and Constraints."



Hettinger Research Extension Center researchers study the feasibility of using 1-millimeter-resolution pictures taken by plane to estimate forage production and rangeland vegetative species' composition on Forest Service grazing allotments.

AGENCY OVERVIEW

Langdon Research Extension Center

North Dakota Agricultural Experiment Station

Agency Statutory Authority

North Dakota Century Code Chapter 4-05.1

Agency Description

The Langdon Research Extension Center is one mile east of Langdon, N.D., on US Highway 5. 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 in northeastern North Dakota and has North Dakota's highest precipitation rates, coolest temperatures and richest productive soils. The environment creates high levels of diverse crop production and recurring disease problems.

The LREC has a strong tradition of assisting the region's producers 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.

Some very positive changes have occurred with the start of the 21st century. Since 2001, the LREC has enhanced its overall agricultural research programming significantly with the addition of a crop protection scientist, a director who also serves the region with an emphasis in rural economic/community development, increased foundation seed stocks programming and a farm business management instructor. The farm business management instructor is employed through a partnership with Lake Region State College and serves more than 40 farm families. In addition, in 2004, a full-service agricultural-based learning center was constructed that greatly enhances outreach and Extension efforts delivered to the region's agricultural industry. 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.

Agency Mission Statement

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

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AGENCY OVERVIEW: Langdon Research Extension Center

Agency Performance Measures

Per NDCC 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 19, 2008. The report it 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.

Agency Future Critical Issues

Acquiring and maintaining adequate resources that allow the LREC to remain proactive and responsive to agricultural production problems and challenges for producers, as well as rural community issues in North Dakota in the face of rising costs, is a critical issue. Unexpected significant increases in energy costs place a burden on the overall operation at the LREC. State fleet, fertilizer, other inputs and heating/cooling costs have increased more than 30 percent, compared with the last biennium.

The increased demand in the biofuels industry, principally biodiesel using canola, and the demand for healthy canola oil pose another critical research issue for the LREC. Additional canola research at the LREC is needed to address variety development, weeds, insects and diseases for biodiesel development. Finding better yielding and higher oil content varieties of canola will benefit both the food and fuel industries.

While many proven methods have been discovered through NDSU ag research concerning crop diseases, the work must continue. The LREC is an ideal location for performing crop disease research because of its favorable disease climate. In addition, the growth in canola research has placed a burden on land resources. The LREC is in need of additional land and water resources to further develop disease and other research at the center.

The Vic Sturlaugson Learning Center has afforded faculty and staff a new office headquarters, as well as meeting room facilities for educational events. The LREC is in a position to implement an active Extension outreach program for producers and families in northeastern North Dakota. Providing an Extension area specialist to the LREC will bring to clients an active outreach program based out of the LREC.

■ Langdon Research Extension Center

- Provided dependable research results concerning crop production issues that impact the region's producers.
- Formed strong research partnerships with chemical, seed and other companies that provide inputs to the region's producers.
- Added \$250,000 in grant research projects in 2007 alone to address unexpected production problems/challenges.
- Continued evolving into a full-service educational outreach center for agricultural as well as nonagricultural outreach.
- Developed new partnerships and continue to pursue value-added opportunities with local economic development groups.
- Hosted approximately 300 educational sessions serving more than 5,000 citizens during 2007 in the Vic Sturlaugson Learning Center.
- Hosted Interactive Video Network-based licensed practical nursing degree program and graduated 10 LPN nurses.
- Significantly increased fusarium head blight disease research by constructing new uniform scab nurseries for the hard red spring wheat, durum and winter wheat breeding programs.
- Increased research work in crop diseases by hiring a research specialist to support the disease research program at Langdon.



Researchers at the Langdon Research Extension Center work to help producers minimize the effect of scab on their crops.

NDSU Langdon Research Extension Center
SB 2020 Testimony – Randy Mehlhoff, LREC Director
January 14, 2009

2007/09 Impacts

- Research Extension Center Support Staff Initiative - \$66,000 – Hired Kevin Misek, LREC Research Specialist – Completing requirements for an MS in soils.
- Scab Operating - \$25,000 – Created two new uniform scab nurseries for the HRSW and Durum breeding efforts at NDSU
- Operating - \$37,500 – Used to offset increase in production input costs and additional operating for the VSLC.
- Revolving Equipment Fund - \$100,000 – Used to purchase a \$160,000 plot combine.

Governors Executive Budget Recommendations (Capital Projects)

- Langdon Research Extension Center Geo Thermal Heating/Cooling System - \$144,000.
- Heating Cooling Costs in 2008 equaled \$21,157.32
- Expect cooling/heating costs to decrease by 70 percent.
- Payback period would be 8 to 10 years
- Many producers in the area considering geo thermal (green) energy conversions in their operations. If funded, the LREC geo thermal system would be available for demonstration tours to educate producers on the system.

SBARE Ranked Research and Extension Initiatives

- As LREC Director, and a member of the NDSU Agriculture Team, I support funding initiatives according to their rank as identified by SBARE.
- Extension Initiative number one will assist the LREC to develop an extension outreach program addressing crop diseases.
- Should the NDAES initiative number four through seven be funded, I ask that you move further down the list and fund research initiative number eight. This initiative will allow us to collaborate statewide with the SCD's, producers and soils scientists to begin a full time effort to address soil saline issues as a result of our states multigenerational intensive farming practices.

SB 2020
March 11, 2009 *attachment #8*
NDSU Langdon Research Extension Center

SB 2020 Testimony – Randy Mehlhoff, Langdon REC Director

March 11, 2009

2007/09 Langdon REC Legislative Action Funding Report

- Research Extension Center Support Staff Initiative - \$66,000 – Hired Kevin Misk, LREC Research Specialist – Completing requirements for an MS in soils.
- Scab Operating - \$25,000 – Created two new uniform scab nurseries for the HRSW and Durum breeding programs at NDSU.
- Operating - \$37,500 – Used to offset increase in production input costs and operating costs for the new headquarters facility built in 2004.
- Revolving Equipment Fund - \$100,000 – Used to purchase a \$160,000 plot combine.

2009/11 Legislative Action SB2020 – First Engrossment/SBARE Initiatives

- As LREC Director, and a member of the NDSU Agriculture Team, I support funding extension and research initiatives according to their ranking as identified by SBARE.
- Extension Initiative number one identifies a crop disease management position with a 70 percent fte extension area specialist identified for the Langdon REC and 30 percent fte extension area specialist for the Carrington REC.
- Our research does not reach its full value until it reaches the people of ND. Funding ND AES initiative number four and five will enhance the LREC's effort to get that research out to the people. ND AES initiative number five compliments Extension initiative number one and would allow NDSU Agriculture to be more proactive in addressing disease issues especially the real threat of a new stem rust called Ug99 recently discovered and expected soon to invade North America.

2009/11 Legislative Action SB2020 – First Engrossment/Capital Projects

- Langdon Research Extension Center Geo Thermal Heating/Cooling System - \$144,000.
- Heating/Cooling Costs in 2008 equaled \$26,500.00
- Conservative estimate shows \$14,000 savings per year (10 year payback period).
- The main station greenhouse project benefits all producers in ND. I ask that you approve additional one time funding of \$5,349,600 to complete the project.

AGENCY OVERVIEW

North Central Research Extension Center - Minot

North Dakota Agricultural Experiment Station

Agency Statutory Authority

North Dakota Century Code Chapter 4-05.1

Agency Description

The NCREC was established in 1945 and is one mile south of Minot on U.S. 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, peas, lentils and chickpeas, in addition to the conventional crops of hard red spring and durum wheat, barley, flax, sunflowers 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.

Agency Mission Statement

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

Agency Performance Measures

Per NDCC 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 19, 2008. The report it 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.

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AGENCY OVERVIEW: North Central Research Extension Center - Minot

Agency Future Critical Issues

- Complete the machine storage and maintenance building for weather protection and security of farm machinery and equipment and to stop renting facilities from neighbors.
- Base funding for personnel to address the research and Extension needs for canola, pulse crops and cereal grain diseases to meet the needs of growers and the increase of processing plants in the Minot area.
- Dramatically increased fuel, fertilizer, energy and operational costs.
- Complete an adequate addition to the headquarters-office-technology transfer building.
- Construct a foundation seed conditioning plant adequate to handle peas, lentils, beans and chickpeas (in addition to small grains and oilseeds) for the growing pulse crop industry and new NDSU breeding program.
- Removal of old seed house.

■ North Central Research Extension Center - Minot

- Produced, conditioned and distributed foundation seed of new NDSU varieties, including Pinnacle and Rasmusson barley, Dylan and Troy chickpeas, Faller hard red spring wheat and Souris oats.
- Continued research of straight combining canola and potentially reducing green seed count.
- Conducted a unique long-term crop rotation study that has demonstrated that crop sequence will affect sclerotinia and blackleg diseases levels in canola.
- Researched new crop protection products for minor crops such as sunflowers, dry peas, lentils, chickpeas, canola and flax.
- Conducted residue trials with the USDA IR-4 that will lead to registration of new herbicides for controlling weeds and insects in North Dakota crops such as canola, sunflowers, flax, dry beans, dry peas, lentils, wheat, barley and millet.
- Conducted Extension outreach programs such as crop pest clinics, field tours, meetings and workshops that teach producers, agricultural industry leaders, private crop consultants and others about new alternative crops and their best production systems.
- Completed the agronomy research laboratory and greenhouse building project.
- Conducted canola field studies for the Oilseed Development Center of Excellence.
- Increased all the highest oil, high-yielding canola lines in the U.S. for the Oilseed Development Center of Excellence project.
- Conducted bioenergy crop research to measure biomass production from switchgrass and other perennials for cellulosic ethanol production.



Mark Halvorson, an agronomist at the North Central Research Extension Center, speaks to producers and others during a field day.

North Central Research Extension Center
Headquarters Building Addition

The headquarters building at the NDSU-North Central Research Extension Center was dedicated in 1999. Changes and additions in programs and staff have created the need for more space. Following are points to justify the need:

Newer positions requiring office space:

Center of Excellence-Oilseeds
Assistant Canola Breeder

Pulse Crop Initiative (2007 Legislative Session)
Assistant Pulse Crop Breeder

Extension Engineer
Energy Engineer Position

Potential future positions:

Area 4-H Specialist
Crop Disease Researcher

Other needs:

Library
Additional paved parking
Sidewalks
Lighting and landscaping
Additional restrooms

Building Requirements/Building Code Regulations:

Increased regulations (cost) when building within one mile of city limits

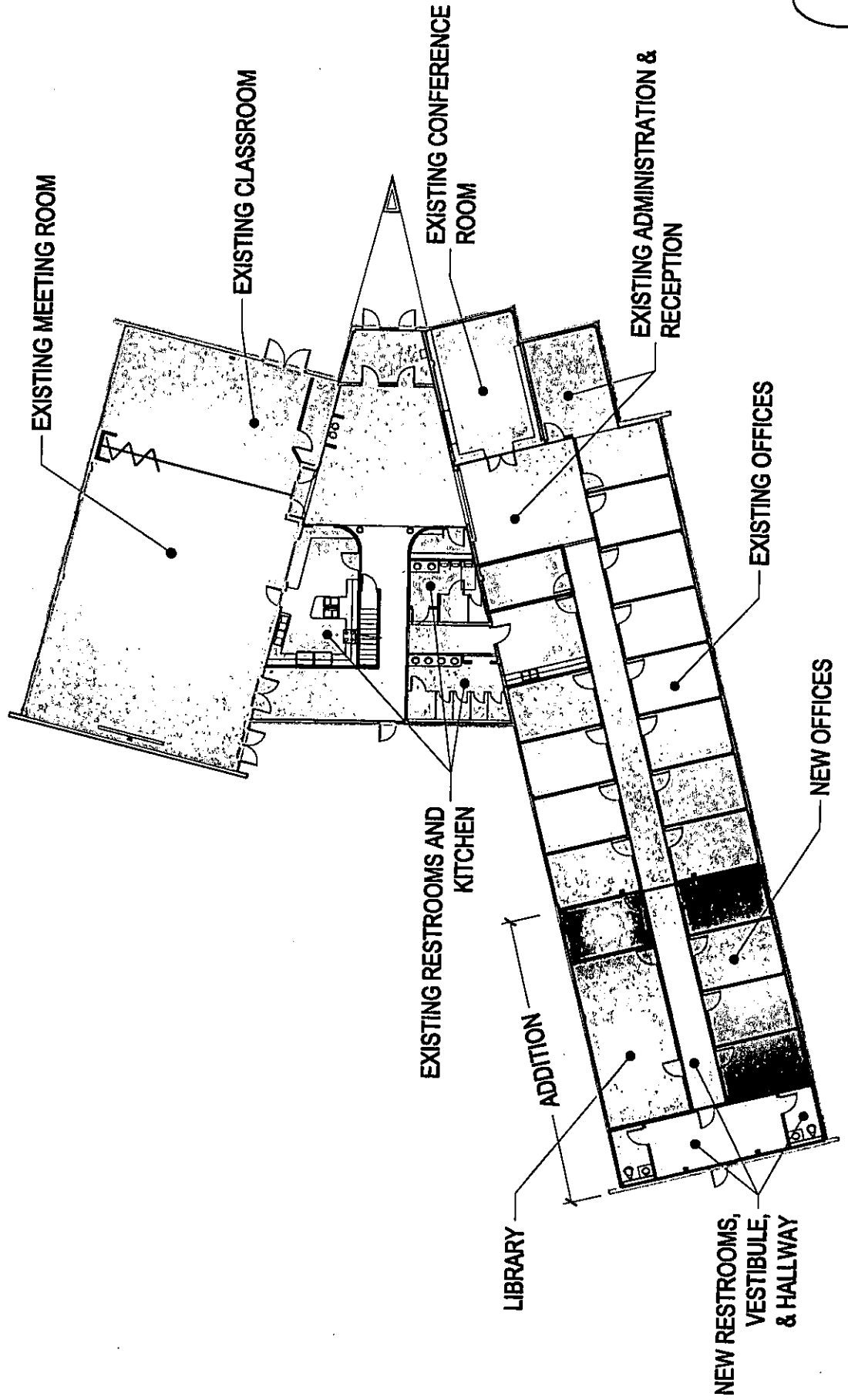
High water table requires

- 1) more expensive septic drain field
- 2) excavate soil, lay fabric, replace soil, add 4 foot of fill

Geothermal heating/cooling will require more wells and added system capacity (higher up-front cost for lower operating expense)

NORTH CENTRAL RESEARCH EXTENSION CENTER

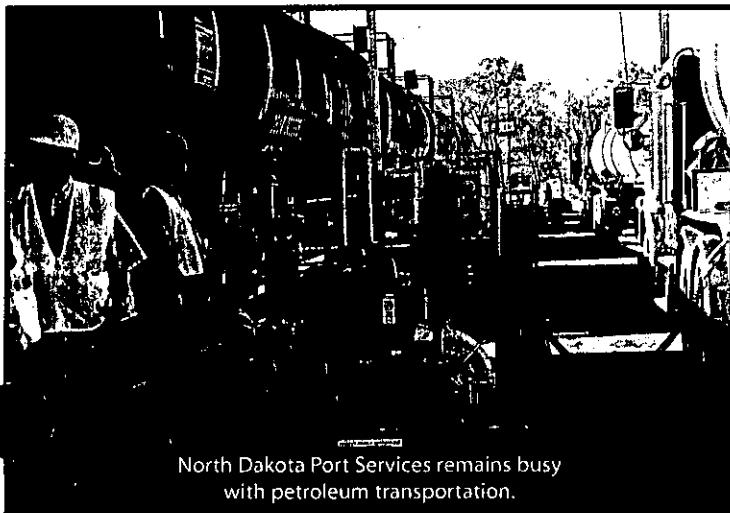
BUILDING ADDITION - MINOT, NORTH DAKOTA



1

Port of North Dakota

As many as 30 trucks a day arrive at the intermodal Port of North Dakota to unload their oil, fresh from the grounds of the Bakken formation, and ship it off to refineries by rail. With the boom of activity in the Bakken, petroleum companies have saturated pipeline services with their exports and are now turning to truck and rail to get the job done efficiently and economically.



North Dakota Port Services remains busy with petroleum transportation.

The Port serves as a cornerstone to the growing oil distribution industry in the Minot region. Some petroleum companies are even coming from as

far as Montana to access the bulk transportation the Port offers. All together last year, North Dakota experienced a 34 percent increase in exports—the highest increase in the nation. Since 2000, North Dakota exports have increased by 225 percent.

The magnitude of the Port's importance to the petroleum industry is particularly impressive considering agricultural commodities were the chief exports in mind when it was conceptualized—a tribute to the Port's versatility. Still, the Port of North Dakota needs to work towards continued development of its ramp operations.

Shipping commodities across the nation and worldwide in identity preserved containers is becoming an increasingly important service, as it saves time and potential contamination.

As the Port's value increases with each month's passing, it in turn acts as a catalyst for drawing new businesses to the area. Such an investment also works to increase the community's service base, resulting in spin-off opportunities. The Project has so far surpassed job creation expectations.

"The Port of North Dakota is becoming a gateway to the world for two of North Dakota's economic powerhouses, agriculture and energy."

— Jay Fisher

C&F Foods, Inc.

In late September, California-based C&F Foods closed on the purchase of MG Grain assets and took over as anchor tenant of Minot's Value-Added Ag Complex.

Previously in 2007, MG Grain announced that Minot would become home to their first U.S. ag processing operation. Construction began on the pea and lentil processing plant until owner Milad Ghattas unexpectedly passed away and the project was suspended. MADC heavily marketed the MG Grain facility conducting over 20 site tours in 2008 before success with this activity led to C&F Foods deciding to make a move to Minot.

In rekindling the project, C&F Foods will continue the visionary goals of its predecessor, purchasing agricultural commodities such as beans, peas and lentils from North Dakota growers then processing, shipping, and delivering them to national and international markets through the nearby Port of North Dakota.

A mutually beneficial relationship between C&F Foods and the Port of North Dakota is expected and will allow each to be more competitive in the agri-business sector. The Port provides unique transportation solutions to Ag Complex tenants such as the flexible, efficient and economical shipping of containerized and bulk commodities that is necessary for the operations of C&F Foods.

C&F Foods is family owned and operated, now with six production facilities in five states including an existing operation in Manvel, ND. Once up and running, the pea and lentil processing plant in Minot will be the largest of its kind in North America.



SB 2020
March 11, 2009
attachment # 10, A



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WELCOME TO C & F FOODS, INC.

C & F Foods, Inc. is a privately held, family owned and operated company. C & F Foods is a major grower, packer, distributor, and exporter of dried beans, peas, rice and popcorn supplying the retail, food service, canning and frozen food manufacturing industries nationally and internationally.

Started in 1975 in a 5,000 sq. ft. facility, C & F Foods has experienced tremendous growth and now occupies five production facilities with a total square footage of over 500,000. These facilities are located in City of Industry, CA., Hansen, ID., Manvel, ND., Dallas, TX and Raleigh, NC. C & F Foods Inc. employs a work force of over 200 plus individuals and ships more than 350,000,000 lbs. of agricultural food products per year.

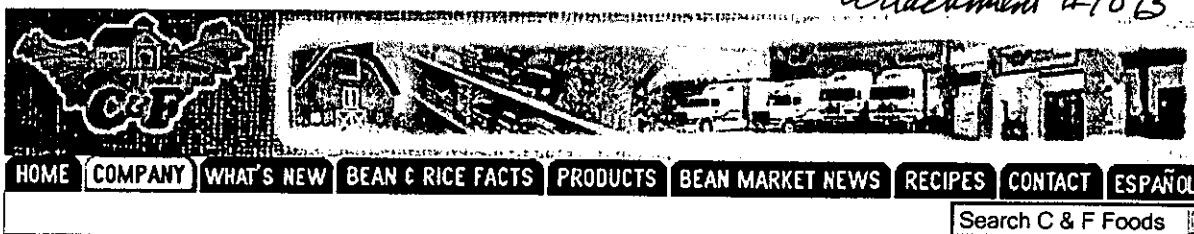


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SB 2020
march 11, 2009
attachment #10 B



CORPORATE PROFILE

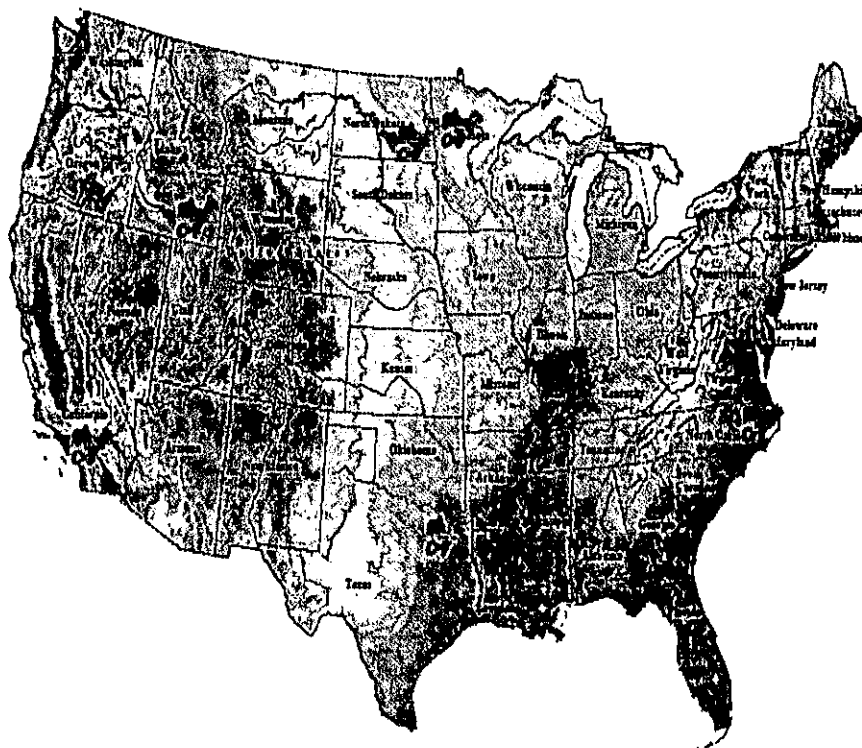
C & F Foods, Inc. is a progressive corporation whose assertive attitude is dedicated to improving our product and our industry. We have revolutionized the retail and frozen food manufacturing industry with the introduction of the "Triple Cleaned" colored bean program. Our dynamic and competitive approach maintains strong growth at higher than the normal industry level. Our commitment is ...



"Consistent quality and service through our dedication to providing consumers with products of superior quality and value".

Get directions and maps to C & F Foods, Inc. by clicking on a destination below:

Our offices our located at:



Corporate Office:
15620 East Valley Blvd.
City of Industry, CA 91744
Phone: (626) 723-1000
Fax: (626) 723-1212

Idaho Plant
22689 U.S. Highway 30
Hansen, ID 83334
Phone: (208) 423-4900
Fax: (208) 423-4903

Minnesota Plant:
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Oslo, MN 56744
Phone: (218) 695-2201
Fax: (218) 695-3006

Texas Plant:
5252 Investment Drive
Dallas, TX 75238
Phone: (972) 709-1000
Fax: (972) 709-1001

North Dakota Plant:
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502 3rd Street
Manvel, ND 58256
Phone: 701.696.2040
Fax: 701.696.2042

North Carolina Plant:
5201 Departure Drive
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AGENCY OVERVIEW

Williston Research Extension Center

North Dakota Agricultural Experiment Station

Agency Statutory Authority

North Dakota Century Code Chapter 4-05.1

Agency Description

The Williston Research Extension Center, established in 1907 and relocated to the present site in 1954, is an 800-acre rain-fed farm in northwestern North Dakota near the city of Williston. Recently (2001) an additional 160 acres were purchased in Nesson Valley and an irrigated research and development project has been initiated at the Nesson Valley site. Studies at the WREC 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, annual pulse crops, canola, flax, alfalfa and other alternative crops also are 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. Soil and crop management systems for sprinkler irrigation and alternative irrigated high-value and value-added crop research studies, including the Western Malting Barley program, also are conducted in the MonDak region in cooperation with the Montana State University Eastern Agricultural Research Center (MSU EARC), Sidney. The WREC also conducts safflower, winter wheat and durum breeding research and variety evaluations in cooperation with MSU and NDSU Main Station scientists. The WREC produces and supplies area farmers with foundation seed of cultivars adapted to the region. Formal cooperation between the NDSU WREC and the MSU EARC was established in January 1994, with a single director responsible for coordinating, broadening and enhancing research programs and educational delivery systems for the MonDak region.

Agency Mission Statement

The Williston Research Extension Center conducts research to increase agricultural productivity in the semiarid 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, Mont., and other cooperating NDSU and University of Minnesota scientists.

Agency Performance Measures

Per NDCC 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 19, 2008. The report it 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.

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AGENCY OVERVIEW: Williston Research Extension Center

Agency Future Critical Issues

A building addition to the Williston REC's Ernie French Center (EFC). This addition is needed to provide additional office space and to house a research laboratory for agronomy, soils and horticulture research. The cost of renovating the entire facility of 8,700 square feet would be \$1,680,000. All offices in the EFC are occupied. Four additional staff members have been or will be hired in 2008 to conduct horticulture, malt barley and irrigation research. Temporary workstations for employees are being used in a room utilized for videoconferencing and as an electronics library.

Contiguous with the EFC would be expanded laboratory facilities, which would house a seed sample processing lab, a soils lab and a horticultural crops lab. With growth in traditional crop research and expansion of research into value-added alternative crops and high-value irrigated crops, the number of crop seed samples to process from dryland and irrigated research plots has increased tremendously in the last 10 years. The current building used for seed sample processing lacks the space needed to condition, weigh and store all of these samples and seed processing equipment. A soils laboratory would allow 1) proper processing of soil samples for analysis (grinding and drying), 2) soil procedures to be conducted, 3) analysis of plant parts such as leaves and petioles for nutrient analysis and 4) space for soil testing equipment and soil sample storage. The center also needs laboratory space for high-value irrigated crops, grape research and other horticulture crops research that would allow proper sampling, processing and laboratory analysis of samples of these crops. The addition will increase operating costs by approximately \$4,500 per year and will address about \$14,500 in deferred maintenance costs.

■ Williston Research Extension Center

- Evaluated the performance and adaptation of new and established crop cultivars and crop cultural practices to improve productivity of agricultural products and reduce inputs in partnership with the MSU Eastern Agricultural Research Center (EARC), Sidney, Mont.
- Conducted research and demonstration projects on potatoes for the french fry industry, on malting barley in partnership with the malt barley industries, on identity-preserved wheat and on value-added safflower and durum and winter wheat variety developments collaboratively with research scientists in Montana, Minnesota and NDSU.
- Initiated a research project on barley for ethanol that has the potential to promote and utilize rejected malt barley (feed barley, estimated 5 million to 6 million bushels) for ethanol at an estimated 50 to 60 cents per bushel higher than feed barley prices.
- Began new bioenergy crop research in 2006 to assess the production of biomass from switchgrass and other perennial herbaceous crops.
- Utilized a 160-acre irrigated site in the Nesson Valley Irrigation District for an irrigated research and development project on sustainable irrigated cropping systems to increase irrigation profitability and support food processing industries in North Dakota.
- An irrigation research specialist and a horticultural research specialist were hired in 2008 to assist in the irrigated research and development project and expanding horticultural research.
- The WREC, in cooperation with scientists in the NDSU School of Natural Resource Sciences, established a collection of 16 varieties of grapes for evaluating adaptation to western North Dakota and for wine making.
- The WREC has extensive collections of trees, shrubs, perennial flowers, landscaping plantings and demonstrations and is cooperating with researchers at NDSU and the University of Minnesota on other commercially viable horticultural crops, including potatoes, onions and other fruits.
- Glyphosate and clethodim received full label for use on safflowers in 2007 as a result of the center's safflower weed control research.
- Research on pulse crops was conducted cooperatively with the USDA, Washington state and Carrington REC in variety evaluation of field peas, lentils and chickpeas and updating production practices.



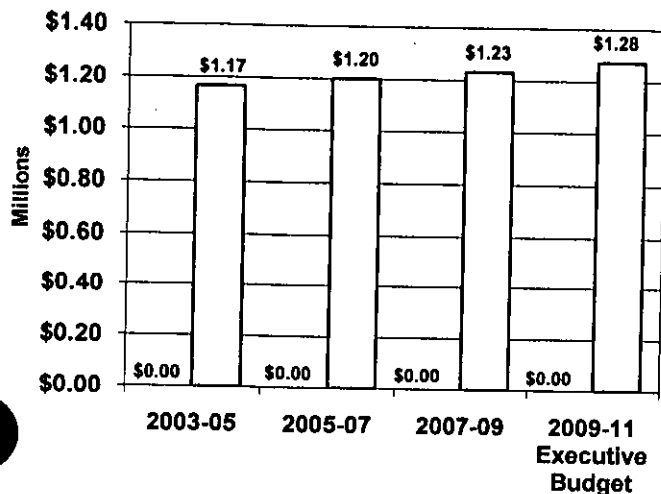
Researchers at the Williston Research Extension Center evaluate crop varieties and conduct studies on herbicide performance and other cultural management issues, cropping systems, and soil and water conservation practices.

Department 649 - Agronomy Seed Farm
Senate Bill No. 2020

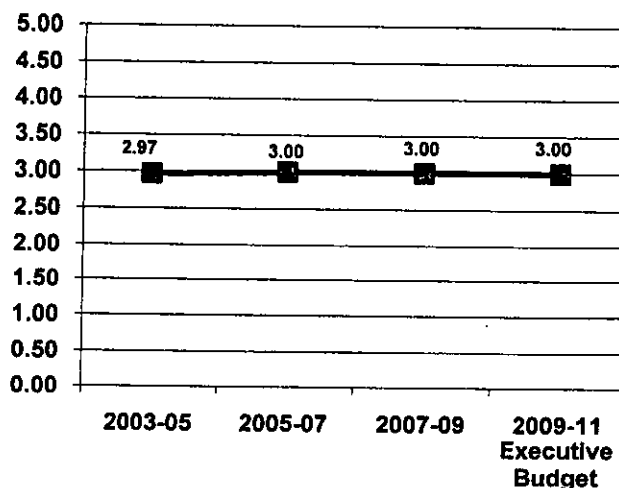
	FTE Positions	General Fund	Other Funds	Total
2009-11 Executive Budget	3.00	\$0	\$1,275,238	\$1,275,238
2007-09 Legislative Appropriations	3.00	0	1,233,576	1,233,576 ¹
Increase (Decrease)	0.00	\$0	\$41,662	\$41,662

¹The Legislative Assembly appropriated \$829,669, of which \$438,129 is from the general fund and \$391,540 is from special funds, to the Main Research Center to provide agricultural research and extension agency employees an additional 1 percent per year salary increase each year of the biennium. The Main Research Center was to allocate the funding between the Main Research Center, branch research centers, North Dakota State University (NDSU) Extension Service, Northern Crops Institute, and Agronomy Seed Farm. The total salary increase provided is 5 percent effective July 1, 2007, and 5 percent effective July 1, 2008, which is the same increase provided to the North Dakota University System. The 2007-09 legislative appropriation amounts for the Agronomy Seed Farm include \$3,414 of special funds for the agency's share of the funding appropriated to the Main Research Center for the additional salary increase.

Agency Funding



FTE Positions



■ General Fund □ Other Funds

First House Action

The Senate did not change the executive budget recommendation for the Agronomy Seed Farm. Attached is a summary of first house changes.

Executive Budget Highlights

	General Fund	Other Funds	Total
1. Removes 2007-09 biennium funding for equipment over \$5,000		(\$174,000)	(\$174,000)
2. Provides funding for equipment over \$5,000		\$104,500	\$104,500
3. Increase funding for selected expenditures as follows:		\$43,500	\$43,500

	Increase	Total Provided
Building, grounds, and maintenance	\$14,200	\$173,800
Other equipment under \$5,000	\$14,500	\$14,500
Utilities	\$14,800	\$51,300

Other Sections in Bill

Additional income appropriation - Section 3 provides that, in addition to the amount appropriated as other funds, any other income from federal acts, private grants, gifts, and donations, or from other sources received by the Agronomy Seed Farm, is appropriated for the purposes designated in the act, grant, gift, or donation for the 2009-11 biennium.

FTE position adjustments - Section 6 authorizes the State Board of Higher Education to adjust or increase FTE positions for the Agronomy Seed Farm and report any adjustments to the Office of Management and Budget.

Expended general fund - Excess income - Section 7 authorizes the continuation of any excess income received by the Agronomy Seed Farm to the 2011-13 biennium.

Continuing Appropriations

No continuing appropriations for this agency.

Major Related Legislation

major legislation is currently under consideration affecting this agency.

ATTACH:1

AGENCY OVERVIEW

Agronomy Seed Farm

North Dakota Agricultural Experiment Station

Agency Statutory Authority

North Dakota Century Code Chapter 4-05.1

Agency Description

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

Agency Mission Statement

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

Agency Performance Measures

Per NDCC 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 19, 2008. The report it 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.

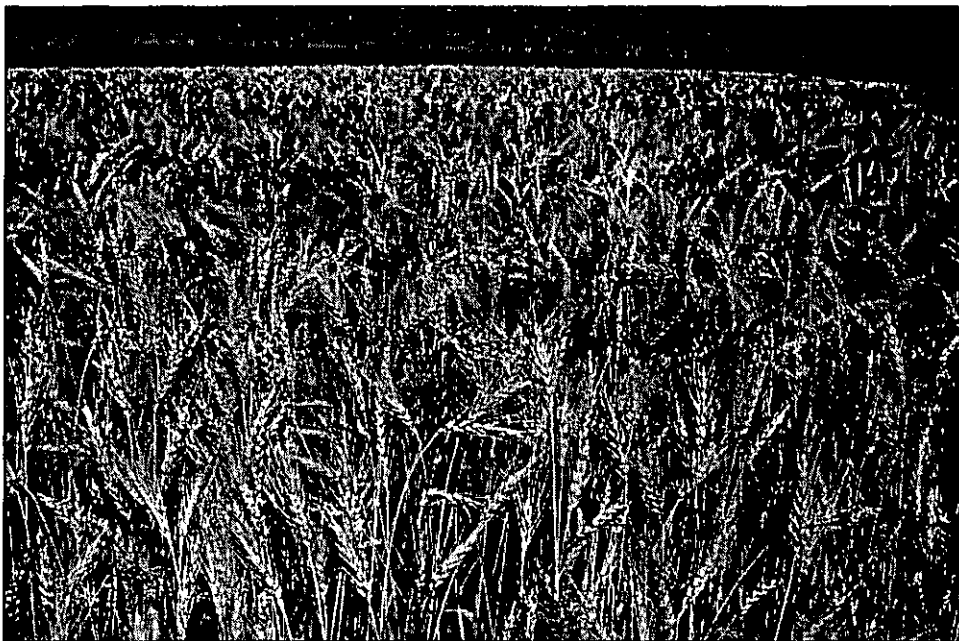
Agency Future Critical Issues

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

NDSU
North Dakota State University
**ND Agricultural
Experiment Station**

■ Agronomy Seed Farm

- Produced and conditioned 40,000 to 50,000 bushels of seed for availability to the seed industry annually
- Provided support to more than 15 research projects at three locations, which included more than 120 acres of variety test plots devoted to new variety development, 25 acres devoted to inbred line development and testing, and approximately 150 acres devoted to other production-oriented crop and weed-related research, resulting in greater efficiency in the projects and money savings in fertilizer and land preparation
- Hosted numerous tours of trade teams, and visiting scientists and producers, which foster good will and disseminates the ASF's research results to others
- Produced and distributed seed of the new wheat varieties Glenn and Faller, the new oat variety Souris, new barley varieties Rasmussen and Pinnacle, the new soybean varieties Sheyenne and Cavalier



Providing high quality wheat seed continues to be an important part of the Agronomy Seed Farm's mission.

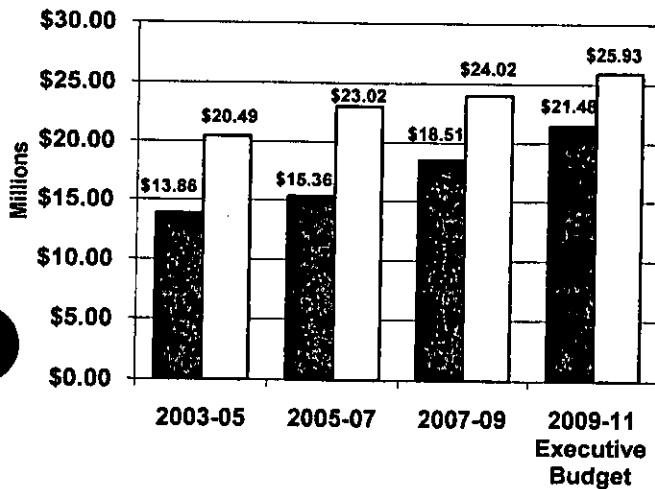
Department 630 - NDSU Extension Service
Senate Bill No. 2020

	FTE Positions	General Fund	Other Funds	Total
2009-11 Executive Budget	267.33	\$21,475,080	\$25,928,877	\$47,403,957
2007-09 Legislative Appropriations	266.33 ²	18,512,190	24,024,541	42,536,731 ¹
Increase (Decrease)	1.00	\$2,962,890	\$1,904,336	\$4,867,226

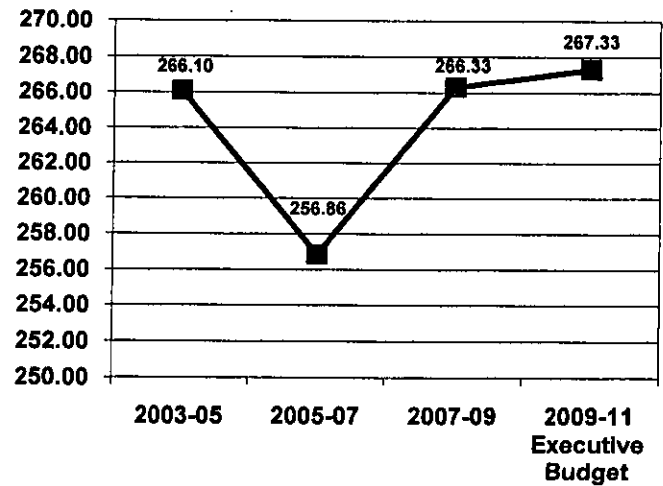
¹The Legislative Assembly appropriated \$829,669, of which \$438,129 is from the general fund and \$391,540 is from special funds, to the Main Research Center to provide agricultural research and extension agency employees an additional 1 percent per year salary increase each year of the biennium. The Main Research Center was to allocate the funding between the Main Research Center, branch research centers, North Dakota State University (NDSU) Extension Service, Northern Crops Institute, and Agronomy Seed Farm. The total salary increase provided is 5 percent effective July 1, 2007, and 5 percent effective July 1, 2008, which is the same increase provided to the North Dakota University System. The 2007-09 legislative appropriation amounts for the NDSU Extension Service include \$270,896, of which \$110,077 is from the general fund, for the agency's share of the funding appropriated to the Main Research Center for the additional salary increase.

²The 2007-09 appropriation was based on 260.46 FTE positions. Section 6 of House Bill No. 1020 (2007) authorizes the State Board of Higher Education to adjust FTE positions as needed. A total of 5.87 FTE positions were added pursuant to this section and reported to the Office of Management and Budget.

Agency Funding



FTE Positions



■ General Fund □ Other Funds

Ongoing and One-Time General Fund Appropriations

	Ongoing General Fund Appropriation	One-Time General Fund Appropriation	Total General Fund Appropriation
2009-11 Executive Budget	\$21,343,080	\$132,000	\$21,475,080
2007-09 Legislative Appropriations	18,512,190	0	18,512,190
Increase (Decrease)	\$2,830,890	\$132,000	\$2,962,890

First House Action

Attached is a summary of first house changes.

Executive Budget Highlights
(With First House Changes in Bold)

	General Fund	Other Funds	Total
1. Removes 2007-09 biennium funding for equipment over \$5,000		(\$70,000)	(\$70,000)
2. Provides one-time funding for interactive video upgrades. The Senate reduced this funding by \$50,000 to provide \$82,000.	\$132,000		\$132,000
Adds 1 FTE academic experiment staff position for crop disease management, including \$40,000 of operating expenses as follows:	\$243,171		\$243,171

	Increase
Travel	\$4,000
Supply/material - Professional	8,000
Miscellaneous supplies	14,400

Postage	1,200
Printing	800
Other equipment under \$5,000	3,200
Operating fees and services	7,200
Fees - Professional services	1,200
Total	\$40,000

4. Increases funding for selected operating costs as follows:

\$300,000

\$300,000

	Increase (Decrease)	Total Provided
Travel	\$30,000	\$1,335,200
Supply/material - Professional	\$60,000	\$550,000
Miscellaneous supplies	\$108,000	\$304,393
Postage	\$9,000	\$356,500
Printing	\$6,000	\$733,400
Other equipment under \$5,000	\$24,000	\$640,700
Operating fees and services	\$54,000	\$1,345,200
Fees - Professional services	\$9,000	\$337,000

Other Sections in Bill

Additional income appropriation - Section 3 provides that, in addition to the amount appropriated as other funds, any other income from federal acts, private grants, gifts, and donations, or from other sources received by the NDSU Extension Service, is appropriated for the purposes designated in the act, grant, gift, or donation for the 2009-11 biennium.

Transfer authority - Section 5 authorizes the transfer of appropriation authority between the Main Research Center, the branch research centers, NDSU Extension Service, and Northern Crops Institute and provides that any transfers be reported to the Office of Management and Budget.

FTE position adjustments - Section 6 authorizes the State Board of Higher Education to adjust or increase FTE positions for NDSU Extension Service and provides that any adjustments be reported to the Office of Management and Budget.

Unexpended general fund - Excess Income - Section 7 authorizes the continuation of any unexpended general fund appropriation and excess income received by the NDSU Extension Service to the 2011-13 biennium.

Continuing Appropriations

No continuing appropriations for this agency.

Major Related Legislation

No major legislation is currently under consideration affecting this agency.

ATTACH:1

AGENCY OVERVIEW

NDSU Extension Service

Agency Statutory Authority

North Dakota Century Code Chapter 4-08.

Agency Description

The North Dakota State University (NDSU) Extension Service is part of a nationwide, university-based educational system that provides research-based educational programs to citizens in all 53 counties and four American Indian reservations in North Dakota. Programs focus on selected needs and issues affecting the state's agriculture, youth, families, communities and natural resources. The staff is located at state, area and local/county offices. The NDSU Extension Service combines funding from federal, state, county and grant sources to specifically address local concerns.

Agency Mission Statement

The purpose of the NDSU Extension Service is "to create learning partnerships that help youth and adults enhance their lives and communities." This purpose is accomplished through the dissemination of research-based information and the implementation of educational programs geared to the changing needs of North Dakotans. Major program areas include agriculture and natural resources; youth development; family and consumer sciences; and community economic development and leadership.

Agency Performance Measures

Per NDCC 4-05.1-19 the State Board of Agricultural Research and Education (SBARE) presents a status report to the budget section of the Legislative Council. SBARE's most recent presentation to the budget section was on March 18, 2008. The report it 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.

Agency Future Critical Issues

Areas that need continuing emphasis and new areas to be addressed include the following: identifying and integrating new development and marketing opportunities/technologies for agricultural products; community and rural leadership development; livestock industry expansion; youth development through expanded 4-H efforts in leadership education through adult and youth partnerships; the camping program as a 4-H delivery method; new Extension agent training; nutrition education for low resource families; soil salinity issues; and assisting land managers with multiple land-use opportunities.

Update of Extension Initiatives Funded in 2007-09 Budget

■ Costs to continue FY2007 salary increases

\$190,390 received and allocated July 1, 2007

■ Operating and Equipment

\$100,000 received

- Operating distributed July 1, 2007
- Equipment monies distributed October 2007 and February 2008

■ Bioproducts/Bioenergy Development

\$300,000 received to fund two positions

Agricultural and Biosystems Engineering Bioprocess Engineer

- 60% Experiment Station, 40% Extension
- Readvertised; interviews scheduled for Jan. 2009
- Will help establish new industries based on renewable resources
- Primary focus: systems for supplying cellulosic feedstocks to biorefineries (harvest, densification, storage and transport)

Agribusiness and Applied Economics Bioproducts Specialist

- 60% Extension, 35% Experiment Station, 5% Teaching
- Hired effective May 2008
- Primary focus: Apply economic principles to bioenergy and bioproduct industries
- Completed feasibility study of using field peas as supplement to corn in ethanol production
- Grant applications submitted to evaluate non-food sugar beets to butanol and development of military biojet fuel
- Working to develop new crop insurance products for biofuel crops

■ Scab

\$50,000 received

Scab

- Five scouts hired to scout wheat, barley, soybean, sunflower and canola across the state (2,017 fields)
- Real-time management information provided to producers via weekly summaries in NDSU Crop and Pest Report and at IPM Web site, www.ag.ndsu.nodak.edu/aginfo/ndipm



Field scouts survey five major crops to help detect the presence and severity of diseases and insects.

- 2007 survey highlights:
 - Increased detection of wheat leaf rust and wheat stem maggot in wheat
 - Low levels of Fusarium head blight in wheat and barley
 - Absence of soybean rust
 - Below economic threshold populations of soybean aphid and canola flea beetle
 - Below economic threshold levels of sunflower beetle
 - High populations of sunflower banded sunflower moth
- Scab forecasting, www.ndsu.edu/scabforecast

■ Waste Management Systems

\$120,000 received to fund two positions

Agricultural and Biosystems Engineering Livestock Waste Management Engineer

- 80% Experiment Station, 20% Extension
- Hired effective April 2008
- Develops innovative uses, processes and products from livestock waste; enhances air and water quality; improves local environment and reduces cost of utilization

Nutrient Management Specialist, Carrington Research Extension Center

- 60% Experiment Station, 40% Extension
- Hired effective September 2007
- Series of research projects focused on expanded utilization of livestock wastes in crop production systems
- Discovery Farms project
- Increased requests to be unbiased resource when determining sites for expanded livestock operations

■ Rural Leadership

\$200,000 received for salary support effective July 1, 2007

Rural Leadership North Dakota

- Third class has begun; 15 participants (57 total since program began in Oct. 2003)
- RLND Alumni Association established April 2005; 41 members
- Leadership skills among 2005-2007 participants increased 33 percent
- Results of projects by first two classes:
 - 10 projects have potential economic impact in communities
 - 10 projects have positively affected tourism in the state
 - 21 projects have improved the quality of life in communities
 - Examples: creating a horse trail and campsite in Stutsman County, building an eight-plex multifamily housing unit in Watford City, hosting art exhibits showcasing Ellendale artists, building a new swimming pool in New England, restoring homes of elderly and low-income in New Town and installing new playground equipment in Ray



Rural Leadership North Dakota members prioritize the top 10 attributes of successful communities during a workshop in Bowman.

■ **4-H Youth Development**

\$175,000 received for one position

4-H Youth Development Specialist, Center for 4-H Youth Development

- 100% Extension
- Hired effective March 2008
- Provides programmatic leadership for educational experiences that focus on agricultural and environmental sciences such as energy development, current trends in North Dakota agriculture, environmental stewardship and natural resources
- Provides leadership for the 4-H outdoor education area including the Archery in the Schools and 4-H Shooting Sports programs

■ **Parenting Resource Centers**

\$125,000 received and allocated to five centers across the state on July 1, 2007

- Amount received made it possible to leverage \$323,080 in grants and contracts the first year of the biennium
- These funds brought programming to three remaining regional centers not connected to Extension operating funds
- Extension provides lead for a Parent Education Network of professionals who deliver education and prevention programs for families

■ **Horticulture Specialist for Western North Dakota**

\$200,000 received for one position

Horticulture Specialist, Department of Plant Sciences

- 100% Extension
- Hired effective March 2008
- Officed at the Burleigh County Extension Office, Bismarck
- Provides overall leadership for horticultural education program in western North Dakota
- Develops and delivers horticultural in-service for Extension agents in western North Dakota
- Works with home horticulture clientele and supports the development of commercial horticultural enterprises
- Supports established and develops new demonstration gardens at RECs in the western part of the state



Extension horticulture specialist Tom Kalb, hired to provide horticultural programming in western North Dakota, speaks to an audience about gardening.

■ **Junior Master Gardener Program**

\$20,000 received

- Program initiated in seven counties in 2008 (Burleigh, Cass, Emmons, Grand Forks, McLean, Morton and Stark)
- Focus is on third- to fifth-grade youth; over 350 kids in 2008
- Instructors a combination of Extension staff, Master Gardener volunteers and classroom teachers
- Program engages youth in hands-on group and individual learning experiences that promote a love of gardening, develop an appreciation for the environment and cultivate the mind
- Encourages youth to be of service to others through service learning and leadership development projects
- Programs offered as six- to eight-week sessions, as after school programs and in school as part of science or reading curricula
- Coordinated by 4-H youth development specialist

■ **Soil Conservation Grants**

\$100,000 received

- Funded seven additional Soil Conservation Districts
- Help landowners reduce soil erosion, improve water quality, and enhance tree plantings, grazing lands and wildlife habitat

■ **Smithsonian Soil Exhibition**

\$7,800 received and allocated

- "Dig It! The Secrets of Soil," exhibit is part of Smithsonian National Museum of Natural History
- Opened July 19, 2008
- Pictures and details at <https://www.soils.org/smithsonian/> and <http://forces.si.edu/soils/>

NDSU Extension Service

2009-11 Needs-based Budget

as Ranked by SBARE Aug. 1, 2008

No. 1 ranked: Crop Disease Management

\$220,000 Total General Fund Increase

\$54,000 salary and fringe benefits, 0.3 new FTE, area specialist, CREC

\$126,000 salary and fringe benefits, 0.7 new FTE, area specialist, LREC

\$40,000 Operating

The magnitude and consistency of crop yield and quality losses due to plant diseases is a persistent problem and it continues to increase. The significance of disease losses to crop diversity is threatening the viability to sustain and expand the agricultural economy of the central and eastern regions of North Dakota. Two area pest management specialists, one at the Carrington REC and the other at the Langdon REC, are needed to provide information to area growers affected by crop diseases. (*Complements Experiment Station initiative 5.*)

No. 2 ranked: Extension Operating Support

\$300,000 Total General Fund Increase

Costs continue to increase both in operating expenses and technological changes. Travel costs continually increase, and today's workers depend on smart-phone and other technologies to be effective in their work. The NDSU Extension Service has area specialists housed at various Research Extension Centers and other locations across the state. Extension funds provide operating and equipment support for these positions. This funding level has been at \$16,000 per FTE per year since about 1992. Operating support needs to be increased by \$4,000 per FTE per year to cover increasing communication, office, travel and programming costs.

No. 3 ranked: 4-H Leadership Education and Camping

\$270,000 Total General Fund Increase

\$180,000 salary and fringe benefits, 1.0 new FTE, state specialist, NCREC

\$50,000 salary support, no new FTE, summer camp staffing

\$40,000 operating

4-H programs serve more than 40 percent of North Dakota's youth and, in many rural areas, 4-H is the only youth program beyond public schools. In addition to developing technical knowledge, 4-H'ers gain life skills. The North Dakota State Fair in Minot and the Western 4-H Camp near Washburn are venues at which significant 4-H activities take place each year. A state 4-H specialist located at the North Central REC in Minot is needed to provide leadership for these activities. This specialist also would provide educational support to programs that lead to youth becoming an integral part of the civic governance and decision-making processes, both in 4-H and in the broader community. Summer salary support for college students to serve as instructors and counselors at 4-H camp is needed. Internships would not only provide a unique training experience for the college students but also would address the staffing needs for an effective 4-H camp program.

No. 4 ranked: Institute for Agribusiness Enterprise and Rural Development

\$480,000 Total General Fund Increase

\$400,000 salary and fringe benefits, 2.0 new FTE, state specialists, Extension Center for Community Vitality

\$80,000 operating

North Dakota has great potential for converting commodities and agricultural processing coproducts into higher-value products. The development of this industry would stimulate rural economies. Healthy rural communities are dependent upon many factors, but core to any community is its local economy. The role of the two positions listed would be to develop educational materials and deliver programs needed by entrepreneurs, existing business owners and community leaders to extend and expand their capacities to take advantage of new markets, technologies and business opportunities. This institute would incorporate and expand the existing Institute for Business and Industry Development in the Center for Community Vitality.

NDSU NDSU Extension Service

NDSU Extension Service

No. 5 ranked: Agents-in-training and Interns

\$600,000 Total General Fund Increase

\$500,000 salary and fringe benefits, 5.0 new FTE, agents-in-training located throughout the state

\$100,000, salary support, no new FTE, 5 college internships for summer programming

A key strength of Extension work lies with county Extension agents, where the Extension offices serve as the "front door" to the land-grant university system. Working with local interest groups, agents identify issues, then develop community-based learning programs to address those needs. Extension agents are hired with college degrees in the areas of agriculture and natural resources, family and consumer sciences, 4-H youth development and community development. However, the skill set needed for successful Extension work goes well beyond subject matter discipline training. These skills are unique to Extension work and are best learned by working directly with an experienced Extension agent. Support for five agents-in-training and five summer internships to be located throughout the state would greatly enhance NDSU Extension Service's ability to recruit and retain high-quality Extension agents.

No. 6 ranked: Family Nutrition Program (FNP)

\$300,000 Total General Fund Increase

\$300,000 salary and fringe benefits, 2.0 FTE equivalents

The FNP helps families with limited resources make more healthful food choices on a limited budget. A recent cost/benefit analysis of nutrition education shows an \$8.82 reduction of health-care costs for every dollar invested in this program. The federal government provides a dollar-for-dollar match through USDA for every nonfederal public dollar that the state invests in this program. Here in North Dakota, the nonfederal match is provided by in-kind support that is limited and complicated. Consequently, North Dakota is losing significant federal dollars from the USDA because of our inability to provide the nonfederal match. This state investment would guarantee another \$300,000 from USDA. These funds would be used to partially cover salaries and would allow the program to be delivered to more counties in the state.

No. 7 ranked: Enhancing Livestock Development

\$220,000 Total General Fund Increase

\$54,000 salary and fringe benefits, 0.3 new FTE, area specialist, CGREC

\$126,000 salary and fringe benefits, 0.7 new FTE, area specialist, DREC

\$40,000 operating

Many driving forces are behind the interest in growing our state's livestock industry. They include the desire of many agricultural producers to grow their existing enterprises and/or to diversify their operations; utilization of potential feedstuffs that are presently shipped to other states for their livestock operations; opportunities to enhance production of feedstuffs to service a growing North Dakota industry; use of coproducts emerging from the rapidly expanding bioenergy/bioproducts enterprises as feedstuffs; and utilization of grazing capacity in range and managed areas. Proper management of grazing systems also holds the potential for increased livestock production. Additional Extension specialists who will continually work with colleagues and industry to evaluate opportunities and provide information that can be used for timely decision making are needed at the Central Grasslands REC and the Dickinson REC. (**Complements Experiment Station initiative 10.**)

No. 8 ranked: Agronomy Technical Support

\$150,000 Total General Fund Increase

\$150,000 salary and fringe benefits, 1.0 new FTE, technician, shared by Plant Sciences and Plant Pathology

NDSU Extension Service agronomists provide educational leadership to Extension agents, producers and industry clientele on all facets of crop production. Much applied research and demonstration activity on various production practices is undertaken to localize the information for North Dakota. Additional technical support is needed in the Plant Sciences and Plant Pathology departments to assist Extension specialists with these efforts.

NDSU NDSU Extension Service

NDSU Extension Service

No. 9 ranked: Salinity (State Soil Conservation Committee Request)

\$220,000 Total General Fund Increase

\$180,000 salary and fringe benefits, 1.0 new FTE, state specialist, Bismarck

\$40,000 operating

Soil chemical, physical and biological properties underlie all cropping management systems and decisions made by agricultural producers. Saline- and sodic-affected soils are increasing in North Dakota and are estimated to be as high as 25 percent (12.6 million acres) of the agricultural land in the state. Approximately 2 million acres of cropland are affected by salinity in the Red River Valley alone. Many land managers are considering expensive land modifications, such as subsurface drainage, as a means of dealing with this issue. An Extension state specialist is needed at Bismarck to coordinate and support North Dakota Soil Conservation District personnel and individual producers in identifying the causes of and solutions for salinity and sodicity in watershed and farm fields. *(Complements Experiment Station initiative 8.)*

No. 10 ranked: Crop Quality

\$150,000 Total General Fund Increase

\$126,000 salary and fringe benefits, 0.6 new FTE, state specialist, School of Food Systems

\$24,000 operating

Quality characteristics and functional food components of North Dakota grain commodities are very important to producers and the industry as a whole. This is particularly true in light of the new processes being developed that can influence the functional components of crops present in the food ingredients that are extracted or the food products produced from these ingredients. These functional components can lead to additional marketing opportunities. Additional Extension support in the School of Food Systems is needed to connect research findings to producers and industry. *(Complements Experiment Station initiative 9.)*

No. 11 ranked: Weeds

\$132,000 Total General Fund Increase

\$54,000 salary and fringe benefits, 0.3 new FTE, area specialist, HREC

\$54,000 salary and fringe benefits, 0.3 new FTE, area specialist, WREC

\$24,000 operating

Weeds are a major threat to profitable crop production in North Dakota. Failure to control weeds costs producers millions of dollars in lost crop yield and quality. Additional weed scientists are needed in western North Dakota (Hettinger and Williston RECs) to conduct research and educational programs on new weed problems, such as herbicide-resistant weeds, to allow growers to achieve economical and successful weed control. *(Complements Experiment Station initiative 14.)*

No. 12 ranked: Support Staff

\$160,000 Total General Fund Increase

\$160,000 salary and fringe benefits, 2.0 new FTE, support staff, College of Agriculture, Food Systems, and Natural Resources

Several Extension units have critical needs for additional support staff. Continued decentralization of effort and an increase in recordkeeping for compliance issues, regulations, accountability, data collection and management require increased efforts by current staff to do more with less help. Two office support staff on campus will help deal with the increased workload that has developed during the last several years.

NDSU NDSU Extension Service

NDSU Extension Service

No. 13 ranked: Swine

\$174,000 Total General Fund Increase

\$150,000 salary and fringe benefits, 0.6 new FTE, state specialist, Animal Sciences

\$24,000 operating

Because of its economic impact, interest in increasing swine production in the state is growing. Each dollar of return from pigs marketed turns over 3.49 times for feed, labor, trucking, vet services and utilities. Too, because of the importance of remoteness to biosecurity issues in swine systems, North Dakota is being evaluated as a potential location for swine genetic companies. Consequently, a state swine specialist in the Animal Sciences Department is needed to provide technical expertise and management assistance. *(Complements Experiment Station initiative 18.)*

No. 14 ranked: Insects

\$150,000 Total General Fund Increase

\$150,000 salary and fringe benefits, 1.0 new FTE, state specialist, School of Natural Resource Sciences/Entomology

Insect identification is critical for making proper management decisions. The NDSU Entomology Diagnostic Laboratory receives more than 1,000 questions on insect identification and pest management each year. Insect survey work is also important in alerting pest managers and detecting trends in insect pest problems. An Extension associate position in the Entomology Department is needed to address the increased workload regarding the technical handling of insect diagnostics and providing real-time pest survey information via maps posted on the Web.

No. 15 ranked: Food Entrepreneurs

\$150,000 Total General Fund Increase

\$150,000 salary and fringe benefits, 1.0 new FTE, technician, Health, Nutrition and Exercise Sciences

Numerous possibilities exist for North Dakotans to use locally grown commodities as a basis for a food business. The Pride of North Dakota Showcase is a perfect venue for these businesses to demonstrate their food entrepreneurial efforts. Small businesses need access to low-cost services such as nutritional labeling and product analysis. The need to expand and deliver these services is growing. A technical support position is needed.

No. 16 ranked: Multiple Land Use

\$258,000 Total General Fund Increase

\$160,000 salary and fringe benefits, 0.8 new FTE, state specialist, School of Natural Resource Sciences

\$54,000 salary and fringe benefits, 0.3 new FTE, area specialist, HREC

\$44,000 operating

North Dakota is in a critical time period for addressing the future of the Conservation Reserve Program and the future of grazing on Forest Service lands. The co-use of these lands for recreation, wildlife, grazing and farming provides new dilemmas for the land owners and managers, specifically absentee land owners. Uncertainty about the future of these grazing lands affects not only individual land owners but entire rural communities that may rely on these lands for long-term sustainability. Two specialists – one in the School of Natural Resource Sciences and one at the Hettinger REC – are needed to assist land owners by using science-based land management principles to address multiple land-use issues. *(Complements Experiment Station initiative 19.)*

No. 17 ranked: Nutrition and Wellness

\$218,926 Total General Fund Increase

\$180,000 salary and fringe benefits, 1.0 new FTE, area specialist, out-state location

\$38,926 operating

North Dakota is unique in its capacity to grow a large quantity and variety of agricultural products for human consumption. Consumers need to understand the impact of these commodities in North Dakota and their contribution to good health. Nutrition and wellness education needs to be delivered consistently across the state. Food safety concerns emerge regularly and must be addressed. Disease prevention, such as through diabetes education, and the looming health impact of obesity in our state and society create an urgent need for Extension programming out in the state. Area specialists will help expand delivery of preventive education efforts in nutrition and health programming.

NDSU NDSU Extension Service

NDSU Extension Service

No. 18 ranked: Energy Conservation Through Precision Agriculture

\$140,000 Total General Fund Increase

\$140,000 salary and fringe benefits, 0.7 FTE, state specialist, Agricultural and Biosystems Engineering
Input costs associated with production agriculture (fuel, fertilizer, seed, pesticides, transportation, crop drying and storage, etc.) are directly affected by the cost of energy. Modern technology can be used to reduce energy costs by optimizing the use of production inputs through appropriate application of "precision agriculture" and/or geospatial application to agriculture. National as well as local and personal databases are available to enable producers to use modern technology to maximize production, protect the environment and reduce input costs. New field equipment technologies such as auto-steer, yield monitoring, parallel tracking, field mapping and variable-rate chemical application are also available. An additional Extension specialist in the Agricultural and Biosystems Engineering Department is needed to assist producers with determining the appropriate use, cost effectiveness and reliability of these systems under North Dakota conditions. *(Complements Experiment Station initiative 24.)*

No. 19 ranked: Journalist

\$150,000 Total General Fund Increase

\$150,000 salary and fringe benefits, 1.0 new FTE, state specialist, Agriculture Communication
Journalist support is greatly needed to actively seek out and report on a regular basis the latest research and Extension efforts happening at Research Extension Centers and campus departments. The information would be put into consumable form, for example: news releases, publications, Web pages, newsletters and other media, and targeted to commodity groups, industry partners and others to make the work of NDSU Agriculture and University Extension widely available.

One-time Interactive Video Equipment (IVN) Upgrades at 23 Sites

\$132,000 One-time Request

\$132,000 videoconferencing equipment, high-definition video camera, editing equipment and software
NDSU Agriculture and University Extension has 32 videoconference sites that are used extensively for educational outreach, credit courses, internal training, meetings, program planning and other purposes. These sites hosted nearly 1,500 events in 2007 alone. NDSU Agriculture and University Extension needs to upgrade the videoconference equipment that no longer will be supported by the Polycom company or the North Dakota Interactive Video Network after September 2010. Twenty-three sites need to be replaced with high-definition equipment, including monitors. This upgrade would bring equipment up to date and provide higher quality viewing, and it is consistent with the IVN upgrade plan. This request would provide 50 percent of the costs; the balance would be covered with local funds.

2007-09 Impacts

Through its research-based educational programs, the NDSU Extension Service strives to:

- 1. Enhance the profitability of North Dakota's crop and livestock producers by focusing on production, marketing and risk management issues*
- 2. Conserve and enhance the natural resources of our state*
- 3. Develop life skills within North Dakota's youth through 4-H youth development programs that focus on decision making, communication skills, career development and healthy lifestyles*
- 4. Strengthen individual and family skills relating to parenting, financial management, work force preparation and communication*
- 5. Maintain a healthy food system at the production, distribution and consumer levels while promoting healthy lifestyles for all age groups*
- 6. Provide leadership for communities and community leaders to identify strengths, enhance local expertise and increase the rural economic base while creating an environment that fosters entrepreneurship*
- 7. Guide communities through processes that relate to public issues*
- 8. Serve as educational leaders in the adoption and utilization of technology for economic, community and individual benefits*

Extension agents and specialists provided 507,851 face-to-face educational contacts with North Dakota residents in fiscal year 2007 and 495,713 in fiscal year 2008. These contacts were focused in eight key areas:

- *Community, Economic Development and Leadership*
- *Competitiveness and Profitability of Animal Systems*
- *Cropping Systems in the 21st Century*
- *Farm and Family Economics*
- *4-H Youth Development*
- *Human Development and Family Science*
- *Natural Resources and Environmental Management*
- *Nutrition, Food Safety and Health*

■ Community, Economic Development and Leadership

Strengthening Communities Through Art

The communities of Carrington, Langdon, Ellendale and Walhalla implemented Extension's Building Communities Through Arts and Heritage program and have completed planning efforts to enhance their arts industry. Each has established a standing arts council to sustain and expand its efforts. Sample results include the creation of annual events to recognize and create awareness of local artists, assisting artists with marketing (Ellendale artists have their art displayed in Washington D.C.), buildings on main streets receiving historical designations, restoration of historical buildings, creation of an artists' directory and the implementation of arts education at the Walhalla High School. Carrington has broken ground for an arts center, combining it with a bowling alley. Langdon has developed four successful programs to showcase local artists and to celebrate their heritage.

BAND Revitalizes Communities

The Beginning Again North Dakota initiative to identify local assets and develop a plan to use the assets to build community vitality began in January 2008. The NDSU Extension Service Center for Community Vitality was awarded the contract from the N.D. Department of Commerce to develop and implement the program. A farmer's market in Tower City and a survey of Walhalla campgrounds to determine economic impact of one segment of tourists were implemented in 2008.

Horizons Program Helps 21 Communities

The Horizons program provides education and activities in 21 rural North Dakota communities to broaden and deepen the leadership base to address the difficult issues the communities face. Nearly 980 individuals have participated in community conversations to help their community thrive, and 622 individuals have participated in a leadership development course. The cumulative effect of this massive number of people learning together is substantial action on issues that affect them. For example, Anamoose, Harvey and Cooperstown have set up long-term endowment funds to give back to the community in perpetuity, while Stanley, Sheyenne, Walhalla, Gackle, Cando, Rock Lake, Linton and Grant County are pursuing the development of a fund or revival of current funds for active philanthropic efforts. Horizons communities also regularly share their work through a community blog that provides up-to-date information on activities and local action. To learn more, go to www.northdakota.communityblogs.us and click on any of the Horizons communities listed on the right-hand side of the page.

Communities Gain Leaders, Entrepreneurs, Infrastructure

Individuals in many Horizons communities report a new-found confidence in running for leadership positions. Walhalla alone had 11 individuals on the City Council ballot, four on the Park Board ballot and one individual running for a North Dakota House seat, with the majority of them involved in Horizons leadership training. Rolette has assisted small entrepreneurs by training them in e-Bay and online business opportunities. Dodge has expanded the community's knowledge of technology to build entrepreneurs online. Anamoose, Bowdon and Gackle started farmers markets to provide local produce entrepreneurs with a market for their products, as well as an opportunity to promote their community. Maddock and Stanley added child-care facilities to assist working families with children. Anamoose and Walhalla lobbied for additional cell phone coverage in their regions to provide a better communication infrastructure. Steele, Hazelton and Rutland are participating in housing surveys and housing development to ensure they have adequate housing for all residents. Horizons program efforts also resulted in about 30 communities gaining 146 moderate income housing units.



Several Horizons communities have started farmers markets to provide local producers with a market for their products and an opportunity to promote the community.

■ Competitiveness and Profitability of Animal Systems

Reducing Costs

Beef cattle producers face increasing feed costs in light of increased demand worldwide for cereal grains. Even though limited amounts of corn are fed to beef cows, the prices of all other feed ingredients, including forages, have increased dramatically in response to increased demand for cereal grains. Therefore, making sure beef producers understand proper beef cattle nutrition to reduce costs and remain profitable is imperative. In 2007, 18 workshops were conducted that related to beef cattle nutrition or feed costs. A total of 723 beef cattle producers, feed industry personnel, veterinarians and agency employees attended these workshops.

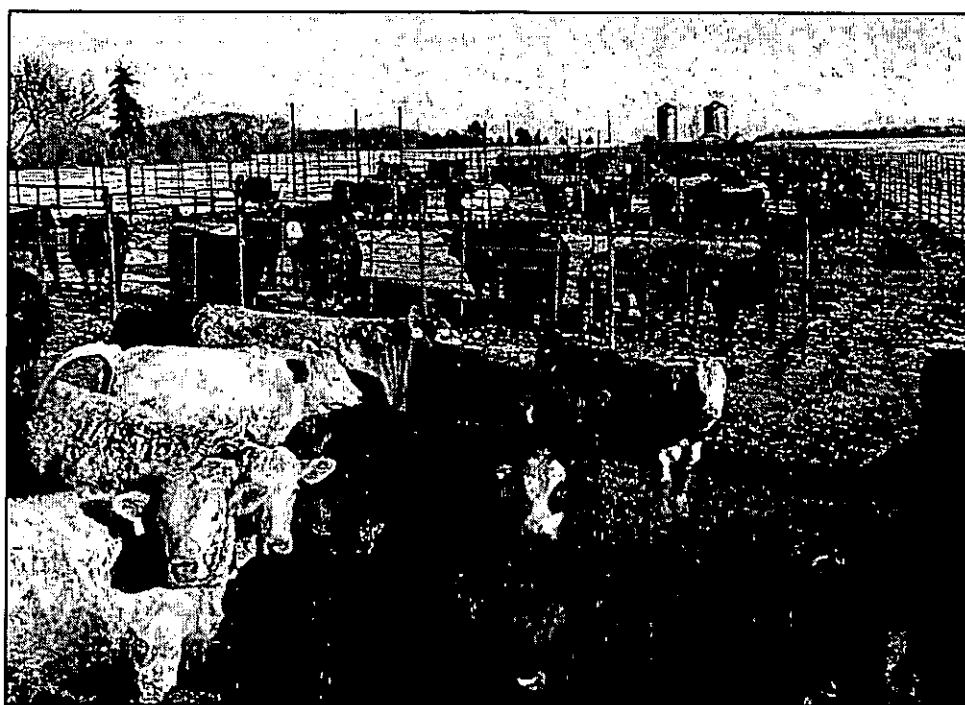
Incentives Available to Cattle Producers

Numerous federal and state government agencies have provided incentives through government cost sharing programs. Livestock producers are interested in learning and using these incentive programs and matching dollars to improve their range management practices and livestock production per given land base. Sixteen educational programs were conducted in collaboration with the Natural Resources Conservation Service for private land managers. More than 600 livestock producers participated in these workshops and training sessions, and more than 30 landowners are known to have participated in and incorporated cost sharing programs.

Livestock Industry Expansion Efforts Paying Off

Extension and Experiment Station efforts in expanding North Dakota's livestock industry are showing benefits. The number of feedlot permits jumped from 18 in 2002 to 52 in 2006, and 83 facilities expanded the number of animals they handle. This represents an increase of about 210,000 animals, including swine, beef cattle, dairy cattle and sheep. Research and educational efforts also had a hand in three out of state dairy operations relocating to North Dakota.

The Extension Service provides beef cattle producers with training on feeding issues and technical expertise and assistance with expansion, business planning, ration formulation and nutrient management.



■ Cropping Systems in the 21st Century

Reducing Disease Losses

Fusarium head blight (FHB), also known as scab, is the major fungal disease in spring wheat, causing grain shriveling and losses due to the DON mycotoxin. Wheat fungicide trials and educational programs conducted by the NDSU Extension Service and Research Extension Centers have led to the release of publicly developed resistant varieties, and their adoption by North Dakota has saved growers millions of dollars. In 2007, North Dakota wheat producers increased acreage of resistant wheat varieties by 43 percent. Those varieties included Glenn wheat, which was the most widely grown variety in the state. North Dakota producers know that experiments performed at NDSU showed efficacy of fungicide applications for reducing disease severity, yield losses and quality losses. In 2007, fungicides were applied to approximately 1 million acres. Depending on the variety treated, yield increased 20 percent to 30 percent, DON decreased up to 50 percent and severity decreased approximately 20 percent to 60 percent. Economic losses in North Dakota were reduced through use of better varieties (approximately \$20 million increase in wheat value statewide) and through use of fungicides (also approximately \$20 million statewide).

Producers Learn About Soil Testing

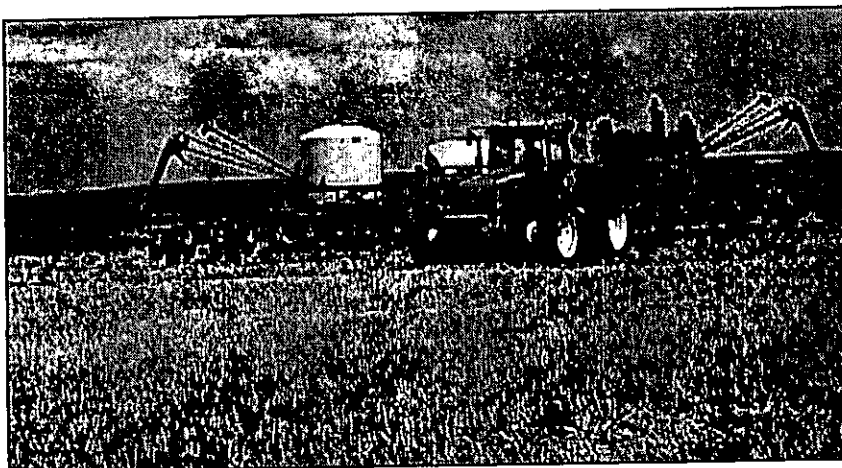
Soil testing helps farmers manage nutrient inputs. The cost of nutrients in 2007 was 50 percent to 100 percent higher than previous years, which resulted in increased farmer interest and participation in soil testing. Soil testing has been and continues to be a part of all crop nutrient training. This training is provided to about 2,000 farmers annually. More than 300 additional farmers used soil testing in 2007. Soil test analysis numbers were up about 10 percent.

Focusing on Site-specific Management

In 2007, programs focusing on site specific management attracted 1,000 attendees at various presentations around North Dakota. Growers learned that they can benefit from the use of precision technologies, tillage improvements and nutrient management changes. New research in dry bean and canola showed producers they can use lower nitrogen (N) rates, and an estimated 1,000 dry bean and canola growers used lower rates of N in 2007 than previously. Research also shows that N credits for previous crops (sugar beet tops and legumes) are underused. An estimated 500 additional growers either use crop credits or use greater amounts than recently published. Extension programming also shows producers that reduction of N rates with no crop yield or quality consequences increases grower profits. An estimated 500,000 acres had a reduced N rate of 20 pounds per acre. With N selling for 40 cents per pound, growers saved \$4 million.

No-till Offers Alternative

No till is a low fuel alternative to other tillage systems that increase soil residue cover. A series of meetings that included information on no till systems and the associated fuel savings was provided for farmers. Reduced tillage decreases fuel use and increases soil conservation and future crop production potential. The Extension programming resulted in approximately 50 additional growers adopting no till strategies. An additional 5 percent of crop acres (1 million acres) in North Dakota were in some kind of reduced tillage compared with previous years. Approximately 250 new farmers used reduced-energy technologies, including RTK global positioning systems and reduced-tillage systems.



Extension workshops educate producers about the benefits of no-till planting.

■ Farm and Family Economics

Biofuels a Growing Industry

The biofuel industry in North Dakota is expanding rapidly. The source of the products is critical and production must be maintained at high levels for the industry to succeed. More than 500 farmers attended corn, canola and soybean meetings and trainings that covered production issues, including ethanol/biodiesel end use. A canola biodiesel plant became operational in Velva, N.D., in 2007. Funding was received for biodiesel coproduct development and for a feasibility study for a large dairy and anaerobic digester collocated at an existing corn ethanol plant.

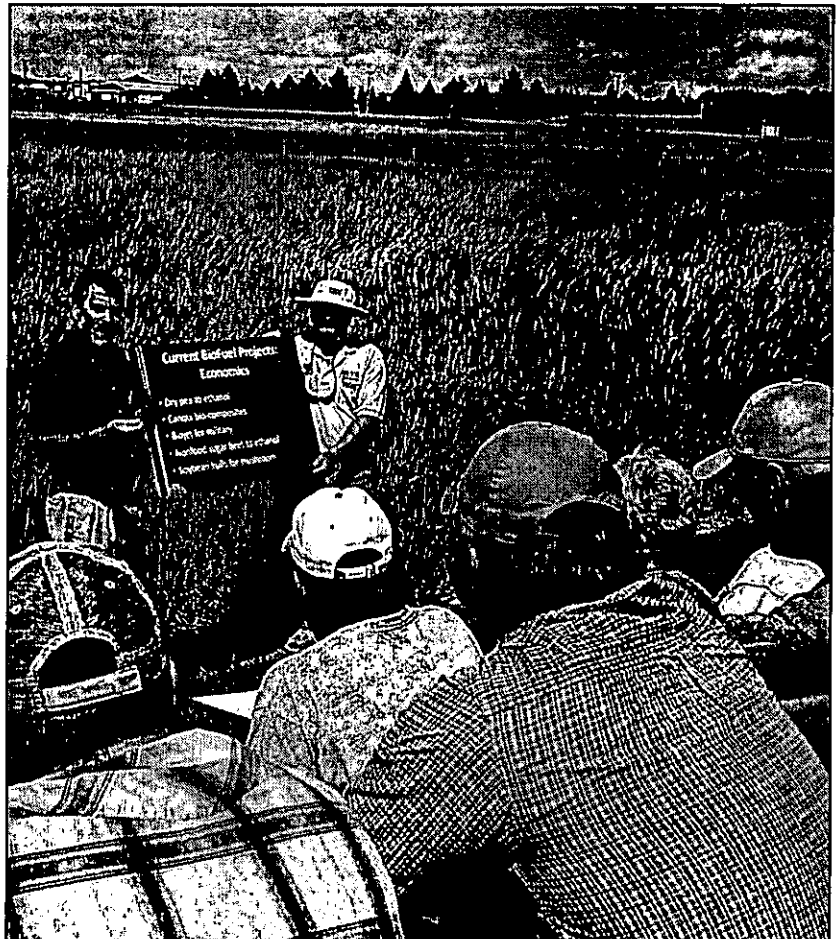
Learning to Save

The savings rate for Americans continues to be at the lowest rate since the Great Depression, while use of credit and home equity loans continues to increase. "Living within your means" has become a lost art. Extension educational opportunities such as the "Financial Security in Later Life" and "High School Financial Planning" programs, publications, the "Credit - Using it Wisely" display and "Marriage and Money" newsletters have been developed to address this issue.

Marketing Clubs' Popularity Grows

Marketing clubs continue to increase in number and are being supported with video conference educational programs and a facilitators conference to give producers a chance to practice what they have learned.

Cole Gustafson, Extension's new biofuels economist, left, and Eric Eriksmoen, an agronomist at NDSU's Hettinger Research Extension Center, report on the economic impact of some of the university's biofuel research projects during a field day at the center.



■ 4-H Youth Development

Youth Get SET for the Future

Hands-on experiences that foster exploration, discovery and passion for the sciences are offered to North Dakota youth as part of the 4-H science, engineering and technology (SET) emphasis. Youth are learning about aerospace engineering, environmental sciences, robotics, GPS technology, energy and a host of other topics related to science, engineering and technology. These programs are being offered to improve science literacy, increase the number of youth seeking degrees in the SET areas and help close the work force gap facing the U.S. in these career areas.

4-H Supports Archery in the Schools

One of the newest 4-H youth development efforts is supporting school curriculum for the North Dakota Archery in the Schools program. More than 140 physical education teachers have been trained to bring the program to a large number of schools across the state. Equipment for the program is being provided through a partnership with the North Dakota Game and Fish Department. The program also provides an opportunity for community-based archery activities led and organized by Extension agents who are working with schools in their communities to extend activities beyond the school day through this outdoor skills program.

Youth Learn Work Force Readiness Skills

Youth who are enrolled in 4-H demonstrate and practice work force readiness skills. In 2007, for example, more than 300 youth participated at the regional level to enhance their public speaking and communication skills in district communication arts events; more than 1,700 youth demonstrated the ability to carry through on a project by displaying 10,486 exhibits at the North Dakota State Fair; and more than 600 youth practiced decision-making skills in state judging contests. Participation in these regional and state events is a culmination of youth participating in the county and American Indian reservation 4-H programs across the state. Nearly 40 youth also had the opportunity to represent North Dakota through national events that include National 4-H Congress, National 4-H Conference, Citizenship Washington Focus in Washington, D.C., and national judging team competitions in several areas of the sciences.

Extension Programming Reaches Youth

County Extension staff delivered educational programs to more than 32,500 North Dakota youth during the 2006-07 year. This includes 5,902 youth enrolled in organized community clubs and 625 enrolled in 4-H after-school clubs. Targeted programming is offered to youth on North Dakota's military installations at Minot and Grand Forks. A variety of camping programs also are offered to target groups, such as youth of military families, or in subject areas related to the Extension Service's mission areas.



Oliver County Extension agent Rick Schmidt shows youth at the NDSU Extension Service's World of Wonder Camp how to build a solar-powered car.

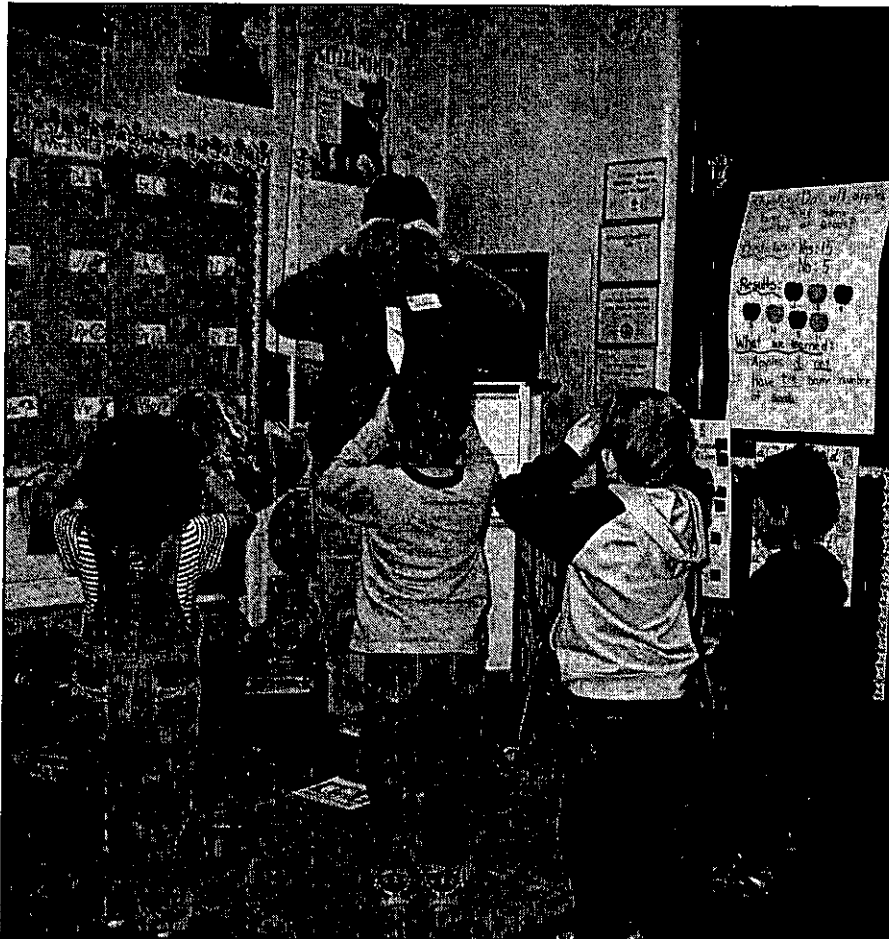
■ Human Development and Family Science

Parents Forever Tackles Divorce Issues

Divorce is a difficult life experience that affects adults and children, often with negative consequences. Parents Forever is a four-hour educational workshop for parents or never-married partners who have separated or experienced divorce. The program focuses on the experience of children and how to avoid putting the kids in the middle, as well as how to reduce stress and strengthen co-parenting. Evaluations of this educational program indicate that participants, after their participation, understand how to help children interact more cooperatively with ex-spouses or partners and make a greater effort to reduce stress for children.

Program Offers School-readiness Education

NDSU Extension Service Parent Resource Centers have partnered with the North Dakota Parent Information Resource Center (federal program managed through NDPASS/Minot) to offer a Gearing Up for Kindergarten school readiness program in selected sites. North Dakota has no consistent program or delivery mechanism for pre-K programming in spite of a national movement to develop programs that have proven outcomes, such as reducing school performance risk factors. Only 12 states in the nation remain without a statewide comprehensive pre-K effort, and this program fills a gap in program options for North Dakota. Other agencies, including United Way/Success by Six and local school districts/Title programs, have supported this effort.



The Gearing Up for Kindergarten program helps parents prepare their children for a successful transition into kindergarten.

■ Natural Resources and Environmental Management

Learning About Weeds

Noxious and invasive weeds have a direct economic and ecological impact on range and pastureland. These weeds reduced forage production, thus livestock production potential, resulting in an economic drain to the livestock sector. Ecologically, noxious and invasive weeds reduce the integrity of the natural resource, reducing the soil and plant community value for health, esthetics and wildlife habitat. Intensive training sessions and workshops were held for livestock producers and land managers to enhance the knowledge of weed management and plant identification. These events impacted 509 individuals and an estimated 35,450 acres.

Weed Control Options

The average cost for controlling weeds is approximately \$12 per acre using traditional techniques, thus creating a cost return at and above these costs of a minimum of \$3. Ten educational opportunities provided options for controlling and managing noxious and invasive weeds that provided a net gain in return from the livestock sector above the input costs from \$3 to \$20. Surveys by the North Dakota Agriculture Department show a continued reduction of noxious weeds by at least 2 percent and as much as 4 percent.

Livestock Waste Pollutes Surface Water

Agricultural pollution primarily from non irrigated cropland, grazing land and feedlots presents a significant threat to North Dakota's surface waters. Livestock waste has been identified as a major source of pollutants. The NDSU Extension Service Livestock Waste Technical Information and Assistance Program addresses manure nutrient utilization, livestock feeding, and housing and management impacts on livestock waste. It also defines and delineates the nonpoint pollution rules and the economics of proper livestock waste management. Extension also helps livestock producers implement management practices or facility upgrades to minimize environmental impact. Individual consultation with producers was conducted to share with them the options they have for reducing their environmental impact. Consultants who work with producers to write nutrient management plans attended group trainings to learn about writing nutrient management plans. Thirty Natural Resources Conservation Service employees and several private consultants now can write those plans.

NDSU research shows that manure is a good substitute for commercial fertilizer and long-term manure use has a positive impact on soil chemical properties.



■ Nutrition, Food Safety and Health

Dining with Diabetes

Extension agents partner with local dietitians on a community-based nutrition education lesson series for diabetics called "Dining with Diabetes: North Dakota Style!" Food demonstrations model portion sizes to assist with calorie and carbohydrate control. Changes in knowledge, behavior, attitudes and clinical lab indices are measured during a three-month period. The program has been piloted in Foster, Grand Forks, Walsh, Richland and Cass counties. State partners include the North Dakota Health Department and Dakota Medical Foundation.

N.D. Crops Healthful

The health benefits of North Dakota crops are being marketed to consumers through the development of research-based educational materials. Flaxseed, dry beans, healthful oils (canola, soybean, flaxseed and sunflowers) and whole grains (wheat, oats, barley, buckwheat) have been featured. State partners include the USDA Agricultural Research Service Human Nutrition Research Center at Grand Forks and commodity groups.

Program Promotes Healthy Lifestyle

From 2005 to 2007, more than 2,000 children and their families participated in "Banking on Strong Bones," a five-week, school-based nutrition and physical activity program. The children improved their knowledge scores, and they have made significant nutrition and physical activity changes to improve their health. On a post-survey, 69 percent of participating children reported drinking three or more glasses of milk the previous day, compared with 48 percent on a presurvey. In a survey with parents, about 56 percent reported positive changes in their child's eating habits as a result of this program.

Taking the Walk N.D. Challenge

About one-third of North Dakotans are physically inactive outside of work. To help modify this trend, Extension programs are promoting increased physical activity. More than 3,000 people have participated in Walk North Dakota since 2004. They have walked a total of 1.2 billion steps, or nearly 600,000 miles. That's the equivalent of walking the circumference of the Earth 24 times. During the 2007 Walk North Dakota Challenge, 58 percent reported an increase in their physical activity level, 46 percent reported an increase in their daily amount of physical activity and 46 percent reported they walked five miles (10,000 steps) per day.

More Fruits and Vegetables, Please

The "5 Plus 5" recognition program promotes eating five to nine servings of fruits and vegetables, and getting physical activity on five or more days of the week. In 2007, 17 community coalitions were recognized for developing multifaceted plans to improve health by encouraging increased physical activity and consumption of fruits and vegetables. These efforts had the potential to reach 70 percent of the state's population.

Teens Learn Food Safety

Since 2001, more than 4,500 students across North Dakota have completed a series of "Teens Serving Food Safely" lessons and passed the exam with a score of 80 percent or higher. Knowledge scores increased from an average of 54 percent on a pretest to 83 percent on a post-test. About 63 percent of participants had been involved in food preparation for the public. In a follow-up survey one month later, 81 percent reported washing their hands more often when preparing food and 52 percent had shared their knowledge about food safety with others.

Eat Smart, Play Hard Every Day

"Eat Smart. Play Hard." is the NDSU Extension Service/Bison Athletics statewide campaign to build awareness about the importance of making more healthful food choices and getting physically active. In 2007, Extension distributed 48,000 pocket folders with information on nutrition and physical activity to all of the state's students in kindergarten to grade five; 45,000 newsletters to parents of those children; and 5,000 copies of 16 minilessons to teachers and 4-H club leaders.



Teens demonstrate safe food-handling techniques while cutting vegetables.

Mr. Chairman and members of the committee, my name is Lesley Lubenow from Cavalier, ND, where I work as agricultural extension agent in Pembina County.

Today I am here to bring forth why I think agent-in-training and internship funding would be valuable to the NDSU Extension Service and the public.

In 2005 the first day on the job, I stepped into the shoes of an extension agent position that has a long heritage of responsibilities, partnerships, and public expectations. From this heritage (a few parts known and many parts unknown), I began my first year – fresh from my NDSU master's degree and living in the small town, Finley.

After a brief orientation, I was responsible for answering questions from pesticide recommendations, Century Code regulations on spray drift to hay feed analysis. My first call was an invitation to soil conservation meeting illustrating the partnership between the extension office and other local entities; and next several calls pertained to Steele County Crop Improvement Association and NDSU public variety release procedures.

As extension agents, we are required to have a broad knowledge of all aspects of general programming areas under the heading of agriculture, which includes cropping and livestock systems, horticulture, natural resources, community development, and youth development. The problems faced by our society are becoming so specialized and complex that extension agents have great difficulty keeping current with the technological developments on all fronts. By utilizing the agent-in-training program, new agents will be able to serve the needs of Extension clientele while reducing workload and frustration.

What would have been beneficial for me, a new arrival, if I had started my extension career as an agent-in-training?

An agent-in-training or an internship position would significantly impact a new extension agent's skills in three broad categories.

Firstly, knowledge through mentorship, service learning and actually teaching new subjects. The extension agent-in-training program allows new agents to be competent in a number of subject matters prior to assuming responsibility for a county. In 4-H, we talk about "learn by doing" method of education, the Agent-in-Training Program grasps this concept and develops experienced and responsive extension agent to public issues when the agent-in-training takes a full fledged extension agent position.

Often as new agents, we start our career with limited resources passed on from the former agent. Utilizing a network is especially important for effective facilitation of extension agricultural programs. A prior agent-in-training will have built a relationship with state extension specialists and private ag individuals.

For example when I planned local county soybean variety trial, I needed a plot combine from a private seed company to harvest the plot. I found this equipment through a local seedsman and then, I accessed NDSU's REC capability to order oil and protein results of the harvested soybeans. The soybean producers received local information using the cooperation of private and public partnerships. An agent-in-training would have this network establishment process started.

The second category is developing the skills to interact with the public and develop leadership skills. Extension agents are considered leaders in the community. We work with volunteers and with organizations such as the Crop Improvement boards, Farm Service Agency, weed boards, and other similar agencies. Speaking out on public issues is not easy in your early career because you are opening yourself up to dissident voices. Agents-in-training can gain the experience to bring the confidence needed to become community leader.

And lastly, an agent-in-training position sharpens communication skills. New agents usually come from cropping systems, animal range science or natural resource management college major backgrounds. Experiences in media work are usually slim. I spend 10 to 20% of my time doing media work - writing my summer ag alert newsletters; doing my county agent radio show on two radio stations, Grafton and Langdon; and newspaper columns. To accomplish this well, an agent needs reliable resources, creativity to generate a topic, and practice. Also, communication is key for building better communities by knowing what issues are important to your county's citizens.

The NDSU Extension Service needs extension agents who are excited about today's issues, knowledgeable in their fields, dedicated to education and committed to building better communities. It is a tall order, but one that can be achieved with the Extension Agent-in-Training Program.

Thank you for your time.

SB 2002
March 11, 2009
attachment #3

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As extension agents, we are required to have a broad knowledge of all aspects of general programming areas under the heading of agriculture. The list is long and includes cropping and livestock systems, horticulture, natural resources, community development, and youth development. The problems faced by our society are becoming so specialized and complex that extension agents have great difficulty keeping current with the technological developments on all fronts. By utilizing the agent-in-training program, new agents will be able to serve the needs of Extension clientele while reducing workload and frustration.

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Often as new agents, we start our career with limited resources passed on from the former agent. Utilizing a network is especially important for effective facilitation of extension agricultural programs. Extension Agents operate on local level, and we access regional and state extension and research levels to create outstanding programs. For example, when I headed a grassroots soybean trial, I used local entities – the elevators and seeds salesman for equipment, NDSU extension specialists for advice and an educational day, and the REC's capability for oil and protein analysis.

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LISTING OF PROPOSED CONFERENCE COMMITTEE CHANGES TO ENGROSSED SENATE BILL NO. 2020

NDSU Extension Service

Proposed funding changes:

Description	FTE	General Fund	Special Funds	Total
1 Adds funding for salaries and wages (\$180,000) and operating expenses (\$40,000) for a 4-H leadership education and camping program position and 1 FTE state specialist position	1.00	\$220,000		\$220,000
2 Provides funding for agents-in-training and interns		200,000		200,000
3 Adds funding for salaries and wages (\$200,000) and operating expenses (\$40,000) for a state specialist in agribusiness enterprise and rural development position	1.00	240,000		240,000
4 Increases funding for the junior master gardener program to provide a total of \$60,000		40,000		40,000
5 Increases funding for parenting resource centers to provide a total of \$250,000		125,000		125,000
Total proposed funding changes	2.00	\$825,000	\$0	\$825,000

Other proposed changes:

None

LISTING OF PROPOSED CONFERENCE COMMITTEE CHANGES TO ENGROSSED SENATE BILL NO. 2020

NDSU Extension Service

Proposed funding changes:

Description	FTE	General Fund	Special Funds	Total
1 Decreases funding for salaries and wages (\$139,668) and operating expenses (\$28,000) to remove a .70 FTE area specialist position for crop disease management at the Langdon Research Center included in the executive recommendation	(0.70)	(\$167,668)		(\$167,668)
2 Decreases one-time funding for interactive video upgrades. The Senate reduced the executive budget recommendation of \$132,000 by \$50,000 to provide \$82,000. This amendment removes the remaining funding.		(82,000)		(82,000)
Total proposed funding changes	<u>(0.70)</u>	<u>(\$249,668)</u>	<u>\$0</u>	<u>(\$249,668)</u>

Other proposed changes:

None

SB 2020
March 11, 2009
attachment # 4

Hearing on SB2020 – Education and Environment Division
Appropriations Committee, ND House of Representatives
Robert Skarphol, Chair

Chairman Skarphol and members of the committee, my name is Kathy Tweeten. I am the director of our NDSU Extension Center for Community Vitality and a community economic development specialist. Our Center is the umbrella for the work that we do in Extension in Community Economic Development and Leadership education programming. This is also the center where number four on the SBARE initiative list for the NDSU Extension Service, the “Institute for Agribusiness Enterprise and Rural Development” would be incorporated.

We are requesting two full time state Extension specialists to assist producers and other rural entrepreneurs to take what they are already good at, primarily production, to the next level of economic value. This institute would enhance our existing Institute for Business and Industry Development (IBID) in which we have one part time specialist. He is an expert in manufacturing processes and can help individuals with connecting to needed campus resources like prototype development but he cannot help community leaders and producers to identify and explore new products and new market opportunities.

The best way to explain what agribusiness enterprise specialists could do is with a real-time example. The purchaser of grains and the fresh produce for the fastest growing high end fast food company in the U.S., Chipotle (Fast Company: March 08), is asking for help to find producers who grow wheat sustainably. She is specifically looking for no-till producers but is also asking for education on exactly what no-till is and how it fits with their marketing strategy of using nothing but the highest-quality ingredients in their foods. We have tried to connect her with appropriate Extension specialists and are working on bringing her to ND to visit with our Extension staff and wheat producers. I don't know where this will lead but it is an opportunity and we will continue to pursue it. There are two possible next steps that would add greater value. Why can't we mill the grain and make the tortillas?

We also have a national network of agribusiness enterprise development centers located at several of our 1862 land grant institutions. We just need to connect with them to bring the resources that have already developed to North Dakota. We can and will learn a great deal from their experiences which will help us to build our program.

Mr. Chairman and members of the committee, I do feel that an Institute for Agribusiness Enterprise and Rural Development would make a positive impact on expanding our markets, identifying new economic opportunities and in helping our community members to understand and support these efforts.

Thank you for your time. I would be happy to answer any questions.

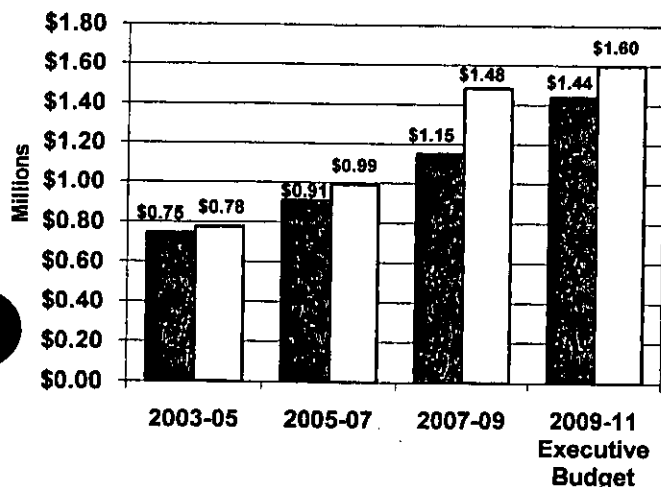
**Department 638 - Northern Crops Institute
 Senate Bill No. 2020**

	FTE Positions	General Fund	Other Funds	Total
2009-11 Executive Budget	11.20	\$1,439,221	\$1,598,265	\$3,037,486
2007-09 Legislative Appropriations	10.20 ²	1,150,818	1,484,328	2,635,146 ¹
Increase (Decrease)	1.00	\$288,403	\$113,937	\$402,340

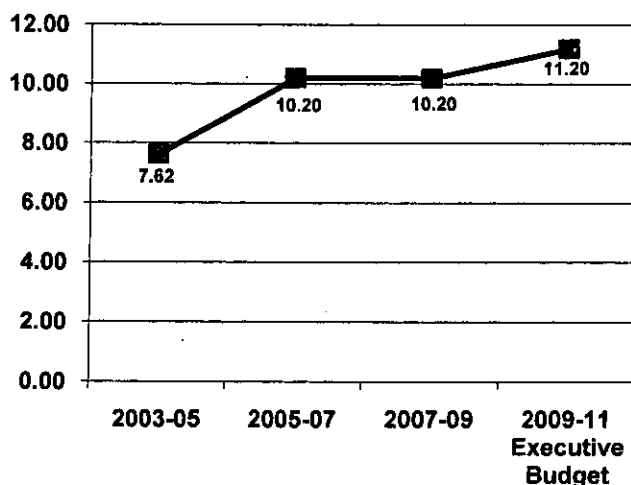
¹The Legislative Assembly appropriated \$829,669, of which \$438,129 is from the general fund and \$391,540 is from special funds, to the Main Research Center to provide agricultural research and extension agency employees an additional 1 percent per year salary increase each year of the biennium. The Main Research Center was to allocate the funding between the Main Research Center, branch research centers, North Dakota State University (NDSU) Extension Service, Northern Crops Institute, and Agronomy Seed Farm. The total salary increase provided is 5 percent effective July 1, 2007, and 5 percent effective July 1, 2008, which is the same increase provided to the North Dakota University System. The 2007-09 legislative appropriation amounts for the Northern Crops Institute include \$12,177, of which \$7,506 is from the general fund, for the agency's share of the funding appropriated to the Main Research Center for the additional salary increase.

²The 2007-09 appropriation was based on 11.20 FTE positions. Section 6 of House Bill No. 1020 (2007) authorizes the State Board of Higher Education to adjust FTE positions as needed. A total of 1 FTE position was removed pursuant to this section and reported to the Office of Management and Budget.

Agency Funding



FTE Positions



■ General Fund □ Other Funds

Ongoing and One-Time General Fund Appropriations

	Ongoing General Fund Appropriation	One-Time General Fund Appropriation	Total General Fund Appropriation
2009-11 Executive Budget	\$1,439,221	\$0	\$1,439,221
2007-09 Legislative Appropriations	1,125,818	25,000	1,150,818
Increase (Decrease)	\$313,403	(\$25,000)	\$288,403

First House Action

The Senate did not change the executive budget recommendation for the Northern Crops Institute. Attached is a summary of first house changes.

Executive Budget Highlights

	General Fund	Other Funds	Total
1. Removes 2007-09 biennium funding for equipment over \$5,000	(\$19,488)	(\$345,512)	(\$365,000)
2. Removes one-time funding for extraordinary repairs provided in the 2007-09 biennium	(\$25,000)		(\$25,000)
Provides funding for equipment over \$5,000		\$328,500	\$328,500
4. Adds 1 FTE milling specialist position	\$175,024		\$175,024

5. Increases funding for selected operating costs as follows:

\$20,197

\$20,197

	Increase (Decrease)	Total Provided
Travel	\$2,020	\$63,120
Supply/material - Professional	\$4,039	\$7,139
Miscellaneous supplies	\$7,271	\$42,743
Postage	\$404	\$20,804
Printing	\$606	\$27,706
Other equipment under \$5,000	\$1,616	\$36,316
Operating fees and services	\$3,635	\$74,835
Fees - Professional services	\$606	\$130,306

Other Sections in Bill

Additional income appropriation - Section 3 provides that, in addition to the amount appropriated as other funds, any other income from federal acts, private grants, gifts, and donations, or from other sources received by the Northern Crops Institute, is appropriated for the purposes designated in the act, grant, gift, or donation for the 2009-11 biennium.

Transfer authority - Section 5 authorizes the transfer of appropriation authority between the Main Research Center, the branch research centers, NDSU Extension Service, and Northern Crops Institute and provides that any transfers be reported to the Office of Management and Budget.

FTE position adjustments - Section 6 authorizes the State Board of Higher Education to adjust or increase FTE positions for the Northern Crops Institute and provides that any adjustments be reported to the Office of Management and Budget.

Unexpended general fund - Excess income - Section 7 of Senate Bill No. 2020 authorizes the continuation of any unexpended general fund appropriation and excess income received by the Northern Crops Institute to the 2011-13 biennium.

Continuing Appropriations

No continuing appropriations for this agency.

Major Related Legislation

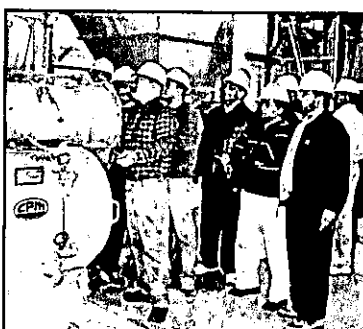
No major legislation is currently under consideration affecting this agency.

ATTACH:1

SB 2020
March 16, 2009 Attachment #1

NCI Northern Crops Institute 2009-2011 BIENNIAL BUDGET

NORTH DAKOTA STATE UNIVERSITY



Same given to Senate

HOUSE APPROPRIATIONS-EDUCATION AND ENVIRONMENT DIVISION COMMITTEE

Representative Robert Skarphol, Chairman
9:00 a.m. Tuesday, March 10, 2009

SB 2020 <http://www.legis.nd.gov/assembly/61-2009/bill-text/JQNJO100.pdf>

Northern Crops Institute - Budget No. 638

- Brian Sorenson, Director, Northern Crops Institute
- David Clough, Northern Crops Council (NCC) Member and ND Wheat Commission
- Dan Wiltse, Northern Crops Council (NCC) Vice Chair and ND Oilseed Council
- Dr. Joseph Chapman, NCC Member and President, NDSU
- Dr. D.C. Coston, Vice President of Agriculture, NDSU

Northern Crops Institute

Leading the effort in North Dakota, Minnesota, Montana, and South Dakota to establish northern-grown U.S. crops as the world's choice for food, feed, and value-added applications.

Northern Crops Institute (NCI) is an international meeting and learning center that brings together customers, commodity traders, technical experts, agricultural producers, and food and industrial processors for education, discussion and technical services. Northern Crops Institute is a cooperative effort between North Dakota, Minnesota, Montana and South Dakota to support the promotion, market development and expanded sales of crops grown in this four-state region.

Some of our major accomplishments are highlighted in these materials. NCI continues to focus on education and technical services as mandated in the Century Code. Our programs teach international buyers how to use the U.S. grain marketing system to make their purchases of northern grown U.S. crops and better manage their risks. Other educational programs teach buyers, both U.S. and international, about the quality and end-use characteristics of northern grown crops to encourage the purchase and use of our crops for their processing needs. We also add value to these crops through technical services in the form of processing, providing consulting and processing solutions to processors and users of regional commodities in the region, U.S. and around the globe.



NCI continues to receive regional funding. However, without the support of North Dakota, we would not be able to continue the level of work documented here. The executive recommendation for NCI's budget is very supportive of our work and our plans for the future. The addition of a Milling Specialist position to our staff would greatly increase the amount of support we can provide to our wheat producers through educational programs and technical services.

The additional operating funds requested will help NCI cover the increasing costs associated with our activities at both our facilities on the NDSU campus and at our Feed Production Center.

I ask that you support the executive recommendation of the NCI budget, and thank you for your continued interest and support of the Northern Crops Institute.

Respectfully submitted,
Brian Sorenson
Director
Northern Crops Institute

www.northern-crops.com

Contents

Agency Statements.....	3-4
Update on NCI Initiatives Budgeted in 2007-09.....	5
2009-2011 Needs-Based Budget.....	6-7
Impact Statements & Major Accomplishments.....	8-12
Countries at NCI in 2007-2008.....	9
NCI Contact Information.....	13

Northern Crops Institute

AGENCY STATUTORY AUTHORITY

North Dakota Century Code 4-14.2.

AGENCY DESCRIPTION

The Northern Crops Institute (NCI) is a cooperative effort between North Dakota, Minnesota, Montana and South Dakota to support the promotion and market development of crops grown in this four-state region. NCI is an international meeting and learning center that brings together customers, commodity traders, technical experts, agricultural producers, and food and industrial processors for education, discussion and technical service. NCI provides technical and marketing assistance through specialized training courses and technical services that facilitate domestic and international market development and expanded sales of northern-grown crops. Representatives from more than 127 countries have visited NCI since its inception. NCI is located on the campus of North Dakota State University.

AGENCY MISSION STATEMENT

NCI supports regional agriculture and value-added processing by conducting educational and technical programs that expand and maintain domestic and international markets for northern-grown crops.

AGENCY VISION STATEMENT

The Northern Crops Institute leads the effort in North Dakota, Minnesota, Montana, and South Dakota to establish northern-grown U.S. crops as the world's choice for food, feed, and value-added applications.

AGENCY PERFORMANCE MEASURES

NCI provides status reports to the Northern Crops Council three times annually at Council meetings (per NDCC Section 4-14.2-02 and 4-14.2-03). On June 23, 2008, presentations and written documentation on accomplishments during Fiscal Year 2008 and plans for the next fiscal year were provided to the Council. Copies are on file at the NCI office and with Council members. NCI provided verbal and written status reports to the South Dakota Appropriations Committees in January 2008. NCI also gives regular status reports on NCI accomplishments to other agencies that provide Special/Other funds.

NCI performance is based on the NCI Five-Year Strategic Plan (Plan), adopted in June 2004 by the Northern Crops Council, that affirmed NCI's mission and identified priorities for the future. The Plan is being used to help guide NCI's future focus, programs, partnerships, and resource management. A guiding principle was to integrate programs that better serve the broad variety of regional crops in 21st century agriculture while continuing to serve our region's more traditional crops. NCI staff has made excellent progress in implementing the actions identified by this Plan which focuses on four areas: Recognized Leadership, Enhanced Programs, Effective Partnerships, and Leveraged Funding.

AGENCY FUTURE CRITICAL ISSUES

Since its inception in 1983, NCI has earned consistent success in promoting regional crops and is recognized as one of the best U.S. training facilities of its kind. It is the only regional organization of its type. In an increasingly competitive climate for world market share of agricultural commodities, NCI must keep current and meet the needs of international and U.S. crop buyers.

NCI programs, processing and analytical technologies must stay up-to-date to match technology of today and the future. High technology equipment is needed to maintain leading edge processing, testing capabilities, and delivery systems. New equipment for analyzing and processing oilseed and a wider range of diverse crops is continually being evaluated and purchased as Special/Other funds become available.

Increasingly, NCI is being recognized as a leader in providing expertise and pilot scale processing capabilities for the education, quality evaluation and utilization of northern grown crops. In order to meet this growing need for crop quality and value-added processing, NCI needs additional technical staff positions for a milling specialist and food technologist.

Northern Crops Institute

AGENCY FUTURE CRITICAL ISSUES (continued)

A tremendous amount of effort and expense is focused on the development of new varieties of hard red spring wheat and other crops to meet the quality needs of domestic and international markets, and at the same time provide top agronomic value to our producers. Currently, our region lacks the equipment and expertise to provide pilot-scale milling of wheat flour for evaluation in domestic and international programs, including Wheat Quality Council and Overseas Varietal Analysis (U. S. Wheat Associates). This service is being covered by other groups, such as Kansas State University or locally using small-scale laboratory mills, which are not designed for this purpose.

NCI is seeking financial support from regional wheat commissions, commercial milling companies and allied industries for the funds to reconfigure the NCI pilot durum mill into a "swing mill" to mill durum and bread wheats, including Hard Red Spring, Hard Red Winter and Hard White wheats.

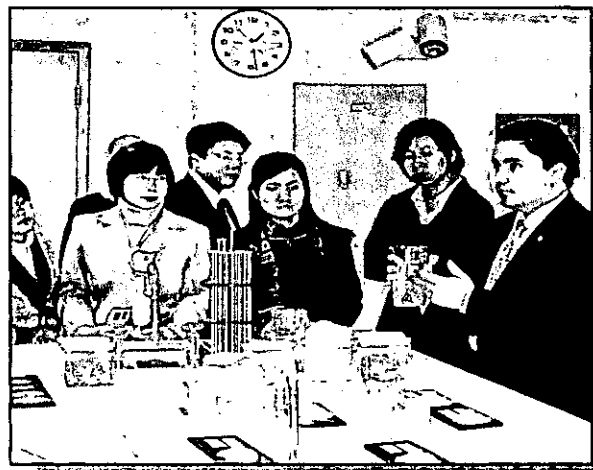
It is important that NCI obtains additional state support for a specialist to provide this needed milling expertise as an important part of NCI's efforts to promote northern grown crops through educational programming and technical services.



A participant in the Exploring Whole Grain Foods short course in 2008 prepares dough for baking.



NCI Director Brian Sorenson welcomes the Feed Safety short course participants to Northern Crops Institute.



Chinese food processors listen as NCI Technical Director Mehmet Tulbek, (right), explains the potential of enhancing food products with peas.

Update on NCI Initiatives Budgeted in 2007-2009

▪ **Technical Processing Staff Position** • \$100,000 received to fund one position

- Assist with NCI programs to educate domestic and international markets on the utilization and quality of crops produced in North Dakota and the region.
- Assist with pilot-scale processing projects for value-added processors to develop new and enhanced products to increase the demand and value of our crops.
- The position is filled by Rilie Morgan, a native of Grafton, North Dakota.



Rilie Morgan, Processing Specialist, (center), demonstrates the twin-screw extruder during the Flaxseed short course at NCI in 2008.

▪ **Developing Staff for Enhanced Technical Service** • \$38,346 received

- This funding has been used to provide staff development training to expand the knowledge of NCI staff in many areas of crop quality and processing.
- Funds will continue to be used to strengthen staff expertise in all areas related to NCI's programs, including processing, marketing, training skills and leadership.

▪ **Extraordinary Repairs Appropriation** • \$25,000 received

- This funding was used to renovate NCI's grain processing laboratory to construct two decks (floors) adjacent to the NCI pilot durum mill to provide additional floor space to install processing equipment for educational programs and evaluation of grain, pulse and oilseed crops.
- This one-time appropriation was combined with NCI gift and local funds of \$100,000 to complete the renovation project in 2008.
- This renovation is providing additional space for the reconfiguration of the NCI pilot durum mill into a dual purpose or "swing" mill for the milling of the hard spring and winter bread wheats, as well as the durum grown in our region. Project planning is now complete and work will begin once funds have been secured.

2009-11 Needs-Based Budget

The following initiatives are included in the Executive Recommendation:

Milling Specialist

\$160,000 salary and fringe benefits, 1.0 new FTE

A milling specialist is needed to provide expertise in the milling of grains, pulses, oilseeds and their co-products, which will strengthen NCI's educational and technical programming efforts for the promotion and utilization of northern grown crops. NCI is proceeding with the reconfiguration of the NCI Pilot Durum Mill to create a dual-purpose or "swing mill" for both durum and bread wheats (i.e., HRS, HRW and HW). Creating this new position will address an identified need for milling expertise that will showcase the quality and functionality of our region's crops to domestic and international grain buyers and processors.

Equipment and Operating Expenses

\$20,197

With the increased number and diversity of the educational programs and crop utilization activities at NCI, additional funds will allow NCI to cover the additional operating expenses and equipment associated with our main facility located on the NDSU campus and the Feed Production Center (FPC) located northwest of campus. These operating expenses include utility costs at the FPC, printing and postage for short course brochures, newsletters and other promotional materials, as well as for laboratory and office supplies and services. Equipment needs include laboratory and pilot-scale processing equipment, and other items to better equip, service and maintain the NCI's laboratories to allow for a broad range of quality testing and pilot-scale processing capabilities.

The following initiative is not included in the Executive Recommendation:

Pulse and Oilseed Technologist

\$90,000 salary and fringe benefits, 1.0 new FTE

A pulse and oilseed technologist is needed to provide additional support for NCI's efforts to educate domestic and international buyers and processors on the quality and functionality of northern grown crops. This position will work closely with NCI's Technical Director and Crop Quality Specialist in evaluation and utilization of the region's specialty crops and help with development of new educational courses and promotional materials.

Northern Crops Institute

2009-2011 Needs-Based Budget

Reconciliation of 2007-09 Fund Appropriations to 2009-11 Executive Recommendation (SB 2020)

General Fund

	<u>NCI</u>
2007-09 Original General Fund Appropriation	\$1,143,312
Transfer from Main Research Center to Extension Service and Branch Research Centers (1% Salary Increase)	<u>7,506</u>
2007-09 Adjusted Appropriation	1,150,818
Base Adjustments:	
2007-09 One-time funding (extraordinary repair--mill renovation)	<u>(25,000)</u>
2007-09 Adjusted Appropriation, Less Base Adjustments	1,125,818
Increases (decreases) included in base budget request:	
Cost to continue FY2009 salary increases	21,290
2009-11 Base General Fund Request	1,147,108
Executive Recommendation Increases (Decreases):	
Compensation package (5% per year) and health insurance increases	111,916
NCI Initiatives	<u>180,197</u>
Total Increases (Decreases) to Budget Request	<u>292,113</u>
2009-11 Executive Recommendation - General Fund	1,439,221
Increase (Decrease) From 2007-09 Adjusted Appropriation, Less Base Adjustments	<u>\$313,403</u>

Special Funds

	<u>NCI</u>
2007-09 Original Other Fund Appropriation	\$1,479,657
Transfer from Main Research Center to Extension Service and Branch Research Centers (1% Salary Increase)	<u>4,671</u>
2007-09 Adjusted Appropriation	1,484,328
Increases (decreases) included in budget request:	
Cost to continue FY2009 salary increases	98,128
Other changes in estimated income	<u>(36,500)</u>
Total requested increases (decreases)	<u>61,628</u>
2009-11 Other Funds Request	1,545,956
Executive Recommendation Increases (Decreases):	
Compensation package (5% per year) and health insurance increases	52,309
Total Increases (Decreases) to Budget Request	<u>52,309</u>
2009-11 Executive Recommendation - Other Funds	<u>\$1,598,265</u>
Increase (Decrease) From 2007-09 Adjusted Appropriation	<u>\$113,937</u>

**North Dakota University System
Northern Crops Institute
Summary of Senate Amendments to SB2020**

	NCI
2007-09 Adjusted Appropriation, Less Base Adjustments	\$1,125,818
<u>Executive Recommendation Increases (Decreases):</u>	
Cost to continue FY2009 salary increases	21,290
Cost of 2009-11 capital bond payments	
Compensation package (5% per year) and health insurance increases	111,916
NCI and SBARE initiatives (1)	180,197
2009-11 capital projects request	
Total Increases-Executive Recommendation	313,403
General Fund per Executive Recommendation	1,439,221

Senate Amendments:

N/A-None

General Fund per Engrossed SB2020	\$1,439,221
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Footnotes regarding general fund adjustments included in the executive recommendation and House amendments:

(1) The following NCI and SBARE initiative was funded in the executive recommendation (all base funding increases):

NCI - \$160,000 Milling specialist; \$20,197 Operating expenses [Total requested = \$270,197]

**North Dakota University System
Northern Crops Institute
Reconciliation of 2007-09 Original Other Fund Appropriation
to 2009-11 Executive Recommendation (SB 2020)**

	NCI
2007-09 Original Other Fund Appropriation	\$1,479,657
2005-07 capital assets carryover	
Transfer from Main Research Center to Extension Service and Branch Research Centers	4,671
2007-09 Adjusted Appropriation	1,484,328
<u>Executive Recommendation Increases (Decreases):</u>	
Cost to continue FY2009 salary increases	98,128
Compensation package (5% per year) and health insurance increases	52,309
Increase (decrease) capital projects & carryover	
Other changes in estimated income	(36,500)
Total Increases (Decreases) to Budget Request	113,937
Other Funds per Executive Recommendation	1,598,265

Senate Amendments:

N/A-None

Other Fund per Engrossed SB2020	\$1,598,265
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Impact

Crops produced on the Northern Great Plains of the U.S. are among the finest in the world. NCI's mission is to tell global crop buyers about our crops' quality characteristics through technical education and services. NCI is the prime source of technical education about the region's wheat, feed grains, soybeans, pulses and oilseeds, and their value-added products. Demand continues to increase for our programs and services. Such demand is also a reflection of the success of our activities to date and the credibility of the information provided through our programs.

Results from educational programs are long-term. One must look at what NCI does in the same way as one looks at other forms of education. We provide information on marketing and technical utilization of northern-grown commodities for both domestic and export markets. This service increases the possibilities of these buyers using northern-grown commodities in the future. Often purchases occur several years after educational efforts when conditions become optimal for the buyers.

Crops grown in the northern-tier of the U.S. are valued by discriminating customers around the globe. Since 1983, Northern Crops Institute (NCI) has hosted crop buyers, technical experts, commodity traders, processors and producers from 127 nations. They come to learn more about crop quality and availability. Northern Crops Institute does not buy or sell crops. We teach people how to use our crops and how to buy them through the U.S. grain marketing system.

State Impact

Production agriculture makes up 25 percent of the economic base. In 2007, crop production accounted for over 6 billion dollars in ND agricultural exports (ND Department of Agriculture 2008). Additionally, NCI contributes to the increased use of ND and regional crops through our processing and product development efforts with ND, regional and multi-national food and feed processors. These programs focus on increased and more effective use of ND crops for value-added purposes.

Regional Impact

Agriculture is the economic backbone of our four-state region: Minnesota, Montana, North Dakota and South Dakota. NCI conducts programs that focus on developing markets for many export crops in addition to domestic use. One in five jobs in each of these four states is in the agricultural sector. In 2007, total agricultural exports were valued at \$3.5 billion in Minnesota, \$723 million in Montana, \$2.5 billion in North Dakota, and \$1.85 billion in South Dakota. NCI acknowledges that credit for agricultural exports is due to the work of many entities in addition to NCI.

Major Accomplishments

Advancing Regional Markets

- Northern Crops Institute works to advance global market development of crops produced in North Dakota and the four-state region. We promote crop quality and availability through education, technical services and consulting throughout the world.

2007 and 2008 NCI Success Story

Seventy-six participants from 44 countries learned new strategies for grain procurement and risk management at NCI in 2007 and 2008. During the basic courses, groups tour area farms, the Port of Duluth, and the Minneapolis Grain Exchange. Advanced courses include risk management games. NCI Assistant Director John Crabtree comments, "In these courses, we give the participants practical experience with tools, such as hedging, that will help them reduce their risk when they are purchasing grain. We also talk about inventory control."



Major wheat buyers from Tunisia and China examine U.S. wheat at a local country elevator during the 2007 Grain Procurement short course.

Education

- Participants in the Grain Procurement courses are decision-makers regarding purchases of grains/crops for their companies and countries. Knowledge of the U.S. grain purchasing system is absolutely necessary for international buyers. The U.S. system is far more complicated than some of our competitors who have single-desk systems.
- Offering courses at NCI remains the best means of connecting potential customers to our state and region. International business depends on personal relationships. The hospitality of our region, from NCI staff, course lecturers, regional farmers and hosts for field trips, to hotel, restaurant and retail personnel, all create positive connections to our state and region. For many international buyers of crops, developing a relationship with the producers and visiting their farms is essential.
- When feasible, NCI teaches courses overseas. This is especially true when funds must be used in-country, not in the U.S., when travel costs are prohibitive, or when security issues make travel impossible. We will continue to pursue these opportunities.

56 Nations Learn More About Northern-Grown Crops

In 2007 and 2008, NCI staff taught short course participants, hosted trade teams and visitors, and consulted with companies from 56 countries, in addition to those in the USA.

Albania	Chile	Egypt	Japan	Monaco	Pakistan	South Africa	Tunisia
Algeria	China	Guatemala	Jordan	Morocco	Philippines	Spain	Turkey
Belgium	Colombia	Honduras	Kenya	Netherlands	Poland	Syria	UAE
Bolivia	Costa Rica	India	Korea	Nicaragua	Romania	Taiwan	UK
Botswana	Cyprus	Indonesia	Madagascar	Nigeria	Saint	Tanzania	Uruguay
Brazil	Denmark	Israel	Malaysia	Norway	Vincent	Thailand	Venezuela
Canada	Dominican Rep	Italy	Mexico	Oman	Singapore	Trinidad	Vietnam

Technical Services

● NCI adds value to northern-grown crops by providing technical services to processors and users of regional commodities. Food companies, small to large, regional to multinational, use NCI's processing capabilities to develop new or modified food products and to evaluate ingredients and processing parameters. In 2007 and 2008, NCI conducted a record number of processing and baking investigations, and analytical testing projects for food and feed companies, universities and others.

● In 2007 and 2008, our technical services have focused on increasing the use and value of amaranth, barley, hullless barley, black beans, buckwheat, canola, chickpeas, yellow and blue corn, dark red kidney beans, flaxseed, Great Northern beans, lentils, millet, navy beans, oats, pinto beans, dry peas, quinoa, sorghum, soybeans, sunflower seeds, durum wheat, hard red spring wheat, hard red winter wheat, hard white wheat, and soft red winter wheat.



A Japanese feed pelleting team examines Distillers Dried Grains (DDGS) at a South Dakota ethanol plant during the 2008 DDGS: Nutrition, Use and Feed Manufacturing short course.

2008 NCI Success Story

Continued expansion of the corn ethanol industry has created education and technical assistance opportunities for the NCI Feed Center. "Northern Crops Institute continues to offer this kind of educational program to promote the utilization of U.S. distiller's grains globally," says Kim Koch, NCI Feed Center Manager. In 2008, NCI offered four DDGS-related courses. U.S. Grains Council (USGC) brought teams from Mexico/Central America and Japan to Fargo for learning opportunities in the nutritional value of DDGS in livestock and poultry diets, with hands-on training in using DDGS in pelleted feeds. NCI also presented two workshops providing hands-on opportunities in answering the questions of regional, national and international clientele about DDGS and pellet manufacture.

"These workshops brought together individuals from feed manufacturing, ethanol production, and support industries to learn about pelleting DDGS," says Koch. One participant commented, "The information from this course will help me trouble-shoot with my customers on pelleting issues and management. More research is needed on DDGS and pelleting to increase the use of DDGS in the U.S. and in other countries." Some of the courses were co-sponsored by the American Feed Industry Association. NCI offered its first course on DDGS: Distillers Grains Quality and Utilization in 2007.

● NCI's Feed Production Center offers educational programs and produces complete feeds, concentrates, supplements and custom premixes that are used in support of NDSU's animal teaching and research mission. Since becoming operational in 1991, the NCI feed production center has provided in excess of 32,000 tons of feed. Average yearly feed production is almost 1,900 tons for the NDSU Experiment Station and Research Extension Centers, with some research diets for University of Minnesota, and experimental work for Mississippi State University and regional companies.



2007 and 2008 NCI Success Story

NCI developed and presented several courses on pulses and oilseeds in 2007 and 2008. "North Dakota has become a significant producer of pulses and oilseeds, and we are looking for new markets for their food use," says Mehmet Tulbek, NCI Technical Director. The Flaxseed: Adding Food Value Short Course was offered in March 2008. Participants from seven countries investigated pea flour as an ingredient in pasta and noodles during two short courses in 2007, sponsored by the USA Dry Pea and Lentil Council. NCI's first Pulse Quality and Utilization short course was offered in October 2008. The course was sponsored by the Northern Pulse Growers Association. "In this course, we focused on pulse crops as alternative ingredients for high protein, high fiber and low glycemic index, as well as cost-reducing aids in food process applications," says Tulbek.

NCI Technical Director Mehmet Tulbek, (above left), discusses extruded pulse products with participants during the 2008 Pulse Quality and Utilization short course.

NCI Pilot Durum Mill to Become 'Swing Mill' for Durum and Bread Wheat

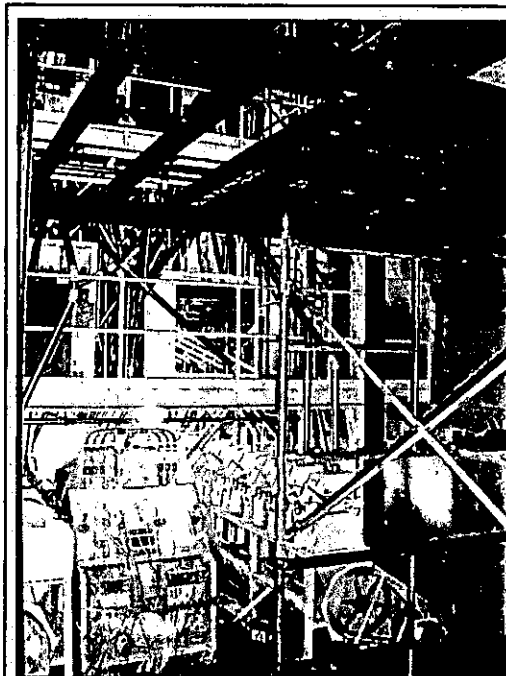
The second phase of NCI's Grain Milling and Processing Laboratory is underway, says NCI Director Brian Sorenson. Renovation of the existing durum pilot mill and other changes will allow NCI's technical staff to expand milling capabilities for wheat and a broad spectrum of other crops grown in the four-state region, including field peas, flax, barley, and corn.

Through generous financial contributions from the South Dakota and North Dakota Wheat Commissions, NCI will reconfigure the pilot durum mill into a dual-purpose mill, or swing-mill, for milling durum and bread wheat.

"The new mill will allow us to do technical service for flour mills in our region. There is lots of interest in new types of milling, new blends of grains, whole wheat and whole grains," says Sorenson.

The swing-mill's set-up will allow staff to switch the equipment quickly from durum semolina milling to bread wheat flour milling.

"The new area will give us the flexibility to do some new and exciting projects. The new decks have trap doors that can be raised with an electric hoist. The renovation gives us three levels with adequate ceiling heights for us to bring in new equipment and larger quantities of ingredients and grains for test work," says Sorenson.



2008 NCI Success Story

The first stage of the mill renovation is complete. Unused storage bins were removed. The decking system around the mill and the loading dock were updated and enlarged.

Partnerships and Leadership

- The region's commodity check-off groups and their producer members continue to be major partners and supporters of Northern Crops Institute. NCI staff identify new market opportunities for regional producers and design courses to focus on those crops and products.

- NCI continues to offer courses in partnership with U.S. Wheat Associates, American Soybean Association and U.S. Soybean Export Council, U.S. Grains Council, American Society for Brewing Chemists, American Feed Industry Association, Association of Operative Millers, American Association of Cereal Chemists, Association of Oil Chemists Society, USDA/FAS Cochran Program, NDSU Extension Service and others. These groups assist in identifying possible participants and often provide other resources.

- NCI provides leadership in ND and the nation, and in return, receives collaborative assistance from many companies, organizations and individuals. Without these partnerships, NCI could not do its work. This year's cooperators are listed on page 19 of the 2008 Annual Update.

- NCI staff provides regular assistance to our partners. For example, in November, NCI Director Brian Sorenson traveled throughout Asia with U.S. Wheat Associates to report on the 2008 crop quality to our Asian buyers. NCI staff regularly travel throughout the world to provide educational seminars and technical consulting. NCI also provides lectures and demonstrations at NDSU, SDSU and other regional universities on technical, scientific, and practical applications of the use of crops in food processing applications.

- The Northern Crops Council, NCI's governing board of directors, continues to provide regional four-state leadership for NCI's programs and strategic planning. NCI's Industry Advisory Board, drawn from the four-state agricultural supply and processing industries and the grain trade, provides advice, lecturers, tours, and resources for NCI programs and initiatives.

2007 and 2008 NCI Success Story

"2008 was our second year to offer Baking with Soy short courses," says John Crabtree, NCI Assistant Director. "For the past three years, Minnesota Soybean Research and Promotion Council has provided support for the courses and staff training. Soy products are becoming very popular around the world, and this is a way that we can promote our regional soybeans," Crabtree concludes. A team from Guatemala, Honduras, Mexico and Nicaragua attended the Baking with Soy short course in July 2008. A Taiwanese team attended in October 2008. Two teams of bakers and importers from Egypt, India, Jordan, Kenya, Oman, and Pakistan came to NCI in 2007 to learn more about the benefits of fortifying baked products with soy. Additional sponsors were the North Dakota Soybean Council, American Soybean Association, U.S. Soybean Export Council (USSEC), and the USDA Cochran Fellowship Program in conjunction with WISHH, the World Initiative for Soy in Human Health.



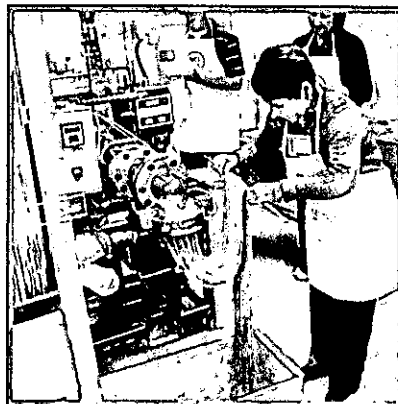
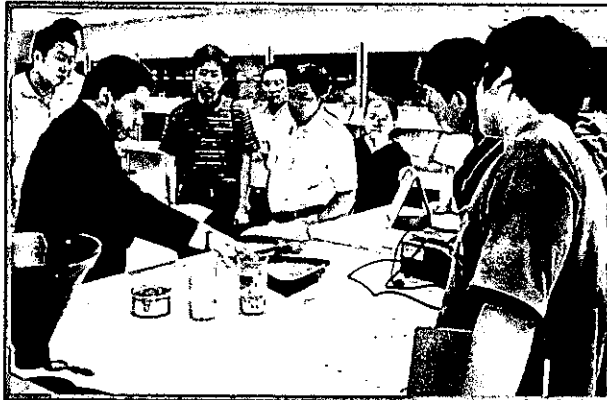
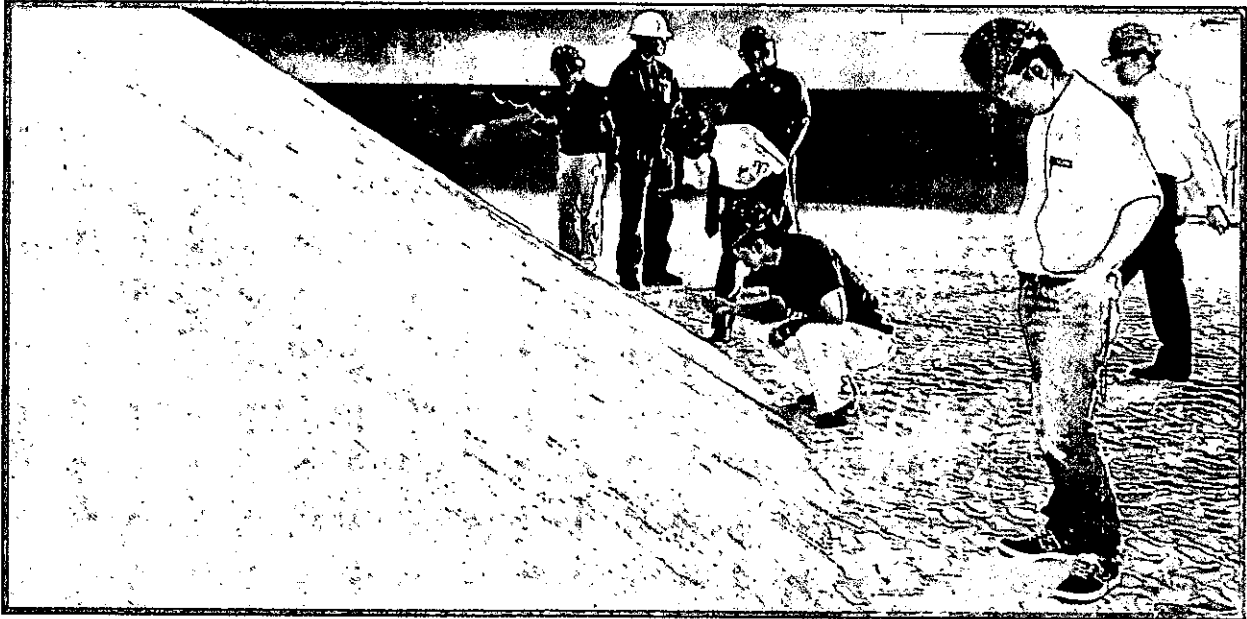
NCI Lab Manager Staci Lee, (center left), assists bakers from Taiwan during the 2008 Baking with Soy short course.

*Some
Seven
to Seven*

Northern Crops Institute Annual Update

2008

Northern Crops Institute supports regional agriculture and value-added processing by conducting educational and technical programs that expand and maintain domestic and international markets for northern-grown crops.



Connecting in the Global Marketplace



Director's Corner

Brian Sorenson

Director, Northern Crops Institute

Welcome to NCI! Whether you have been a friend of NCI for years, or this is your first opportunity to learn about us, I hope you are able to take some time to review this



Sorenson

report. This is my first article for NCI Update since becoming Director January 1, 2008.

I am excited about the personnel changes here at NCI, starting with the promotion of Mehmet Tulbek to Technical Director, and the addition of Staci Lee as Laboratory Manager, and Thunyaporn Jeradechachai (Naggie) as Food Technologist. Naggie will become our Pulse and

Oilseed Specialist December 1, 2008.

Our entire NCI team has been working hard to make this year's short courses and trade team visits extremely successful.

As Technical Director since 2001, my primary goal was to expand NCI's technical capabilities for grains, oilseeds and pulse crops grown in our four-state region. The changes we are making allow us to better serve our producers and value added processors, through new and enhanced short course programming, laboratory analysis and pilot-scale processing.

By helping our processors develop new products or incorporate new crops into existing products, we play an important role in promoting regional agriculture here and internationally.

I want to say thank you to our friends who have helped us this past year through serving on our Northern Crops Council, Northern Crops Advisory Board and our Industry Advisory Board, participating in our programs with guest lectures, demonstrations, and tours of farms and processing plants. Your participation is essential to our success.

Last winter, a reporter from the New York Times called me to discuss the role of biofuels in high crop and food prices, as well as the food shortages and riots in developing countries. After sharing my thoughts on the impact of high energy prices and global production problems, the reporter commented that "maybe NCI has done too good of a job promoting U.S. crops around the world."

I think about his comment often, not just because I think he was wrong, but because of how much work we have yet to do.

Notes from the NCC Chair

Laird Larson

South Dakota Wheat Commission

Another year has come and gone, and with it came changes. Brian Sorenson has taken over as Director of NCI. He has actively taken charge and has some exciting changes taking place. Other staff changes have occurred. So business is as usual with constant changes always facing us.

NCI short courses continue to be as popular as they have ever been. New topics are always considered and evaluated before being added to the growing list of courses. Most of the core courses have been offered for many years.



Larson

One of those is the Grain Procurement Strategies for Importers short course. I recently had the opportunity to welcome the participants of this course at their recognition dinner. I immediately felt the willingness and eagerness of this group to learn and participate. Much concern was expressed to me wondering if producers will keep producing an adequate supply of wheat with competition for acres growing from soybeans and corn. One thing I heard from these participants is they do not want to change their diets from using wheat. They will consider different ways to utilize wheat but wheat needs to stay in the formula.

Many long lasting friendships are built at these courses and for that I thank the staff. Again, the real success of the short courses is the expertise and willingness of our competent staff who put together such great programs that result in the return of so many participants.

We have just implemented a committee structure within our Northern Crops Council to better utilize our great members. They represent not only producers from the four state region but also industries that process our crops, along with NDSU and the ND Commissioner of Agriculture.

With all the leadership available in this group, we are trying to give everyone a stronger voice by allowing enough time for them to formally meet in their areas of expertise during each meeting. NCI can only be better with these inputs from the people that NCI serves.

Again, I want to thank all of the council members for their participation, the four states that support NCI and the staff of NCI for another successful changing year.

Table of Contents

NCI Leadership Reports.....	2
Northern Crops Council and Industry Advisory Board.....	3
Educational Short Courses.....	4-11
Global Marketing.....	12-15
Technical Services.....	16-17
Staff Changes and Additions.....	18
2009 Short Course Schedule.....	18
Thank You to Cooperators and Speakers.....	19
Thank You to 2007-08 Funding Partners.....	19
Staff Contact Information.....	Back Cover

Northern Crops Council Re-elects Laird Larson to NCC Chair

2008-09 Northern Crops Council Members

* elected or appointed in 2008

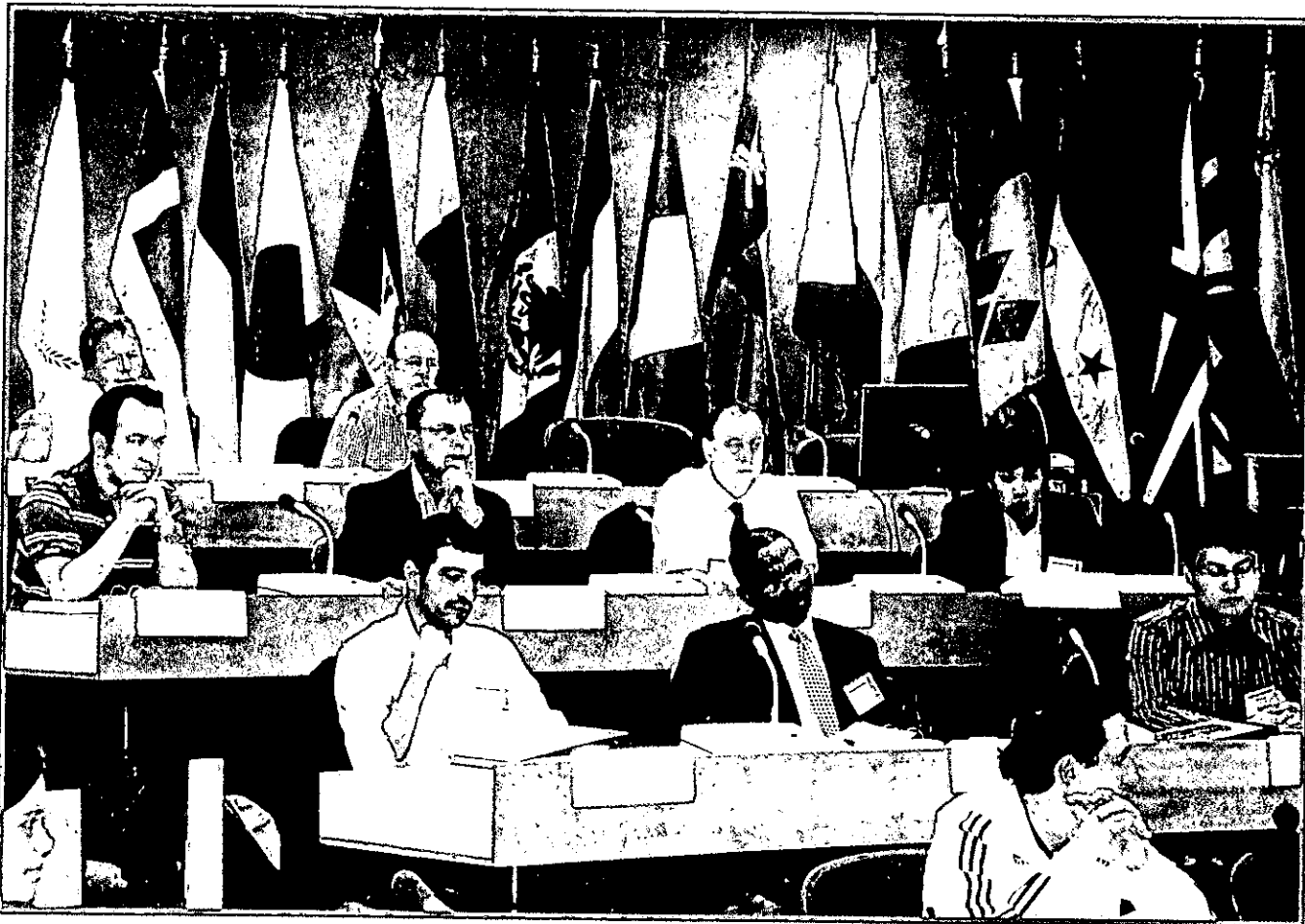
- **Laird Larson, Chair**
Clark, SD
SD Wheat Commission
- **Dan Wiltse, Vice-Chair**
Lisbon, ND
ND Oilseed Council
- **Mark Askegaard**
Fargo, ND
MN Soybean Research/Pro. Council
- **Ryan Brooks**
Bowman, ND
Northern Pulse Growers Association
- **President Joseph Chapman**
Fargo, ND
North Dakota State University
- **David Clough**
Fessenden, ND
ND Wheat Commission
- **Dr. D.C. Coston (Pres.'s Designee)**
Vice Pres. for Agriculture
North Dakota State University
- **Ernie Hoffert**
Carrington, ND
AmeriFlax
- **Roger Johnson**
Commissioner of Agriculture
ND Department of Agriculture
- **Mark Jossund**
Moorhead, MN
MN Wheat Research & Pro. Council
- **Doyle Lentz**
Rolla, ND
ND Barley Council
- **Robert Majkrzak**
Fargo, ND
Red River Commodities Inc.
- **Claude Richard**
Fargo, ND
ND Soybean Council
- **Robert Sinner**
Casselton, ND
SB&B Foods Inc.
- **Arlo Skari ***
Chester, MT
MT Wheat & Barley Committee
- **Kevin Skunes ***
Arthur, ND
ND Corn Utilization Council
- **René Steiner**
Plymouth, MN
Buhler Inc.
- **Vance Taylor**
Grand Forks, ND
North Dakota Mill



At the July 2008 NCC Reorganizational Meeting, Brian Sorenson, NCI Director, (left), and Laird Larson, NCC Chair, (right), thank Brian Kaae (center) as he retires from the NCC Board after more than eight years of service. Kaae represented the Montana Wheat and Barley Committee. Jennifer Tesch, SK Food International, also retired from the Board in July.

2008-09 NCI Industry Advisory Board

- **John McLean, Chair**
Cargill
- **Eric Bartsch**
United Pulse Trading
- **David Berg**
American Crystal Sugar
- **Darwin Britzman**
Int'l Nutrition Consulting
- **Rodney Christianson**
SD Soybean Processors, Inc.
- **Ron DeJongh**
Columbia Grain
- **Joel Dick**
Dakota Specialty Milling
- **Mark Dillon**
Golden Growers Coop.
- **Timothy Dodd**
Dakota Growers Pasta
- **Carrol Duerr**
Colfax Elevator
- **Tim Egeland**
Dahlgren & Company Inc.
- **Gordon Gingras**
Evonik
- **Mike Gray**
Kellogg's
- **Greg Johnson**
Premier Pulses International
- **Brad Kjar**
Tharaldson Ethanol
- **Jon Long**
BNSF Railway Inc.
- **Ray Lottie**
General Mills (retired)
- **Robert Majkrzak**
Red River Commodities
- **Dave Polries**
Northern Pulse Growers
- **Jay Romsa**
General Mills
- **Robert Sinner**
SB&B Foods
- **Travis Sitter**
Hesco Inc.
- **René Steiner**
Buhler, Inc.
- **Mike Stevens**
Busch Agricultural Resources
- **Tom Streifel**
Blue Flint Ethanol
- **Mark Stutrud**
Summit Brewing Company
- **Vance Taylor**
North Dakota Mill
- **Jennifer Tesch**
SK Food International
- **Ken Ulbrich**
Bay State Milling
- **Kimberly Vachal**
UGPTI



21 Nations Attend NCI's Grain Procurement Management Course *Grain Buyers Express Concern on Cost and Availability of Crops*

Albania, China, Colombia, Cyprus, Denmark, Indonesia, Japan, Jordan, Madagascar, Mexico, Netherlands, Nigeria, Oman, Philippines, Poland, Romania, Saint Vincent, Syria, United Kingdom, USA, Venezuela • September 8-17, 2008



Crabtree

"The cost and availability of grain is heavy on the minds of our short course participants," says John Crabtree, NCI Assistant Director. Thirty-six crop buyers attended the 2008 Grain Procurement Management for Importers short course at NCI to learn how to make more effective purchases in the U.S. grain marketing system.

Grain buyers at the course were from Albania, China, Colombia, Cyprus, Denmark, Indonesia, Japan, Jordan, Madagascar, Mexico, Netherlands, Nigeria, Oman, Philippines, Poland, Romania, Saint Vincent, Syria, United

Kingdom, USA, and Venezuela. They represented large and small food processing, feed manufacturing, and trading companies that import HRS wheat, durum wheat, corn, soybeans, barley and other commodities.

Several participants were sponsored by U.S. Wheat Associates and the USDA Foreign Agriculture Service Cochran Fellowship Program.

"Right now, the world is consuming more wheat than is being produced," says Crabtree. "In the long term, that can't continue because it may cause prices to rise to unpredictable levels. The biofuel industry throughout the world is using the crops, too. That's a big concern for overseas processors, and it adversely affects consumers."

Technical Education

"There is so much volatility in the market," Crabtree continues. "In this course, we give the participants tools, such as hedging, that will help them reduce their risk when they are purchasing grain. We also talk about inventory control. Many companies operate on the 'just in time' theory. At the present time, that may not be a very good idea. Processors need adequate stocks because of the uncertainty in the markets," Crabtree concludes.

During the first week of the course, the group toured Hunter (N.D.) Grain Company elevator with Paul Skarnagel and visited the Jim Howe farm near Casselton, N.D.

"We are excited to have these grain buyers see our region and farm crops first-hand," says Brian Sorenson, NCI Director.

"Our spring wheat harvest in the four-state region went quite well. We are very excited about the quality of these crops. The regional crop quality survey is showcased throughout the world at U.S. Wheat Associates Crop Quality Seminars, so millers and processors get the first glimpse of the new crop's quality," Sorenson concludes.

The course participants also traveled to Duluth, Minn., where they toured the Duluth Seaway Port Authority with Adolph Ojard, Executive Director, and the CHS Export Grain Terminal with Dick Carlson.

Trading games both at NCI and at the Minneapolis Grain Exchange (MGEX) are a special feature of this course.

At the MGEX, Helen Pound of Goldenberg, Hehmyer & Co., led the participants in a mock trading exercise on the Exchange floor and explained the fine points of grain trading. Ray Erickson led a tour of the Minneapolis Grain Exchange.

During the tour of CHS, Inc. Barge Facility at Savage, Minn., Superintendent Greg Oberle explained the grain transport system on the Mississippi River.

Speakers for the course were: Dr. William Wilson, NDSU; Art Boline, GIPSA/USDA; Darcy Rasmussen, N.D. Grain Inspection Service; Ray Grabanski, Progressive Ag; Dr. David Bullock, FC Stone; Dr. John Oades, U.S. Wheat Associates; Holly Womack, CoBank; Erica Peterson, N.D. Wheat Commission; Mike Krueger, The Money Farm; Sean Hower, BNSF Railway



Co.; Ron DeJongh, Columbia Grain; Rick Dusek, Julie Heinz and Mike Klein, CHS; and Randy Narloch, ADM-Benson Quinn.

The course's study topics included U.S. grain handling and transportation system, cash and futures markets, basis, U.S. grain grading standards, basic hedging principles, options, commodity analysis, price risk management, quality specifications, sources, financing imports, grain situation and outlook, railroads, logistics management, contracts and arbitration, managing ocean freight risk, exporter tendering strategies, and buyer/seller relations.

NCI Educates Buyers from 44 Nations about Northern Crops in 2008

Albania...Belgium...Bolivia...Brazil...Canada...China
Colombia...Costa Rica...Cyprus...Denmark...Guatemala...Honduras
India...Indonesia...Italy...Japan...Jordan...Korea...Madagascar...Malaysia
Mexico...Monaco...Netherlands...Nicaragua...Nigeria...Oman...Pakistan
Philippines...Poland...Romania...Saint Vincent...Singapore...South Africa
Spain...Sweden...Syria...Taiwan...Thailand...Trinidad...Turkey
United Kingdom...USA...Venezuela...Vietnam

Technical Education



Grain Procurement short course participants from China, Venezuela, USA, and Nigeria examine grain samples in the cash market during their tour of the Minneapolis Grain Exchange.



During the short course's first week, the Grain Procurement Short Course class toured Hunter (N.D.) Grain Company Elevator with General Manager Paul Skarnagel.

Advanced Procurement Course Gives Buyers Risk Managements Tools

Brazil, Italy, Monaco, Nigeria, South Africa, Trinidad, USA, Venezuela • May 12-16, 2008

"More and more companies are implementing a risk management program. The volatility in prices and supplies is causing food companies to reevaluate their inventories of grains and oilseeds," says John Crabtree, NCI assistant director and coordinator of short courses.

"They might do this through using the futures markets to hedge their purchase, or by working closer with their grain supplier. This course is specifically designed to help buyers of U.S. crops reduce their company's risk," concludes Crabtree.

Fourteen participants from eight nations learned how to improve their risk management strategies when making U.S. grain purchases.

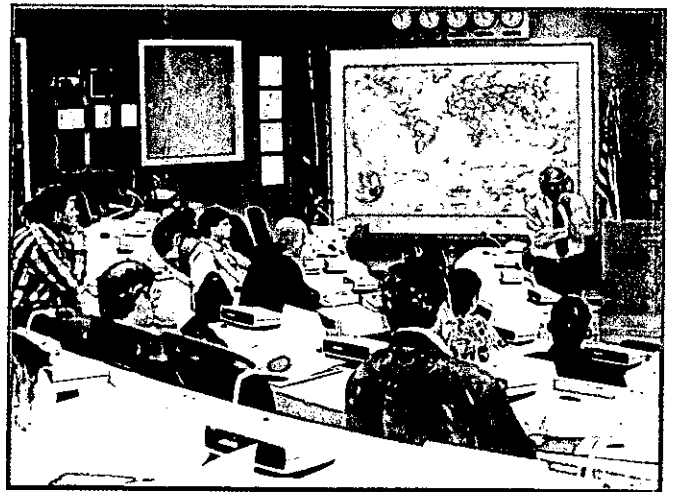
Short course participants were from Brazil, Italy, Monaco, Nigeria, South Africa, Trinidad, USA, and Venezuela. They represented flour mills, food processing and grain supply companies.

Dr. William Wilson, NDSU Department of Agribusiness and Applied Economics, was the lead lecturer.

Additional speakers included: Dr. David Bullock, FC Stone, Inc.; Neal Fisher, N.D. Wheat Commission; Mike Krueger, The Money Farm; Rick Dusek and Mike Klein, both CHS Inc.; Sean Hower, BNSF Railway; Dr. John Oades, U.S. Wheat Associates; and Curtis Hanson, Trade Acceptance Group, Ltd.

The group also toured the Alton Grain Terminal, a shuttle train facility at Hillsboro, N.D., hosted by Cory Tryan and Mark Wild.

Participants learn about basis analysis, options, over-the-counter contracts, grain situation and outlook, quality and contract specifications strategies, logistics risk management, trade financing, and buyer/seller relations in grain procurement. At the end of the course, participants break into teams and compete in options trading games.



Dr. William Wilson, NDSU Department of Agribusiness and Applied Economics, is the lead lecturer in both the Basic and Advanced Grain Procurement courses. Wilson is an expert in commodity futures trading and consultant to the international grain and food processing industries.

DDGS & Pelleting Workshops Attract International Feed Industry **Four Workshops Draw Participants from Canada, Costa Rica, Guatemala, Japan, Mexico, USA**

Continued expansion of the corn ethanol industry has created education and technical assistance opportunities for the NCI Feed Center.



Koch

“Worldwide, there is an increased demand for distiller’s dried grains, a co-product of ethanol production. The demand is driven primarily by the increase in corn prices,” says Dr. Kim Koch, NCI Feed Center Manager and coordinator of the Dried Distiller’s Grains with Solubles (DDGS) courses.

“Northern Crops Institute continues to offer this kind of educational program to promote the utilization of U.S. distiller’s grains globally,” says Koch. In North America, over 80% of DDGS are used in beef and dairy cattle diets. DDGS are also fed to poultry and swine.

In 2008, NCI offered four DDGS-related courses. U.S. Grains Council (USGC) brought teams from Mexico/Central America and Japan to Fargo for learning opportunities in the nutritional value of DDGS in livestock and poultry diets, with hands-on training in using DDGS in pelleted feeds.

In June, sixteen participants from Mexico, Guatemala, and Costa Rica attended the Distiller’s Dried Grains with Solubles (DDGS): Nutrition, Use and Feed Manufacturing Short course at NCI. The group was escorted by Patricia Esqueda, Assistant Director, USGC, Mexico.

An eight-member Japanese Feed Industry DDGS pelleting team attended the DDGS Short Course in August. They were escorted by Hiroko Sakashita, Associate Director, USGC Tokyo.

“Japan is not such a large DDGS user yet, but feed companies are considering their use quite seriously,” Koch comments.

“Some of the Japanese short course group represented companies that have tried to use DDGS, but have had some problems. We spent time discussing how to modify their equipment and formulations to increase their satisfaction with the pelleted feed. We toured the VeraSun Ethanol plant in Marion, S.D., so the group could see a representative corn fuel ethanol plant. This will help them understand why variability in DDGS products exists,” Koch concludes.

Speakers in the courses were: Dr. Vern Anderson, NDSU; Dr. Darwin Britzman, International Nutrition Consulting, Inc.; Dr. Alvaro Garcia, SDSU; Dr. Arnold Hippen, NDSU; Kurt Johnsen, NCI; Dr. Ken Kalschur, SDSU; Dr. Kim Koch, NCI; Dr. Robert Thaler, SDSU; Dr. Greg Lardy, NDSU; Jennifer Leupp, NDSU; Dr. Sally Noll, UMN; Dr. Chris Schauer, NDSU; Dr. David

Schingoethe, SDSU; and Dr. Mark Whitney, UMN.

Short course participants toured Bones Feed Yard, Parker, SD.; Larson Aquaculture Independent Research, Lake Preston, S.D.; NDSU Dairy Unit; POET Nutrition, Sioux Falls, S.D.; SDSU Dairy Unit; and Turner County Dairy, Parker, S.D.

Continuing with the DDGS theme, the NCI Feed Center presented two workshops providing hands-on opportunities in answering the questions of regional, national and international clientele about DDGS and pellet manufacture.

Twelve participants from Canada, Japan and the U.S. attended the DDGS & Pellet Manufacturing Workshop at NCI’s Feed Center in April. Nine participants from Canada and the U.S. attended the second session of this course in October.

This course highlighted pelleting of distillers grains alone and in combination with complementary ingredients. Workshop participants spent considerable time in hands-on pellet production. The courses were co-sponsored by the American Feed Industry Association.

“These workshops brought together individuals from feed manufacturing, ethanol production, and support industries to learn about pelleting DDGS,” says Koch.



“Through their interactions, many individuals became colleagues with shared common experiences. Workshop activities provided hands-on pelleting experience with DDGS singularly, in combination with complementary ingredients, or at typical inclusion levels for swine diets,” Koch concludes.

One participant commented, “The information from this course will help me trouble-shoot with my customers on pelleting issues and management. More research is needed on DDGS and pelleting to increase the use of DDGS in the U.S. and in other countries.”

Course Touts Regional Pulses as Alternative Ingredient

Canada and USA • October 21-23, 2008

Thirteen participants from Canada and the U.S. attended NCI's first Pulse Quality and Utilization short course in October.



Tulbek

The course was sponsored by the Northern Pulse Growers Association. Dr. Mehmet Tulbek, NCI Technical Director, was coordinator and main lecturer in the course.

"North Dakota and Montana have become significant producers of pulses, and we are looking for new markets for food use," says Tulbek.

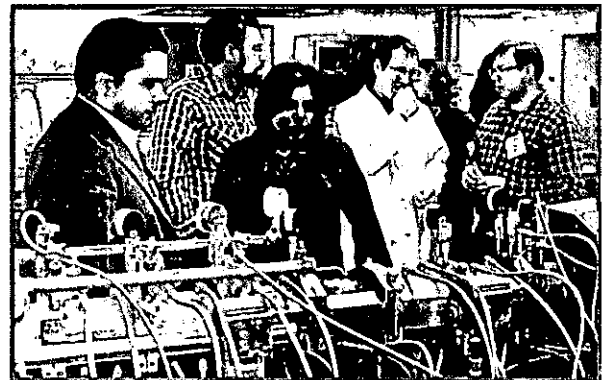
"In this course, we focus on pulse crops as alternative ingredients for high protein, high fiber and low glycemic index, as well as cost-reducing aids in food process applications. Pulse flours can be utilized as protein supplements in products so that we can partially replace high cost ingredients such as egg whites," concludes Tulbek.

A variety of topics about pulses were covered during the course, including: breeding programs; quality evaluation and the 2007 Dry Pea Quality Survey; pulse milling; wet and dry fractionation; flour and semolina selection for pulse fortification; physical properties of pulse flour on dough systems; utilization in baked and soup products; nutritional benefits; antioxidant properties; utilization in pasta and noodles; Food Aid Program and its necessary specifications; antinutritional properties; utilization in extruded snacks; functional trends; and microbial quality.

Speakers and demonstrators in the courses were: Shannon Berndt, Northern Pulse Growers; Dr. Juan Osorno, NDSU; Blaine Schatz, NDSU; Dr. Gerald Combs, USDA Human Nutrition Research Center, Grand Forks, N.D.; Dr. Clifford Hall, NDSU; Charles Wachsmuth, U.S. Dry Bean Council; and Brian Sorenson, Thunyporn Jeradechachai, Staci Lee, and Rilie Morgan, all NCI.



Lab Manager Staci Lee (right) discusses pulse-enhanced tortillas with a participant.



Tulbek and Rilie Morgan, (2nd from right), demonstrate extrusion of pulse-enhanced snacks to course participants.

NCI Staff Collaborates with NDSU on Pulse and Oilseed Projects

NCI's technical staff has worked on several projects that focus on the utilization of functional food ingredients, primarily pulses and oilseeds. NCI Technical Director Mehmet Tulbek and NCI Food Technologist Thunyporn (Naggie) Jeradechachai are overseeing several projects involving peas, lentils, chickpea, edible beans and flaxseed.

Staff collaborated with NDSU faculty Dr. Clifford Hall, Dr. Senay Simsek and Dr. Kevin McPhee on the development and characterization of extruded lentil flour, extruded bean snack, flaxseed fortified bread, milled flaxseed, pre-cooked pea flour products and evaluation of regional pea quality.

Tulbek presented oral and poster presentations at the Flaxseed Institute of U.S., American Oil Chemists' Society, and American Association of Cereal Chemists meetings.

Evaluation of the Impact of Packaging Methods on the Oxidative Stability of Milled Flaxseed (an oral presentation at the Flaxseed Institute of the United States meeting), is

co-authored by Bin Zhao of Kraft Foods and Dr. Hall.

Evaluation of Milled Flaxseed and Flaxseed Oil on the Oxidative Stability of Bean Paste (an oral presentation at the American Oil Chemists' Society Annual Meeting), is co-authored by Dr. Hall.

Characterization of pre-cooked split and whole dry edible pea flours (an oral presentation at the American Association of Cereal Chemists Annual Meeting), is co-authored by Dr. Simsek and Dr. Hall, Dr. Yuan Yao of Purdue University and Jeradechachai.

Evaluation of the impact of location and cultivar on North Dakota dry edible pea quality (poster presented at American Association of Cereal Chemists Annual Meeting), is co-authored by Dr. Simsek and Dr. McPhee.

"Our collaborative research efforts with NDSU examine the effects of pulses and oilseeds. The data we obtained were presented at NCI's Flaxseed: Adding Functional Food Value and Pulse Quality & Utilization short courses," says Tulbek.

South Asian Feed Processors See Need for Dairy Feed Studies

India, Pakistan • April 28-May 2, 2008

The U.S. Soybean Export Council and American Soybean Association brought a team of feed manufacturers from Pakistan and India to NCI for training in the nutritional value of soybean meal in dairy production, and feed manufacturing processes that amplify that value. The Dairy Feed Manufacturing Technology Short Course was held in April.

The 13-member team was escorted by R. Shah Nawaz Janjua, U.S. Soybean Export Council, Pakistan, and Ajay Bhojar, U.S. Soybean Export Council, India.

"India is the largest milk-producing country in the world. Pakistan ranks fourth in the world," says Mr. Janjua. "Day by day, nutritional deficiencies in milk production are becoming a concern.

The purpose of bringing a team over here is to give them the opportunity to learn more about the nutritional aspects of dairy cattle feed and its manufacturing technologies. The team members already manufacture poultry feed, but they are now transforming their businesses from poultry to dairy."

"As a representative of the U.S. soy growers, my job is to do the market development for U.S. soy products," continues Janjua. "We are here to educate the team about



making dairy feed utilizing soy meal, particularly de-hulled soy meal. The team will apply this technology to increase the milk production in Pakistan and India. Both countries have realized that in order to reduce poverty, dairy is the backbone of an agricultural sector that they need to develop.

We see a lot of opportunity to introduce U.S. soybean products into the dairy industry."

Speakers in the course included: Dr. J.W. Schroeder, Dan Schimek, and Dr. Greg Lardy, NDSU Animal Science Department; Dr. Latif Lighari, and Dr. Vikram Mistry, SDSU Dairy Science Department; Dr. Alvaro Garcia, SDSU Dairy Unit and Processing Center; and Dr. Kim Koch, Manager of NCI's Feed Center. Portions of the course were held

at the NDSU Dairy Center and the NCI Feed Center.

The group toured several dairy farms and processing centers, including Qual Dairy, Lisbon, N.D.; Five Star Dairy, Milnor, N.D.; S.D. Soy Processors, Volga, S.D.; and Lone Tree Dairy, Volga, S.D.

The North Dakota Soybean Council hosted the team at a luncheon where NDSC board members learned more about the market potential in Pakistan and India.

HACCP Plans Are Focus of Feed Safety Short Course

USA • October 7-9, 2008

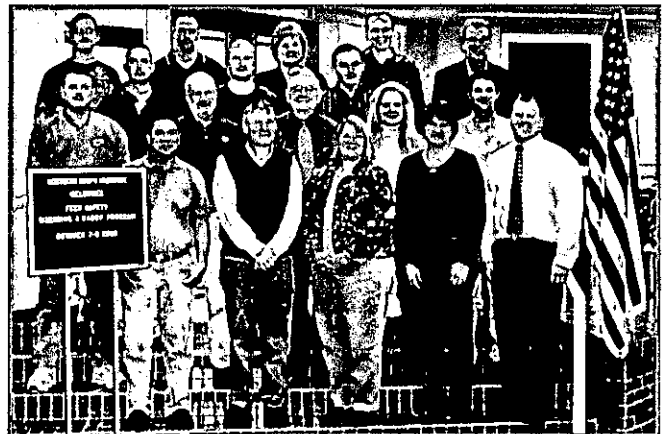
Food and feed safety is probably the number one concern of consumers globally, according to Dr. Kim Koch, NCI Feed Center Manager. The Feed Safety: Managing a HACCP Program short course, presented at NCI in October, offered feed industry personnel a proactive step in the key area of feed safety.

HACCP, an acronym for Hazard Analysis Critical Control Points, is a planning program used voluntarily within the U.S. feed industry. HACCP plans, which identify hazards or threats that represent significant harm to animals and people, are a way of insuring the safety of the feed industry.

"Through this feed safety course, we hope to help companies that are just beginning to introduce HACCP into their systems and those that want to tighten up their existing HACCP plans," Koch says.

During the course, participants wrote HACCP plans for their individual companies.

The course's fourteen participants represented local and international feed manufacturers in six states. Their companies range from premix and complete feed companies to an aquaculture company.



The course was led by Matt Frederking, International HACCP Alliance Lead Instructor, and coordinated by Koch. Co-sponsors of the course are the American Feed Industry Association and the National Grain and Feed Association.

The HACCP program was conceived in the early days of the NASA space program to ensure the safety of food going into space.

Bakers from Five Nations Learn About Benefits of Soy in Baked Products

Guatemala, Honduras, Mexico, Nicaragua • July 28-August 1, 2008

Taiwan • October 13-17, 2008

"This is our second year to offer Baking with Soy short courses," says John Crabtree, NCI Assistant Director. "Soy has been found to be very important for nutrition and health issues. Soy flour is an easy way to add more protein into people's diets."

Ten participants from Guatemala, Honduras, Mexico and Nicaragua attended the Baking with Soy short course in July. Eleven participants from Taiwan attended the October session.

"For the past two years, Minnesota Soybean Research and Promotion Council has provided scholarships for the course," Crabtree continues. "Soy products are becoming very popular around the world, and this is a way that we can promote our regional soybeans. We are looking forward to doing more soy-related programs next year," Crabtree concludes.

Mehmet Tulbek, NCI Technical Director, coordinates and lectures in the courses.

The hands-on laboratory courses are taught by Dr. Clyde Stauffer, Technical Foods Consultants, Cincinnati, Ohio, the U.S. expert in enhancing baked products with soy.

"In the 23 countries where I've taught, bakers show wide-spread acceptance of defatted soy flour for baking applications," says Stauffer. "The addition of soy flour to bread products strongly adds to bakery profits, particularly in the U.S., because it increases water absorption and dough yield. Overseas, the cost/benefit margin isn't as great because of the cost of shipping soy flour," Stauffer concludes.

After a day of lectures on the production and use of soy flour in baked products, the groups spent the rest of the week in the NCI baking

laboratory. They conducted baking trials of 20 PDI, 70 PDI, and 90 PDI soy-enhanced borillo breads, tortillas, pan breads, hearth breads, hamburger buns, donuts, cookies, and waffles.

PDI is an important specification for identifying types of soy flour. PDI (or Protein Dispersibility Index) measures soybean protein solubility in water.



Improving Barley Malt Quality Attracts Brewers from Five Countries

Belgium, Canada, India, Japan, USA • August 19-22

Nine participants from brewing and malt companies in five nations attended the Barley Malt Quality Evaluation technical course at NCI in August. During the course, the group learned more about the quality components of barley and malt necessary to produce an acceptable beer.

Dr. Paul Schwarz, NDSU professor of plant science, was program coordinator and instructor in the course.

Alain Caekaert, an instructor in the course and director of barley procurement and logistics for Malteurop North America, Inc., discussed the world barley malt supply and demand situation. "I think the largest challenge for the U.S. malting industry is to keep sustainable barley production," comments Caekaert. "Barley competes with many other commodities for acres. Varieties are the key to production. High prices will attract farmers to growing barley, but if he doesn't have a variety that performs well, he will not raise it. NDSU has the only six-row barley breeding program and we need to support it. Acres will not go up, but we need to keep the acres we have," he concludes.

Additional instructors included Judd Carlson, Busch Ag Resources; Dr. Lynn Dahleen, USDA; Dr. Richard Horsley, NDSU; Dave Kuske, Briess Malting Co.; and Jess Theis, Rahr Malting Company.

American Society of Brewing Chemists, Institute of Barley and Malt Sciences, and NCI co-sponsored the course.



Pasta Short Course Offers Real-Time Pasta Making Experience

Bolivia, USA • April 15-17, 2008

"People are very interested in learning more about the utilization of durum wheat from this region and how to make the best quality pasta. That's what is important about NCI's involvement in Pasta Production and Technology short course. It helps us promote these crops by showing people how to create new and innovative products that appeal to consumers, even though pasta has been around for a long, long time," says Brian Sorenson NCI Director and an instructor in the course.

Twenty-four U.S. pasta manufacturers attended the April course. "We've been offering this course at NCI since 1984, and each year we are pleasantly surprised by how many industry people it attracts," comments Brian Sorenson.



"Pasta is a very exciting segment of the food industry right now. There is a lot of interest not only in traditional pasta, but also in different types of pasta products such as fresh and frozen pasta, and in incorporating non-traditional ingredients such as flax, peas, lentils, whole wheat and other grains into pasta," he concludes.

Additional speakers at the course were Gabriele Cannata, De Mari Dies USA; Michael Ehr, Buhler; Dr. Elias Elias, Durum Wheat Breeder, NDSU; Bruno Giberti, Axor America; Dr. David Hahn, Flowers Foods; Bonnie Jacobson, NCI; Dr. Frank Manthey, NDSU Department of Plant Sciences; Rilie Morgan, NCI Processing Technician; and Dr. Mehmet Tulbek, NCI Technical Director.

Course participants also toured Conte Luna Foods, Grand Forks, N.D., a division of Philadelphia Macaroni.

Adding Food Value is Focus of Flaxseed Short Course

Canada, Colombia, USA • March 24-26, 2008

Thirteen participants from the USA, Canada, and Colombia attended the Flaxseed: Adding Food Value Short Course in March. The course was held in conjunction with the 62nd Annual International Flax Institute in Fargo.

"North Dakota grows 96-97% of the total U.S. flax production. That's why it is so important to develop the expertise here at Northern Crops Institute, in collaboration with NDSU. The industry is showing a considerable amount of interest in Omega-3s, fiber, and proteins in the flaxseed. Through this short course, we are training mainly the product development and quality control specialists, processors, and producers about flax," says Dr. Mehmet Tulbek, NCI Technical Director, who coordinated the flax course.

"I think one of the most important things about utilizing flax in food systems is how to use it correctly. For us to demonstrate the correct uses of flax helps our course participants understand the whole area of flaxseed and its utilization in food systems," says Dr. Clifford Hall III, Dept. of Cereal Science, NDSU, a lecturer in the course.

Topics in the course highlighted nutritional benefits of flaxseed, flaxseed quality, milling of flaxseed, shelf life stability, utilization of milled flaxseed in bread (pan, hearth,



pita, tortilla and chapatti), pasta, noodles and extruded snack products, and sensory properties of flaxseed in food systems.

Additional course speakers included: Dr. Charlene Wolf-Hall, NDSU; Gerry Hertz, Wenger Manufacturing; Dr. Frank Manthey, NDSU; Dr. Forrest Nielsen, ARS/USDA Human Nutrition Research Center, Grand Forks, ND; DoKyoung Lee, NDSU Carrington Research Extension Center; Kaye Effertz, AmeriFlax; and Brian Sorenson, Bonnie Jacobson, and Rilie Morgan, all NCI.

Trade Teams and International Consulting



Japan...A five-member Technical Team from Japan came to NCI in May to learn more about the region's wheat crop. The team represented four Japanese flour mills. They were accompanied by Mr. Wataru Utsunomiya, Director of U.S. Wheat Associates Tokyo. The team heard several presentations by ND Wheat Commission staff, and Dr. Elias Elias, Dr. Frank Manthey, Dr. Mohamed Mergoum, and Brent Hinsz, all from NDSU. The team also toured the ND State Mill and visited with Vance Taylor, the mill's president and general manager.



Thailand...Mehmet Tulbek, NCI Technical Director, traveled to Thailand to give a series of technical presentations during the Pea Flour Milling Techniques Short Course, sponsored by USA Dry Pea and Lentil Council (USADPLC), in January. "Southeast Asia is a growing market for U.S. dry peas, primarily for extruded snacks and fried peas. The quality of milled pea flour is essential for the end product attributes, which we extensively elaborated during the program," Tulbek says. Twenty-two participants from Thailand, Indonesia, Malaysia, Philippines and Vietnam attended the program.



South Africa...A five-member South African Crop Assessment Team came to NCI in June to assess the current status of the hard red spring wheat crop. The team represented senior management from four of South Africa's largest milling groups. They were accompanied by Jim McKenna, milling consultant to U.S. Wheat Associates, Cape Town. They were hosted by Erica Peterson, ND Wheat Commission Marketing Specialist. Total U.S. wheat exports to South Africa were up substantially this past year to 18.4 million bushels.



Sweden...A Rotary Foundation Exchange Team from Sweden visited NCI in May, where they learned more about NCI's mission, agriculture and the culture of the region. Rotary districts in different countries are paired to send and receive professional study groups that travel for four to six weeks. The program is designed to develop professional and leadership skills among young adults so that they can address the needs of their communities in an increasingly global workplace.



Turkey... Mehmet Tülbek, NCI Technical Director, presented at the Mixolab R&D Point of View for Millers and Bakers Workshop at ICC Bosphorus Conference in Istanbul, Turkey in April. The participants were trained on Mixolab equipment, test procedures, data interpretation, use of the Mixolab by millers and bakers, and evaluation of insect damage in wheat flour. The meeting was co-sponsored by Chopin Company.



Taiwan... The Taiwanese Flour Millers Healthy Foods Study Team came to NCI in June to learn more about the value of purchasing U.S. wheat to produce high quality, healthy foods. The team was from three of Taiwan's leading mills, in addition to the former Chief of Nutrition from Taiwan's Department of Health. The team was escorted by Ron Lu, (left), Country Director for U.S. Wheat Associates, Taiwan. They also toured the ND Mill, Grand Forks, and visited the Bruce Hagen farm, Ayr, ND.



Japan... A team from Toyota Tsusho Co., Ltd., a Japanese trading company, met at NCI in August with wheat experts to learn more about the region's current wheat quality and supply. Erica Peterson, ND Wheat Commission, (far left), discussed the 2008-09 Hard Red Spring (HRS) supply and demand, and outlook. Dr. Senay Simsek, Assistant Professor of Cereal Science at NDSU, provided an overview of HRS quality and varieties, and led the team on a tour of the NDSU HRS Quality Labs. Dr. Bill Wilson, Professor of Agribusiness and Applied Economics at NDSU, discussed the U.S. elevator and transportation system. NCI Director Brian Sorenson (right) led the group on a tour of NCI.



Korea... Wheat buyers from Korea met at NCI in September to learn more about the region's durum wheat. Erica Peterson, ND Wheat Commission; Dr. Elias Elias, NDSU Durum breeder; Dr. Frank Manthey, NDSU Plant Sciences Dept.; Brian Sorenson, NCI Director; and Dr. Radwan Ibrahim, Dakota Growers Pasta; spoke to the team. Dr. Mehmet Tülbek, NCI Technical Director, and Rilie Morgan, NCI Processing Technician, presented a pasta processing demonstration. The team was hosted by the North Dakota Trade Office and member exporters.

Trade Teams and International Consulting



Singapore & Southeast Asia..

Dr. Kim Koch, NCI Feed Center Manager, addressed the 16th Annual ASAIM Southeast Asian Food Technology and Nutrition Workshop in Singapore in May. The meeting was sponsored by the American Soybean Association and the U.S. Grains Council. Koch traveled to several cities in Southeast Asia for presentations on pelleting technology and improving feed production efficiency.



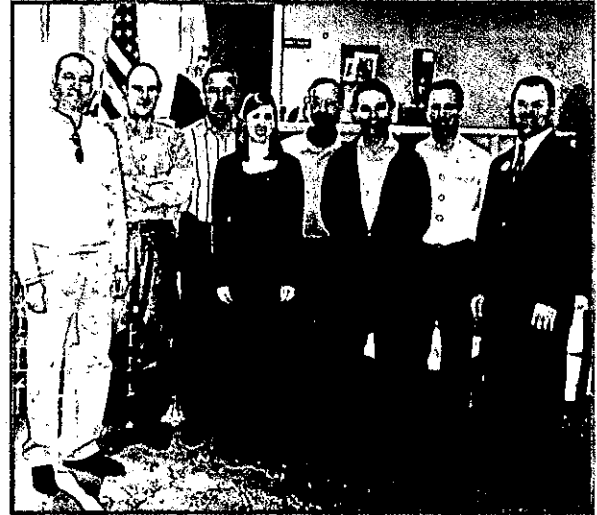
Korea... A group of food-grade soybean buyers representing leading companies in Korea met at NCI in September to learn more about the region's food-grade soybeans. They were hosted by the North Dakota Trade Office and the Northern Food Grade Soybean Association (NFGSA). They toured area farms and processing plants and met with local producers and soybean experts. Mehmet Tulbek, NCI Technical Director, (far left), discussed the 2007 ND food-grade soybean quality survey and gave an overview of ND food-grade soybean varieties.



Indonesia, Malaysia, Singapore, Thailand, Vietnam... Dr. Mehmet Tulbek, NCI Technical Director, traveled to Thailand and Indonesia in August to lead the "Pea Flour, a New and Healthy Ingredient" technical seminars, sponsored by USA Dry Pea and Lentil Council and the United States Department of Agriculture (USDA). Fourteen participants from Malaysia, Singapore, Thailand and Vietnam attended the Bangkok program (left photo). Twenty-nine participants from Indonesia attended the Jakarta program (right photo). Some of the topics covered in the programs were dry pea quality evaluation, overview of US dry pea quality, dry pea milling techniques, pea flour as an ingredient, nutritional attributes of dry pea flour, cost, supply & demand issues of dry peas, pea flour utilization aspects and overview of functional foods in the global marketplace.



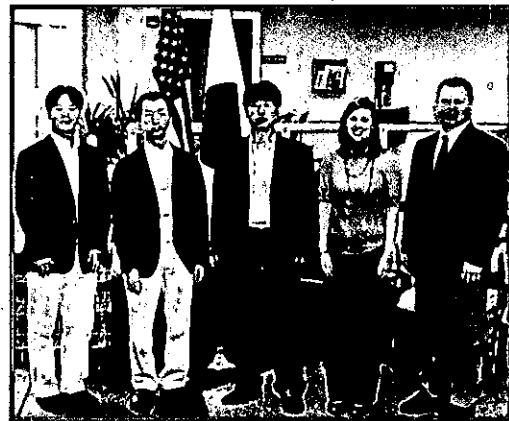
Wheat Quality Council...The WQC hard red spring and durum wheat tours wrapped up at NCI after touring wheat fields in North Dakota plus parts of South Dakota, Minnesota and Montana during July to assess the 2008 crop. NCI Director Brian Sorenson (right), is pictured with Kelly McMonagle, (left), NDSU; Ben Hancock, (second from left), WQC Executive Director; and Jocelyn Brown, (second from right), Assistant Deputy Administrator for the USDA Foreign Agricultural Service.



Spain...Officials from four of Spain's largest milling companies and the director of the Spanish Millers Association were at NCI in September to learn how high quality hard red spring wheat can be used to blend with their own domestic crop. Spain is one of the world's top importers of US hard red spring wheat. The millers also visited the Alton Grain Terminal in Hillsboro and the North Dakota Mill in Grand Forks. The team was accompanied by Goris Van Lit, U.S. Wheat Associates Rotterdam. Erica Peterson and Jim Peterson, both of the North Dakota Wheat Commission, hosted the team.



China...An eleven-member trade team from China learned more about the region's dry peas and lentil industry at NCI in July. They were sponsored by the USA Dry Pea and Lentil Council and escorted by Pete Klaiber, USADPLC Marketing Director (back row, center left). Mehmet Tulbek, NCI Technical Director, (second row, left), coordinated the workshop. Topics included quality evaluation; dry pea varieties; 2007 Quality Survey; nutritional attributes; pasta processing demonstration of pea-fortified pasta; and pulse-fortified products in the U.S. food industry.



Japan...Traders from Showa Sangyo and Toyota Tsusho Co., Ltd., met at NCI in October to learn more about the region's current wheat quality and supply. They were hosted by Brian Sorenson, NCI Director (right), and escorted by Erica Peterson, ND Wheat Commission, (second from right), who also discussed the HRS and durum supply and demand. Dr. Elias Elias, Dr. Frank Manthey, Dr. Mohamed Mergoum, Dr. Senay Simsek, Brent Hinsz, and Dr. Bill Wilson, all NDSU, discussed various aspects of the U.S. wheat industry.

Construction of Grain Milling and Processing Lab Underway

The creation of the NCI Grain Milling and Processing Laboratory is well underway, announces NCI Director Brian Sorenson. The renovation of the existing durum pilot mill and other changes will allow NCI's technical staff to expand milling capabilities for wheat and a broad spectrum of other crops grown in the four-state region, including field peas, flax, barley, and corn.

Advice on the plan was provided by the NCI Milling committee, which consists of representatives from regional milling companies, the Northern Crops Council and Advisory Board.

The first stage of the mill renovation was just completed, says Sorenson. Unused storage bins were removed in 2006 and the decking system around the mill was updated and enlarged this past summer. The loading dock was also enlarged.

"Previously, because of the design of the building, if it didn't fit into our elevator, it didn't go into our labs. This new area will give us the flexibility to do some new and exciting projects. The new decks have trap doors that can be raised with an electric hoist. The renovation gives us three levels with adequate ceiling heights for us to bring in new equipment and larger quantities of ingredients and grains to do test work," says Sorenson.

The second phase, the swing-mill project, is underway. Through financial contributions from the South Dakota and North Dakota Wheat Commissions, NCI will reconfigure the pilot durum mill into a dual-purpose mill or swing-mill for milling durum and bread wheat. The set-up of the swing mill will allow staff to switch the equipment fairly quickly from durum semolina milling to bread wheat flour milling.

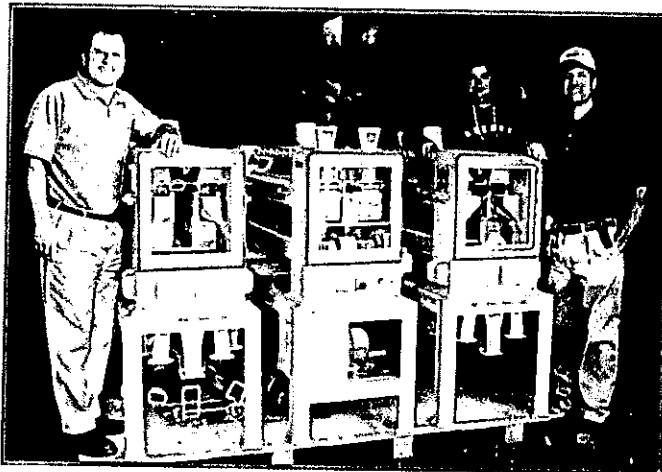
"NCI has received tremendous interest from companies wanting to mill bread wheats in larger quantities," says

Sorenson. "We have a Buhler laboratory mill designed for milling samples of 5 to 50 pounds. But that size mill is not large enough to mill quantities of 300 pounds to a ton."

"There is a definite need in our region for a pilot-scale test mill that will process wheat for projects such as the Wheat Quality program or the U. S. Wheat Associates Overseas Varietal Analysis (OVA) program. But also it will allow us to do technical service for flour mills in our region. There is lots of interest in new types of milling, new blends of grains, whole wheat and whole grains," says Sorenson.

North Dakota State Mill and Elevator donated three pilot-scale purifiers for use in the swing-mill.

"We hope to have the new mill operating in the first quarter of 2009. Our staff is looking forward to having a mill that is truly beneficial to this region. It's definitely a need," concludes Sorenson.



Sorenson (left) receives delivery of pilot scale purifiers from North Dakota State Mill and Elevator staff.

NCI Increases Capabilities with New Laboratory Equipment

Several pieces of equipment have been added to NCI's labs that will increase service capabilities for various crops.

"We are very excited about the new equipment. We have diversified the services we can offer and will continue pursuing functional food products in which we can utilize cereals, pulses and oilseeds," says Dr. Mehmet Tulbek, NCI Technical Director.

The **C-Cell** is essentially the next generation in bread quality instrumentation. It uses digital photography and computer enhancement to evaluate everything from the size of the cells in the crumb, to the thickness of the walls, to the shape or elongation of the cells. All those little pieces of information can provide insight into how well a particular wheat flour is performing or the impact of a specialty ingredient.

"The **Soy Cow** will help us analyze food grade soybeans grown in the region, which will assist Asian market

development programs," says Tulbek. Staff will use it to make soy milk from soybeans, and then to make tofu and a number of other products from the soy milk. Funding for the Soy Cow came from the Minnesota Soybean Research and Promotion Council and the North Dakota Soybean Council.

The **Retort Pressure Canner** adds another capability for service to value-added agriculture. "The Retort will enable us to develop programs on canned soups, pasta and bean products. We would like to assist food manufacturers and scientists with sterilization and pasteurization processes that we conduct," says Tulbek.

"In 2009, we are planning to develop fresh, frozen and acidified pasta products as well as frozen baked goods with our new **Blast Chiller/Freezer**. This equipment will be utilized in the Pasta Production & Technology Short Courses and the baking programs," concludes Tulbek.

NCI Conducts Soybean Quality Survey and Expands Isoflavone Calibrations

NCI technical staff has been using the Perten DA 7200 Diode Array NIR Analyzer to do data analysis on the 2008 soybean crop. Mehmet Tulbek and Thunyaporn (Naggie) Jeradechachai are heading up the evaluation work.

The quality survey for northern soybeans compares North Dakota soybean samples from 2005, 2006 and 2007 surveys, also done at NCI.

"The project's goal is to monitor the quality of regional soybeans. The survey is funded by the North Dakota Soybean Council," says Tulbek.

As farmers continue to increase the food grade soybean acreage in the Red River Valley region, NCI expands soybean quality testing to understand about the soybean quality attributes. As a member of USB consortium, NCI has been working with Perten Company and University of Minnesota soybean researchers Dr. Jim Orf and Art Killam in developing isoflavone (malonyl genistin, daidzin, genistin and genistein) calibrations for the NIR.

"Food grade soybean buyers are very interested in isoflavone levels of our soybeans. Dr. Clifford Hall of NDSU collaborated with us in this project by conducting HPLC analysis which was used as a wet chemistry comparison test. NCI will continue developing the isoflavone analysis in 2009," notes Tulbek.

Sorenson Presents 2008 HRS & Durum Wheat Quality Reports in Taiwan, Japan, and Korea

NCI Director Brian Sorenson will assist with U.S. Wheat Associates' HRS and durum wheat crop quality seminars in Asia for the 7th consecutive year. He travels to Taipei, Taiwan; Tokyo, Japan; and Seoul, Korea in November.

"The wheat quality surveys allow us to get a snapshot of the quality of this year's crop. We share the evaluations of the wheat, flour and baking properties with buyers, millers and bakers around the world. We want them to see the quality and to understand what they can expect when they receive it," says Sorenson.

The following crops or their milled products were tested at NCI in 2008:

Amaranth	Chickpeas	Sunflower
Barley	Corn	Confection
Beans	Flaxseed	Oil Type
Black	Lentils	Wheat
Dark Red Kidney	Millet	Durum
Great Northern	Oats	HRS
Navy	Peas	HRW
Pinto	Quinoa	HW
Buckwheat	Sorghum	
Canola	Soybeans	

Pea Flour Recipes Developed for Northern Pulse Growers Association

NCI Technical Staff collaborated with Northern Pulse Growers Association Marketing Director Kaye Effertz to develop pea flour-based recipes. "Pea flour is an excellent ingredient to increase protein and dietary fiber level in baked products, as well as to reduce the glycemic index levels," says Mehmet Tulbek, NCI Technical Director. "The recipes will be used as promotional materials in food manufacturing shows," he concludes. The finishing touch was a professional photo shoot of pea flour fortified baked products prepared from the recipes.

Nisshin's Bungo Hirano is NCI Visiting Scholar



Hirano

Northern Crops Institute is hosting a visiting scholar, Bungo Hirano, who works for Nisshin Flour Mills, Japan. Hirano is at NCI for one year.

NCI's Visiting Scholar Program will continue for two more years with new Nisshin personnel coming each year.

Nisshin Company wants to learn more about U.S. HRS wheat production and availability, in order to work with U.S. farmers and grain companies to source appropriate quality and varieties of wheat to meet specific needs of their company.

Koch Collaborates on Feed Projects

Dr. Kim Koch, NCI Feed Center manager, worked with Dakota Black Goose to increase the Omega-3 content of pork, by using flax inclusion into diets for carp, fed as a dietary component to pigs. Feed for NDSU animal trials was produced using dry peas in swine finishing diets. Glycerol was combined with DDGS in pelleted swine finishing diets.

A second animal trial was conducted with the University of Minnesota that used DDGS and glycerol in turkey finisher diets (pelleted and nonpelleted). Faculty at Mississippi State University and NCI conducted pelleting trials using fractionated DDGS products. Koch also teaches an Animal Science course in the Principles of Mixed Feed Technology, Production and Management this fall semester at NDSU.

Tulbek Represents ND Trade Office in Turkey

NCI Technical Director Mehmet Tulbek was part of a trade mission led by N.D. Trade Office and U.S. Commercial Service in November. Tulbek met with pulse and oilseed importers of Turkey and presented regional pulse and oilseed quality data.

North Dakota exported \$13.3 million to Turkey in 2007 (up 125 percent since 2005) and North Dakota exports through April 2008 are already up 127 percent over 2007. North Dakota's main exports to Turkey include food crops (shelled sunflowers, peas, lentils and flax) and construction machinery.

NCI Technical Staff News and Additions

Mehmet Tulbek assumed duties as NCI's Technical Director in July. Tulbek has served as NCI's Pulse and Oilseed Specialist since January 2006.

Tulbek provides leadership in technical services for processors and end users of crops grown in the four-state region. He assists in developing educational short courses and provides technical assistance to food processing companies to expand utilization of regional crops.

Tulbek's experience includes over ten years of research and process development experience in pulse, oilseed and wheat quality and processing. Tulbek earned his Ph.D. degree in cereal science at North Dakota State University (NDSU). He is a native of Turkey.

Rilie Morgan has been promoted to NCI Processing Specialist, effective Dec. 1, 2008.

Morgan has been accepted into the NDSU Graduate Program in Cereal Science. He began his studies in September.

Staci Lee began duties as NCI Lab Manager in October. Lee assists in the evaluation and demonstration of the quality and functionality of regionally produced wheat and other crops, including the milling,

baking and other processing properties for NCI's educational and technical service efforts. She also provides oversight for NCI's flour quality and baking labs, and will develop and implement lab/pilot-plant safety, food safety, hygiene, and sanitation programs.

Lee previously worked as Quality Assurance Manager for ADM Milling Company and as Quality Manager in Training for Cargill Flour Milling, both in Chattanooga, Tenn. She earned her bachelor of science degree from NDSU in Food Science.

Thunyaporn (Naggie) Jeradechachai joined the NCI staff in August as a Food Technologist, and will be promoted to Crop Quality Specialist on December 1, 2008. She is a native of Thailand.

Jeradechachai's primary responsibilities include laboratory testing and analysis for the quality evaluation and utilization of pulse and oilseed crops and their co-products.

Jeradechachai has a bachelor of science degree in Food Science from NDSU. She worked as a Student Research Assistant with the USDA in Fargo from 2005-2008. In January 2009, she will begin her graduate studies in Cereal Science at NDSU.



Tulbek



Morgan



Lee



Jeradechachai

2009 Short Courses... Short Courses... Short Courses

February 9	International Protocol
April 14-16	Pasta Production and Technology
April 28-30	Flaxseed: Adding Functional Food Value
May 11-15	Advanced Grain Procurement Strategies
May 19-21	Basics of Wheat and Flour Quality
June 2-4	Exploring Whole Wheat Foods
June 8-12	Dairy Feed Manufacturing Technology (USSEC-ASA)
June 16-18	Baking with Sunflower
July 20-24	Pasta: Raw Materials & Processing Technology (Int'l)
July 27-31	DDGS: Nutrition, Use, and Feed Manufacturing
August 3-7	Baking with Soy
August 18-20	Co-Products in Animal Feed Manufacturing
September 8-11	Baking with Durum and Hard Red Spring Wheat (Int'l)

September 21-30	Grain Procurement Management for Importers
October 5-9	Quality and Utilization of Food Grade Soybeans
October 20-22	Pulse Quality and Utilization

CHECK OUR WEBSITE regularly for updates and new courses.
www.northern-crops.com

PLEASE NOTE OUR NEW MAILING ADDRESS & EMAIL ADDRESS
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NDSU Dept. 7400
P.O. Box 6050
Fargo, ND 58108-6050
Email: nci@ndsu.edu

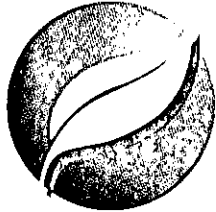
Thank You

Thank You to Our 2008 Cooperators and Speakers

North Dakota State University Agribusiness & Applied Economics Dr. Bill Wilson	Superior, WI Dick Carlson	ND State Mill and Elevator Grand Forks, ND Robert Sombke Vance Taylor	Dr. Ken Kalscheur Dr. Latif Lighari Dr. Vikram Mistry Dr. David Schingoethe
Animal & Range Sciences Kurt Johnson Dr. Greg Lardy Jennifer Leupp Dan Schimek Dr. J.W. Schroeder	CoBank, Denver, CO Holly Womack	ND Wheat Commission Neal Fisher Erica Peterson Jim Peterson	Technical Foods Consultants Cincinnati, OH Clyde Stauffer
Research Extension Center Dr. Vern Anderson Dr. Dokyoung Lee Blaine Schatz Dr. Chris Schauer	Columbia Grain Minneapolis, MN Ron DeJongh	Pan-O-Gold Company Fargo, ND Cliff Sheeley	Trade Acceptance Group, Ltd. Minneapolis, MN Leslie Berglund
Cereal and Food Sciences Dr. Clifford Hall	Conte Luna Foods Grand Forks, ND Tom Martens	Perten Instruments Springfield, IL Terry Allen	Turner County Dairy Parker, SD Steve Bossman
Plant Sciences Dr. Elias Elias Dr. Rich Horsley Dr. Frank Manthey Dr. Juan Osorno Dr. Paul Schwarz	DeMari Pasta Dies Dracuti, MA Gabriele Cannata	Poet Nutrition, Sioux Falls, SD Dr. Matt Frederking Matt Gibson Dr. Kip Karges	University of Minnesota Dept. of Animal Science Dr. Sally Noll Extension Service, Mankato Dr. Mark Whitney
Veterinary & Microbiological Sciences Dr. Charlene Wolf-Hall	FC Stone St. Louis Park, MN Dr. David Bullock	Progressive Ag, Fargo, ND Ray Grabanski	USA Dry Pea & Lentil Council USDA/ARS, Fargo, ND Dr. Lynn Dahleen
ADM-Benson Quinn Minneapolis, MN Randy Narloch	Five Star Dairy, Milnor, ND Flowers Foods Thomasville, GA Dr. David Hahn	Qual Dairy, Lisbon, ND Alan Qual	USDA/ARS, Grand Forks, ND Dr. Forrest Nielsen Dr. Gerald Combs
Alton (ND) Grain Terminal Cory Tryan	Frontier Futures, Minneapolis Austin Damiani	Rahr Malting Co., Shakopee, MN Jess Theis	USDA/FAS/Cochran Fellowships U.S. Grains Council U.S. Soybean Export Council U.S. Wheat Associates Dr. John Oades
American Feed Industry Assoc. American Society of Brewing Chemists	GIPSA/FGIS Art Boline	Seaway Port Authority of Duluth Ron Johnson Adolph Ojard Adele Yorde	VeraSun Energy, Marion, SD J.R. Baer Ted Hattori Aaron Riedell
American Soybean Association Axor America, Inc., Dracuti, MA Bruno Giberti	Goldenberg, Hehmeyer & Co. Minneapolis, MN Helen Pound	SD Corn Utilization Council SD Soy Processors, Volga, SD Rodney Christianson	Wenger Manufacturing Sabetha, KS Gerry Hertzell
BNSF Railway, Fort Worth, TX Sean Hower	Howe Farm, Casselton, ND Jim Howe	South Dakota State University Animal and Range Science Dr. Bob Thaler	
Bones Feed Yard, Parker, SD Walt Bones	Hunter Grain Co., Hunter, ND Paul Skarnagel	Dairy Science Department Dr. Alvaro Garcia Dr. Arnold Hippen	
Briess Malt & Ingredients Co. Chilton, WI David Kuske	Int'l Nutrition Consulting, Inc. Sioux Falls, SD Darwin Britzman		
Buhler, Inc., Minneapolis, MN Michael Ehr	Larson Aquaculture Research Lake Preston, SD Ron Larson		
Busch Agricultural Resources Moorhead, MN Judd Carlson Greg Ballentine West Fargo, ND David Jacobson	Lone Tree Dairy, Volga, SD Frido and Sonja Verpaalen		
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CHS, Inc. Inver Grove Heights, MN Rick Dusek Julie Heinz Mike Klein Savage, MN Greg Oberle	Minneapolis Grain Exchange Mark Bagan Ray Erickson Roger Hipwell		
	MN Soybean Research and Promotion Council		
	The Money Farm Casselton, ND Mike Krueger		
	Montana State University National Grain and Feed Assn. North Central Consulting Sioux City, IA Dr. Arnie Fleck		
	ND Barley Council ND Corn Utilization Council ND Grain Inspection Service Fargo, ND Darcy Rasmussen ND Soybean Council		

Thank You to Our 2007-2008 Funding Partners

American Soybean Association
Minnesota Department of Agriculture
Minnesota Soybean Research and Promotion Council
Minnesota Wheat Research and Promotion Council
Montana Wheat and Barley Committee
State of North Dakota
North Dakota Oilseed Council
North Dakota Soybean Council
North Dakota Wheat Commission
Northharvest Bean Growers
Northern Pulse Growers Association
State of South Dakota
South Dakota Wheat Commission
USA Dry Pea and Lentil Council
USDA FAS Cochran Fellowship Program
U.S. Grains Council
U.S. Soybean Export Council
U.S. Wheat Associates



SB2020
March 11, 2020
attachment H 6

Northern Pulse Growers Association

Testimony of Ryan Brooks
Senate Bill 2020
House Appropriations
Sakakawea Room
March 11, 2009

Good afternoon Chairman Skarpol and members of the Committee. For the record, my name is Ryan Brooks and I am a farmer & rancher from Bowman North Dakota. I also serve as president for the Northern Pulse Growers Association. The Northern Pulse Growers Association represents the pea, lentil and chickpea growers and processors throughout North Dakota and Montana. I am here today to provide testimony in support of SB2020 and to specifically speak on the collaborative effort between the pulse/oilseed/ wheat industries in the establishment of a quality lab at North Dakota State University.

I would like to begin by thanking the North Dakota legislature for the establishment of the pulse breeding program at NDSU in 2007. This program is paramount to the continued success of the pulse industry in the region. Prior to the NDSU breeding program, the only pulse breeding program available was the USDA/ARS facility in Pullman, Washington. While the regions pulse industry benefited greatly from the USDA/ARS facility, the establishment of a pulse breeding program in this region will provide pulse producers with the needed varieties specific to the environment conditions of the region. The two breeding programs will work in harmony providing producers with the best possible scenario for variety development.

Pulse acres have continued to increase across the region over the past several years. In 2000, North Dakota planted 125,000 acres and in 2008 over 600,000 acres of peas, lentils and chickpeas. The regions pulse industry accounts for 82% of all pulse acres produced in the United States. The efforts by the NDSU research and extension centers around the state have had a major impact on the development of the industry.

The development of a pulse/oilseed/wheat quality lab is of extreme importance to this industry as new varieties are being developed, tested and released. The quality lab will add yet another facet to the pulse industry by providing producers with valuable information that will assist them with their marketing efforts. In addition, the lab will be a key component for the industry to market pulse products domestically and internationally.

I would also like to comment on the Northern Pulse Growers Associations support for the State Board of Agriculture Research and Education and the priorities established by that board. SBARE has done a tremendous job meeting the needs of the North Dakota agriculture community.

Chairman Skarpol and committee members, I urge you to support SB2020 and more specifically the pulse/oilseed/wheat quality lab at North Dakota State University. Thank you and I would welcome any questions that you may have.

TESTIMONY OF JAMES TEIGEN
SB 2020
SENATE APPROPRIATIONS COMMITTEE
1/14/09

Mr. Chairman and Members of the Committee,

Thank you for the opportunity to testify today. My name is Jim Teigen, and I am a farmer from Rugby, in Pierce County. I serve as a Supervisor for the Pierce County Soil Conservation District and as President of the North Dakota Association of Soil Conservation Districts. I speak to support the soil conservation line item of the extension budget.

North Dakota's 55 soil conservation districts are unique subdivisions of state government that plan, design, and apply conservation solutions to address local issues on privately owned land. These districts work closely with other partners, such as the Natural Resources Conservation Service, the Forest Service, wildlife groups, and other conservation organizations to provide technical, educational, and other services to promote and enhance natural resource conservation. The cooperation between these partners is often so seamless, that it is hard to distinguish one from the other.

While major priorities vary among the districts, common programs include tree planting and maintenance, education of producers and youth, CRP clipping, promotion of no-till and reduced tillage programs, demonstration plots and tours, soil health education, and others. We believe that one of our strengths is the locally-led nature of our districts in North Dakota and across the entire nation.

Unfortunately, the financial resources of our districts vary as greatly as our programs. This is where the District Assistance Program plays a very important role. The line item for the State Soil Conservation Committee includes \$730,000 which the Committee provides to the districts via a grant program. **Last biennium, this program assisted 44 of the 51 districts which applied for funds, and often meant the difference between making a district viable or simply present.**

One other item which our organization strongly supports is the soil salinity position in the Extension budget. This position ranked 9th in the SBARE priority listing, and it is an initiative which we believe deserves funding because soil salinity affects all crops (including pasture and hay) and all areas of the state. **Studies have shown that areas of soil salinity are increasing in size and severity, and affect crop growth and yield even before the problem is severe enough to recognize as the white spots that show up in wet spots of the field.** We believe an Extension position needs to be authorized to serve as a focal point for information dissemination and perhaps to facilitate further study of remedies to correct soil salinity problems. An accompanying handout provides additional details of the problem and describes the position we seek to have developed. Taking meaningful action to vigorously address the problem of soil salinity in North Dakota will keep our land productive and add economic value to the state.



SB 2020
March 11, 2009
attachment # 18

TESTIMONY

SB 2020 – House Appropriations Committee - March 11, 2009 Regarding SBARE #9 Soil Salinity & AES #8 Soil Health

The North Dakota Association of Soil Conservation Districts is proud to support two very worthy initiatives relating to soil salinity and soil health:

- Soil salinity position in the Extension budget - ranked #9 in the SBARE priority listing
- Soil health research positions - ranked #8 in Ag Experiment Station listing

North Dakota is in the forefront of research on soil health. Much of this research is informal, based on experiments by landowners and anecdotal evidence. We believe it's important to include the scientists to prove our theories and help disseminate the information.

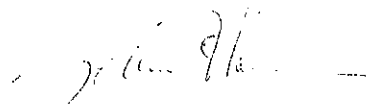
Let's focus on the salinity issue. Studies are showing that up to one quarter of North Dakota's land – 6 million acres of rangeland and another 6 million acres of cropland - including 2 million in the Red River Valley - may be affected by soil salinity. It affects all parts of North Dakota and appears to be on the rise.

Salinity affects all crops – including pasture and hay. It's most commonly recognized as white surface salt crusts that show up in a field or pasture, with weed infestations or no vegetation at all.

Salinity starts to affect crop growth and yield even before white spots show up in the field. In fact, research indicates that 20-30% of yield potential can be lost.

It's estimated the loss in direct crop production in North Dakota because of salinity costs over \$200 million annually (based on \$6/bu wheat). Couple that with losses in rangeland, reduced effectiveness of genetic research programs and new product formulations, impacts to water quality and tax equalization and the total negative impact may be more than \$250 million annually. If you use the multiplier effect of 7, the real cost to the State of North Dakota is \$1.75 billion annually. That's money we'll never get back – and can't carry over.

We believe a strong, aggressive salinity specialist to gather and disseminate information, coupled with a research staff to explore more solutions, are important to fully combating this insidious problem.



LeAnn Harner – Legislative Chair, ND Association of Soil Conservation Districts
Chairman, Oliver Soil Conservation District
Mandan, ND Phone: 701-667-4185

SOIL SALINITY/SODICITY SPECIALIST

Soil salinity is a serious problem throughout North Dakota. Saline soils not only negatively affect production and economic returns but they increase the need for herbicides and reduce the effectiveness of fertilizer. Salinity also impedes advances in plant genetics and breeding, and it has environmental costs associated with water quality and infrastructure. Overall the impact of salinity in the state approaches a quarter of a billion dollars annually.

Saline and associated sodium-affected soils (sodic or claypan soils) occur throughout the state. In western and central North Dakota, saline seeps and sodium-affected soils are the dominant concern. Saline soils associated with shallow groundwater is the major issue in eastern North Dakota. Approximately 2,000,000 acres of cropland are affected by salinity in the Red River Valley of North Dakota. In the rest of the State it is estimated that 6,000,000 acres of cropland and another 6,000,000 of rangeland are affected by salinity/sodicity. Unfortunately, due to climatic conditions and management practices, the amount of land impacted by saline soils has increased in recent years. Some areas of North Dakota with susceptible soils have seen over a 10 percent increase in the land affected by salinity since the early 1990s (Devils Lake Basin, etc.).

Saline and sodium-affected soils reduce crop production by disrupting the soil-plant-water relationships and interfering with the uptake of nutrients (Franzen 2007). Salts concentrate in the soil through movement of subsurface water along impermeable layers, and the capillary rise of saline groundwater into plant rooting zones. These actions along with the lack of leaching contribute to increasing soil salinity. Salinity is also increased during wet climatic periods and by management practices that minimize use of available soil water.

The impact of salinity on crop production can range from being very obvious to quite subtle. The classic saline seep with white surface salt crusts is easily identified as seriously reducing yield. These areas often exhibit weed infestations or in the worst cases, no vegetation at all. As additional salts precipitate in these areas they can migrate into productive cropland and cause the loss of additional farmland. Other saline soils may not have visible salt crusts but crop yield can still be negatively affected. Research has shown that 20 to 30 % of yield potential can be lost in soils with lower levels of salinity. In addition to lost productivity, salinity negates advances made by plant breeders in developing crop varieties with increased yield potential. Nutrient uptake of plant fertilizers and herbicide movement and effectiveness can also be negatively affected. These secondary consequences from salinity contribute to its negative impact on our agricultural economy.

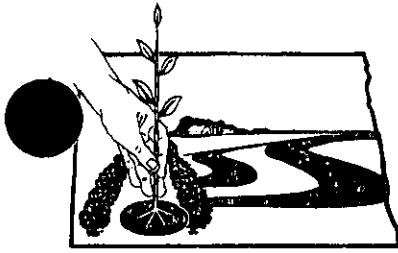
Quantifying the total economic impact of salinity is difficult without a comprehensive economic analysis. It is estimated the loss in direct crop production in North Dakota due to salinity at over \$200 million annually at current crop prices (\$6/bu wheat was used). This amount, coupled with losses in production in rangeland, reduced effectiveness of

genetic research programs and new product formulations, impacts to water quality and tax equalization, increase the total negative impact due to salinity and sodium-affected soils to over \$250,000,000 annually. Salinity will cost the next generation of North Dakota farmers billions of dollars if the current trend continues.

When considering a multiplier effect of 7.0, to account for the number of times these lost crop dollars would be turning over in the state's communities, the economic effects of salinity/sodicity to North Dakota approaches \$1.75 billion in direct losses and forgone economic activity.

NDASCD endorses the salinity specialist (#9 on the SBARE priority listing) as a vital cog in the efforts to address and control this problem. The proposed specialist will work with SCDs and individual producers as a hub for salinity/sodicity networking and efforts, including funding projects. The position would link institutions, agencies, and organizations in their efforts to address the issue. It would also serve as an information clearinghouse for those entities working in this area and individuals just seeking more information. The specialist would also be a feedback conduit to NDSU Soils Department in identifying critical research needs.

There are very few issues which can rally agricultural interests around a common cause like salinity can, since the loss of productivity is basic to all of agriculture. The North Dakota Association of Soil Conservation Districts is dedicated to addressing the salinity problem in North Dakota. **We see a strong, aggressive specialist as the most critical component to fully implementing a successful program.**



**NORTH DAKOTA ASSOCIATION
OF SOIL CONSERVATION DISTRICTS**
OWNER AND OPERATOR OF LINCOLN-OAKES NURSERIES

3310 University Drive
Bismarck, ND 58504
(701) 223-8518 • (701) 223-1291 fax

*SB 2020
March 11, 2009
attachment 4.5*

PRESIDENT
James Teigen

EXECUTIVE DIRECTOR
Thomas Hanson
ndascd@btinet.net

SB 2020
Testimony of James B. Teigen
North Dakota Association of Soil Conservation Districts

Mr. Chairman and Members of the Committee,

Thank you for the opportunity to testify today. My name is Jim Teigen, and I am a farmer from Rugby, in Pierce County. I serve as a Supervisor for the Pierce County Soil Conservation District and as President of the North Dakota Association of Soil Conservation Districts. I speak to support the State Soil Conservation Committee line item of the Extension budget.

North Dakota's 55 soil conservation districts are unique subdivisions of state government that plan, design, and apply conservation solutions to address local issues on privately owned land. These districts work closely with other partners, such as the Natural Resources Conservation Service, the Forest Service, wildlife groups, and other conservation organizations to provide technical, educational, and other services to promote and enhance natural resource conservation. The cooperation between these partners is often so seamless, that it is hard to distinguish one from the other.

While major priorities vary among the districts, common programs include tree planting and maintenance, education of producers and youth, CRP clipping, promotion of no-till and reduced tillage programs, demonstration plots and tours, soil- health education, and others. **In short, SCDs provide everything, from advice to equipment and people doing the work, to "put conservation on the ground."** We believe that one of our strengths is the locally-led nature of our districts in North Dakota and across the entire nation.

Unfortunately, the financial resources of our districts vary as greatly as our programs. This is where the District Assistance Program plays a very important role. The original line item for the State Soil Conservation Committee included \$737,800 which the State Soil Conservation Committee provides to the districts via a grant program. That line item was amended by the Senate to the present level of \$837,800 which is the amount that we requested during the last legislative session.

Last biennium, 51 of the 55 districts in the state applied for funding and only 44 districts received grants. Those grants ranged from \$5350 to \$21,250 per district for the 2007-2009 biennium. The most common grants ranged from \$16,250 to \$21,250 per district for the biennium.

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Those funds made a real difference and often meant the difference between making a district viable or simply present in the community. While grant monies may be used for any need of the district, a significant amount is used to hire clerks and technicians. Some districts are just now able to offer benefits such as retirement plans or health insurance for their full-time employees, and some districts still aren't able to offer those benefits.

This winter, 52 of the 55 districts applied for funding through this grant program, with total requests amounting to \$1,240,500. Our survey of the greatest needs of districts indicated that improving employee compensation and benefits ranked highest, with needs for educational programs and maintenance of equipment and buildings close behind.

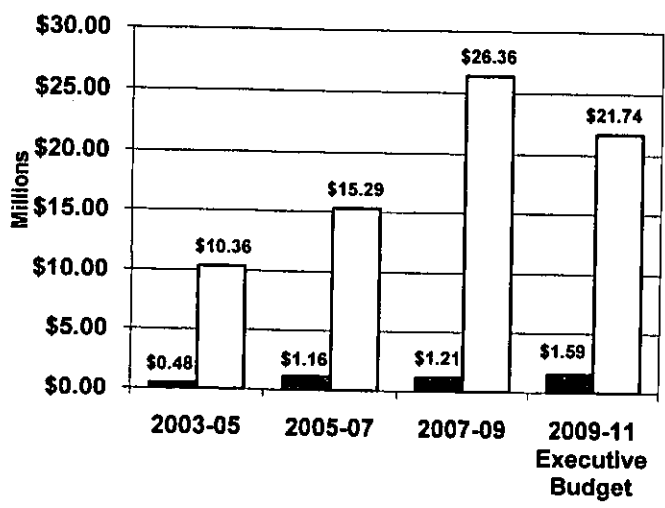
The District Assistance Grant Program provides a very positive and necessary support for our state's soil conservation districts as they work to conserve our natural resources, and has the added benefit of helping provide decent jobs for their employees. We appreciate your thoughtful consideration and support for the state soil conservation in the Extension budget.

Department 627 - Upper Great Plains Transportation Institute
Senate Bill No. 2020

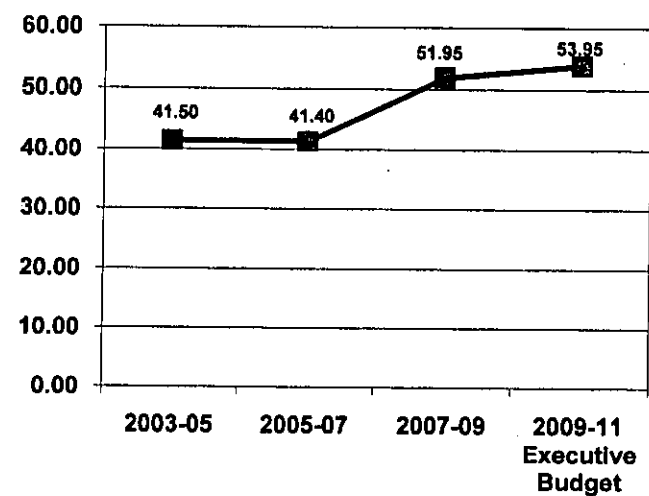
	FTE Positions	General Fund	Other Funds	Total
2009-11 Executive Budget	53.95	\$1,589,793	\$21,737,199	\$23,326,992
2007-09 Legislative Appropriations	51.95 ¹	1,209,840	26,361,681	27,571,521
Increase (Decrease)	2.00	\$379,953	(\$4,624,482)	(\$4,244,529)

¹The 2007-09 appropriation was based on 43.40 FTE positions. Section 6 of House Bill No. 1020 (2007) authorizes the State Board of Higher Education to adjust FTE positions as needed. A total of 8.55 FTE positions were added pursuant to this section and reported to the Office of Management and Budget.

Agency Funding



FTE Positions



■ General Fund □ Other Funds

Ongoing and One-Time General Fund Appropriations

	Ongoing General Fund Appropriation	One-Time General Fund Appropriation	Total General Fund Appropriation
2009-11 Executive Budget	\$1,589,793	\$0	\$1,589,793
2007-09 Legislative Appropriations	1,209,840	0	1,209,840
Increase (Decrease)	\$379,953	\$0	\$379,953

First House Action

Attached is a summary of first house changes.

**Executive Budget Highlights
 (With First House Changes in Bold)**

	General Fund	Other Funds	Total
1. Removes prior capital asset appropriation provided in the 2007-09 biennium. The Senate provided additional one-time funding of \$3 million from special funds for the center for transportation study.		(\$5,500,000)	(\$5,500,000)
2. Removes prior equipment over \$5,000 appropriation provided in the 2007-09 biennium		(\$300,000)	(\$300,000)
3. Provides funding for equipment over \$5,000		\$90,000	\$90,000
4. Provides additional general fund support for salaries	\$284,826		\$284,826
5. Increases funding for travel to provide a total of \$1,026,737	\$21,737		\$21,737
Increases funding for office supplies to provide a total of \$468,879	\$5,136		\$5,136
7. Adds 1 FTE other professional position		\$167,103	\$167,103
8. Adds 1 FTE other professional position		\$180,451	\$180,451

Other Sections in Bill

Additional income appropriation - Section 3 provides that, in addition to the amount appropriated as other funds, any other income received from federal acts, private grants, gifts, and donations, or from other sources received by the Upper Great Plains Transportation Institute, is appropriated for the purposes designated in the act, grant, gift, or donation for the 2009-11 biennium.

Position adjustments - Section 6 authorizes the State Board of Higher Education to adjust or increase FTE positions for the Upper Great Plains Transportation Institute and report any adjustments to the Office of Management and Budget.

Unexpended general fund authority - Excess income - Section 7 authorizes the continuation of any unspent general fund appropriation authority and excess income received by the Upper Great Plains Transportation Institute to the 2011-13 biennium.

Unspent appropriation authority - 2007-09 biennium - Section 8 provides that the 2007-09 appropriation for the Center for Transportation study of \$5.5 million of special funds is not subject to the provisions of North Dakota Century Code Section 54-44.1-11, and any unspent appropriation authority or related revenues are available and may be spent during the biennium beginning July 1, 2009, and ending June 30, 2011.

Emergency - Section 9 provides the additional \$3 million from special funds authorized for the center for transportation study capital project is declared to be an emergency measure.

Continuing Appropriations

No continuing appropriations for this agency.

Major Related Legislation

Senate Bill No. 2128 - This bill contains changes to the membership of the Advisory Transportation Council of the Upper Great Plains Transportation Institute.

ATTACH:1