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10/30/03
Date

2003 HOUSE APPROPRIATIONS

HB 1021

2003 HOUSE STANDING COMMITTEE MINUTES

BILL/RESOLUTION NO. 1021

House Appropriations Committee
Education and Environment Division

☐ Check here for Conference Committee

Hearing Date January 22, 2003

Tape Number	Side A	Side B	Meter #
1	X	X	
2	X	X	

Committee Clerk Signature Celeste Keller

Minutes:

Chairman Martinson opened the hearing on HB 1021. All members of the committee were present with the exception of Representative Rennerfeldt.

Patricia Jensen Vice President and Dean of Agriculture at North Dakota State University, discussed how they intended to proceed with the hearing. Stated that they have changed their name to reflect the breadth of the work they do in agriculture. They are now the college of agriculture, food systems and natural resources. NDSU agriculture's goal is to continue to support the cornerstone of agriculture in the state.

Jerry Doan Farms and ranches south of McKenzie, North Dakota and is the Chairman of the State Board of Ag Research and Education, testified in support of HB 1021 and discussed the producer's perspective of what they do. **Please see testimony entitled "State Board of Agricultural Research and Education Highlights: 2001-2003".**

Rep. Phil Mueller from District 24, testified in favor of the portion of HB 1021 dealing with the State Board of Agricultural Research and Extension. He emphasized the necessity of research in the agricultural world and that it will continue to drive production agriculture in this state. He discussed that there are more than enough worthy projects, but not enough dollars to fund them. He encouraged the committee to look favorably on increasing ag research money.

Rep. Wald Are you a voting member of SBARE group?

Mueller Yes, I am.

Jerry Doan Referenced back to the handout which basically states some of SBARE's accomplishments.

Rep. Aarsvold Do other states have a format like we use with SBARE?

Doan Not that I am aware of. There are advisory groups out there.

Ken Grafton Director of Ag Experiment Station at North Dakota State University, testified in favor of HB 1021. **See attached testimony.** Discussed highlights of what they have done in the 2001-2003 biennium.

Chairman Martinson When you create a new variety, do you license that? Does NDSU receive a royalty?

Grafton It's on a case by case basis. All intellectual property is the ownership of the NDSU research foundation. At the time of a variety release, the NDSU research foundation takes ownership of that variety. An application for a patent or for variety protection is made based on whichever is appropriate. We do plant variety protect our varieties. In some instances royalties are assessed. Royalties are received if seed sales occur out of the country.

Chairman Martinson Is information on the income and some of the plant varieties being used world wide in any of these documents?

Grafton Some of that information might be in there but it is not identified as royalties per se. It would be gifts, grants and contracts. 90% of the royalties that are received go directly back into the breeding program. The department may recover or retain a small percentage to help offset some of the costs in the department.

Chairman Martinson Do you think that that is an area that we need to look at as far as licensing the products and the royalties?

Grafton Are you suggesting licensing in North Dakota as well?

Someone sitting in on the hearing advised that they could furnish a copy of the foundation annual report.

Rep. Wald When you refer to the word license, who is the licensing board that has the authority to license you?

Grafton The license is essentially a contract between a company and organization in a foreign country and the NDSU research foundation.

Rep. Wald Who grants the license?

Grafton The license is granted by the NDSU research station.

Rep. Wald So you are licensing yourself, or who grants that license?

Grafton Licensing is a term that is used, but it is essentially a binding contract.

Sharon Anderson Director of NDSU Extension Service, testified in support of HB 1021. She shared some things about the work of that organization and how they interrelate with the

agriculture experiment station and research entities across the country. She also provided information regarding marketing club performance. **See attached testimony.**

Dr. Grafton and Dr. Anderson Discussed the budget. **See attached testimony.**

Chairman Martinson After the 95% budgets were reached, I thought they added back in the health care and the cost to continue on the salaries?

Dr. Grafton They added a 1% and 2% salary increase effective January 1, 2004 and January 1, 2005 respectively. The health care costs were also included. The general fund cost to continue is operating money from 2001-2003, 2003-2005 as well as the base salaries, which was not included.

Rep. Aarsvold The agricultural waste management proposal that you lay out here, I have family in Iowa and I know the folks in Iowa do a lot of research on animal waste. Are we taking advantage of what they are doing there and maybe adjusting it to our situation in North Dakota?

Dr. Grafton We have this as a base line information. There is going to be needed opportunities to take a look at how those situations might fit into us. There is work done in this area at Nebraska, Oklahoma, Kansas. We feel this position is critical because of the relatively pristine environment that we have. Also, we feel this position could work at least a portion of his or her time on biofuel research. We feel this is something that is crucial to the state. If we want to get into biofuels, we might already be too late. We really need to move into it.

Rep. Wald In reinvesting in critical areas on page 2 and 3, under BeefLine, is it the $474,000 that you are making reference to or is it the $274,000 that comprises 1.2 million?

Dr. Anderson It is confusing, I know we have a lot of numbers here. The numbers under the big headings will total 1.2 million. The numbers within each category will total the numbers under the big headings.

Rep. Wald So the $233,000 and the $288,000 would total the $521,000 under the Cereal Production Constraints heading?

Dr. Anderson Correct.

Rep. Aarsvold You have cut out a million dollars that would have put the research mill in place in making it operational and functional, is that what you are suggesting?

Dr. Grafton The million dollars removed was removed from the governor's executive budget. The million dollars is added on page 6 for other funds. According to the governor's budget, we have the authorization to spend up to a million dollars to construct a facility.

Rep. Aarsvold Was the mill a gift from industry?

Dr. Grafton Yes, that was a gift from the Nestle Company. It's estimated value is about a million dollars or more. It is a state of the art mill that can be used for both durum and spring wheat. The Nestle Company is no longer in the pasta production arena and they donated the mill based on some arrangements that we had between NDSU scientists and the company in Switzerland.

Rep. Wald In view of the fact that Anheiser Bush is building a malting plant in Sydney, Montana, what kind of emphasis are we putting on barley research?

Dr. Grafton That is a very high priority for us. We hoped that the location of that facility would have been on the North Dakota side, but unfortunately that is not the case. We feel that barley production is moving to the west because of the scab problems. We haven't been as successful

in getting scab resistance into barley. One way to allow North Dakota to remain a preeminent supplier of high quality malting barley is to have it produced in areas that it is not traditionally grown in. We feel this is a very high priority for the barley research improvement effort and we believe the North Dakota Barley Council understands and supports our level of prioritization of that effort.

Rep. Wald Is Anheiser Bush out contracting with farmers now?

Dr. Grafton I believe that that is the case. My understanding was that they wanted about 250,000 acres of production.

Rep. Wald On both sides of the border?

Dr. Grafton Yes. I believe it is in that general area.

Rep. Monson I noticed a real lack of new varieties of barley produced since 1998. We have one new variety and six or seven oat varieties. In my area, barley used to be a very large crop and now, because of the scab, has really taken a back seat to a lot of other crops. I am disappointed in the fact that we have one variety of barley. Do you have more plans to do something more with barley besides just a western malt?

Dr. Grafton Barley is a unique crop. We have a very strong barley improvement program and a very strong team. Prior to when a variety or experimental line is released, it has to meet strict malting quality evaluations conducted not only by our facilities but by USDA facilities in Madison, Wisconsin working with the American Malting Barley Association. It has to undergo strict guidelines in order for it to be an approved variety. It is my understanding that the variety has to be approved before it can be put on the approved list.

Rep. Monson I am concerned that we need to start doing more with the feed barley. I see nothing happening with these varieties either. Are you working on feed barley?

Dr. Grafton We have a very strong program in feed barley. We have been working on feed barley for the last four or five years and my understanding is that the North Dakota Barley Council is very proactive in wanting feed barley so yes, we are working very hard in that.

Rep. Wald Is there a problem with going from barley to wheat and so forth. Why don't farmers rotate from one crop to another?

Dr. Grafton I don't have that information. I know it happens and that people are reluctant to do it. I don't know the reason why. I would suspect it would be because of disease problems.

Chairman Martinson Do you have the numbers with you today on what it would take to get you to the 100% level, plus what it would then cost to maintain the health insurance and salaries above that level?

Dr. Anderson The cost to continue numbers are on page 4.

Chairman Martinson Is that the total cost?

Dr. Anderson That's the total cost and that would include more than the salary dollars.

Chairman Martinson That would take you to the 100% budget?

Dr. Anderson This is the cost to continue and that would get us back up to the 100%.

Rep. Wald Refer to page 4 in the gray box where it says general fund salary operating. If I understood Rep. Martinson, his question was was what would it take for the salary and health insurance. I don't think those numbers are in your budget, right?

Dr. Anderson What is in our budget from the governor is the health insurance package. That is in our budget and that is covered for the whole biennium. What is also included is the 1%

starting next January and the 2% starting the following January. That is in the line items on page 5, as well as the salary and health insurance increases. To maintain the salaries for this current biennium, the cost to continue and funding for the next biennium would take the dollars that are shown on page 4.

Chairman Martinson You are talking about eliminating some positions and other things. That $800,000 would allow you to keep the cuts you would have to make at the 95% level?

Dr. Grafton I don't believe that that is the case. I believe that we would still have these cuts

Rep. Brusegaard The FTE numbers you have outlined as reductions, are they currently filled positions or are some of them vacant?

Dr. Anderson Those are all vacant positions right now. There is one on the research side that is still occupied but will be vacant soon.

Rep. Brusegaard Do you have figures detailing what you are expecting in the next five years for retirement and positions that will be coming vacant?

Dr. Anderson We could estimate what that would be. We always keep a running total of positions including lengths of service and where they are in their career. Some people surprise us and work a lot longer than we would expect. We always have a tract on where our people are in their employment record with the organization.

Chairman Martinson Why haven't those positions been filled?

Dr. Grafton The reason why these positions were not filled was because they were vacant during short periods of time when this budget was being prepared.

Chairman Martinson We are taking a look at all of those FTE's, and a lot of vacant FTE's were used to provide salary increases. So you are saying that the timing was not good, otherwise you would have filled them?

Dr. Grafton In light of the 5% budget requested by the governor, there would have been very difficult times for us to have filled those positions.

Chairman Martinson If you would have had at least a 100% budget, you would have filled them?

Dr. Grafton We evaluate the program to determine whether or not that program should continue or should be readjusted. We would hire an individual that would meet either that original goal or the expected goal. I was told the 5% budget cut equals 2.5 million. In order to get back to the 100% budget, it would be the 2.5 million plus the $867,000.

Patricia Jensen Directed the presentation to four of the station directors to talk about their specific budgets and what is going on at their stations.

Kris Ringwall Director of Dickinson Research Extension Center, testified in support of HB 1021. **See attached testimony**. Mr. Ringwall shared information regarding the beefline project and the accomplishments of the research extension center. He asked for the committee's support of the executive budget recommendation.

Rep. Wald You said you had as high as 1,000 hits per day on you web site. Are those regional, local, national, or worldwide?

Ringwall The majority of them come from the Midwest. After that, it would decrease rapidly as far as the hits coming nationally and all over the world.

Randy Mehlhoff Director of the Langdon Research Extension Center, testified in favor of HB 1021. **See attached testimony.**

Jerald Bergman Director of Williston Research Extension Center, testified in favor of HB 1021. He pointed out some of the economic development activities going on in his region. **See attached testimony.**

Rep. Wald What is your relationship with the Sidney station and is that a federal or a Montana station?

Bergman Both. Montana State University research center is there, which I am also the director, and there is also a USDA facility there which has recently expanded from three to twelve scientists. They just completed a 7.4 million dollar research laboratory facility. They are a key partner with us in the ag development effort.

Blaine Schatz Director of the Carrington Research Extension Center, testified in favor of HB 1021 and the accomplishments of the center. **See attached testimony.**

Rep. Monson You said you were enhancing your feed lot operation. Is that going to be at the expense of cutting back into your cow/calf operations?

Schatz The feed lot research enhancement can move forward without modification of existing programs. The major limitation we have at the present time is the technical expertise. We also have a significant limitation of resources in order to support the individual research projects. It can go forward right now without any significant constraint upon either program, at least at the present stage.

Rep. Monson Your plans for the next few years are that you would still continue your cow/calf operations as they are?

Schatz The program direction that we take in the next period of time is going to be in response to the state board of ag research and our advisory board. These issues, in terms of what we expend our human operational and infrastructure resources, are discussed on an ongoing basis.

Based on the feed back I have received from various boards, we would continue both programs.

Recessed until 10:35 a.m.

Patricia Jensen Directed the presentation to Dr. Pat Bergland.

Dr. Patricia Berglund Director Northern Crops Institute, testified in favor of HB 1021. **See attached testimony** on the Northern Crops Institute.

Rep. Brusegaard The commodity check off funds you receive, are those grants by the individual commodity groups?

Berglund Yes, they are.

Rep. Brusegaard Is that a fairly stable form of income or do they vary from year to year?

Berglund They have been fairly stable. I would say it is a little tenuous at the moment because of the drought situation. In Montana, we were at a high of $66,000 per year from Montana Wheat and Barley Committee in, I believe, 1998. We have gone down to $5,000 for this year. They have had five years of drought. Minnesota is making a 10% cut for all of the department of agriculture budgets.

Rep. Monson When you referred to Montana and the $5,000, was that all we got from their check off, or do we get anything from other state revenues?

Berglund That is correct, that is just commodity check off. There aren't very many commodity check off dollars in Montana at the moment because of their drought situation.

Rep. Monson I see that they do have representation on your board.

Berglund Yes they do. That is not a permanent position. The permanent membership of the Northern Crops Council elects the other positions with the hope by including a representative from Montana that we would be able to continue funding there.

Rep. Aarsvold With the changing in cropping patterns and less and less wheat being produced, do you foresee a problem for the Northern Crops Institute in attracting people to come here and look at our wheat products?

Berglund We have continued to focus on wheat, but we also have broadened our capabilities to include a lot more crops. It is imperative to get buyers here to know about the quality and processing characteristics of North Dakota wheat because of the competition that has taken place.

Tom Christensen Chairman of the North Dakota State Soil Conservation Committee, testified in support of the portion of HB 1021 which addresses the operational needs of the Committee and also the Soil Conservation District Assistance Program. **See attached testimony.**

Gary Nelson Executive Director of Farm Service Agency, testified in favor of HB 1021 regarding what the extension service has done in the last year and the partnership that has developed between Farm Service Agency and North Dakota's extension service. He discussed the new farm bill that is in the process of being implemented out of congress in which there are multitudes of choices that have to be made by both producers and owners of land. If it is decided part of the option is to update yields, complications continue when the production evidence that is needed is produced. One of their challenges is to get the education out. They have held an excess of 200, probably 300, meetings around the state and extension has been involved in virtually each one of them. Without extension's help to help the producers try and understand this program, the sign-up process would be far behind and producers in North Dakota would

suffer. He discussed that extension does many good things in North Dakota and extension will touch virtually all owners and producers.

Rep. Wald Where is the drought bill at in congress?

Nelson Today, I believe congress will be dealing with the 3.1 billion dollar drought bill in the Senate. I understand there will be another bill introduced in the area of 6 billion dollars. I think they are still basically in the talking phase. I think that it is anybody's guess at this point whether there will be disaster legislation that passes.

Patricia Jensen Directed the presentation to Jody Hauge.

Jody Hauge Farm and ranches south of Carson, North Dakota and also has a feed lot and is a member of SBARE. She testified in support of HB 1021. She is a strong believer in producer input. EPSCoR has offered her and the state an avenue to do that. She is a strong believer in seed money and what it can do to multiply other money. One of her personal goals is more interactions with the branches.

Patricia Jensen Directed the presentation to the remaining individuals who wished to speak, beginning with Martin Platz.

Martin Platz Member of the North Dakota 4-H program operated by the NDSU Extension Service. He is involved with the North Dakota Technology Team. **See attached testimony.**

Dean Henne Small grains farmer and cattle operator from Minot, and a member of the North Central Beef Marketing Club, testified in favor of HB 1021. He discussed the success of the Beef Marketing Club in Minot. There are about 20 active members in the club that come from about a 70 mile radius. They have had excellent support from the NDSU staff. The past support is appreciated. The guidance and knowledge of NDSU staff is helpful.

Randy Anderson President of the Livestock Marketing Club in Minot, testified in favor of HB 1021. Their primary goal is to look at the markets. They are planning a future trip to visit a packing plant and a feedlot somewhere in the Minnesota, Iowa area to get members more familiar with that segment of industry. A day and a half conference is planned for mid June and they also have plans to join an existing web site to enable them to stay better networked. One of the reasons their club has been successful is because of the excellent guidance they have had from NDSU staff, which is essential to keep the clubs up and focused on the right track. He hopes the committee looks favorable on continuing to show support for new marketing clubs.

Rep. Brusegaard Do the programs charge enrollment or fees for participation?

Henne Our fees are varied. We started off with $200. This year we are down to $150. We use those fees for some of these extra brokers and things brought in. It's not a big expense and is easily recouped.

Rep. Wald As a cattle producer, you were never involved in futures before until you joined this marketing club, understood how it works, and what the down and up sides are?

Henne That is correct. I can say that it has been well worth it. It makes it easier when you know you have a bottom underneath things, because you can lose a lot of equity in a hurry. One of the things our teachers have taught us is how to hang on to that equity.

Nick Sinner Executive Administrator for the North Dakota Barley Council, testified in favor of HB 1021 and the importance it has for barley production in the state of North Dakota. Barley has been facing some tough growing conditions over the last few years which threatens the viability of the barley industry in the state. Traditional barley producing areas have had to look to other crops that are better suited for these growing conditions which has forced a lot of the barley acres

to move west. Construction began on a new malting barley receiving facility in Sydney, Montana. When completed, this facility will have storage capacity of 1.5 million bushels, and will be able to ship between 10 and 15 million bushels of malting barley annually. They feel there is an opportunity for high quality malting barley production in this area. Continued research into new barley varieties and production practices to handle weather conditions is extremely important. There is also a need to investigate the production of barley in other parts of North Dakota using new production practices. These areas offer a great opportunity for the producers here in the state. Last biennium, the legislature saw the benefit of directing research dollars towards the western malting barley research program. This money was very well spent and the budget presented here will continue that important research which is a way of increasing overall barley production in the state. It is very important to include new money for this research into new barley varieties that will work in western North Dakota.

Lowell Berntson Chairman of the Agriculture Coalition. The coalition's goal is to improve the business climate in North Dakota agriculture and serve as a facilitator of ideas as well as pursue legislative support. It is their job to improve the importance of agricultural research and education in North Dakota. What is important for his farm and farmers across North Dakota is long term sustained funding and research for the things they do in agriculture. Ongoing research is critical to keep at the levels they are at and to increase funding. The way their research is directed though the State Board of Agriculture Research is a unique and effective way of doing it. The impact of the dollars spent on research and education is huge. He encouraged support of continued funding at these levels and better.

Leon Hiltner Producer from Langdon, North Dakota and President of Cavalier County Crop Improvement Association, testified in favor of HB 1021. **See attached testimony.**

Rep. Aarsvold I hear from some constituents in my district that the private sector can do this as well as the public sector and are we spending the tax dollars where, in fact, the private sector might be a better source of research and information?

Hiltner I believe that the tax dollars that are spent on any research are impartial dollars. For example, chemical companies all say that their product is the best. NDSU and the extension locations test all of these chemicals and they will tell you which ones are the best. I am not saying that dollars are not needed in private industry, but you have to watch what they are after too.

Bob Subart From Robinson in Kidder County and Chairman of the Advisory Board for the Carrington Research Extension Center, testified in favor of HB 1021. The board meets with the director and staff of the Carrington station to hear reports from the staff on audio, research and education, and to suggest changes in those areas for future consideration. He is impressed with the staff and the seriousness with the meetings they have. They clearly try to incorporate the needs of the surrounding counties in their plan. The advisory board is strongly in favor of raising the salaries of professional staff to keep pace with private industry jobs. The board recommends keeping the cow/calf research at Carrington. It is largely self-supporting and the research is widely used. The board supports and encourages research in Carrington. He asked the committee to consider the long term positive effect the work will have on the farmers and ranchers in North Dakota.

Jim Nelson Employed with the research center, testified in favor of HB 1021 and gave a report on the barley initiative started last year. His responsibilities have been getting the seeds in the ground and taken care of, recording data and getting them harvested. **See attached testimony** from one of his good producers last year, Bill Flaget, of what he thought was the importance of the program. He introduced Darwyn Mayer to explain how barley fits into his operation.

Darwyn Mayer He has seen first hand barley moving west in the state over the last five to six years. He has been using traditional varieties typically used in the east. Because finding new varieties is all it in the barley industry, he would like to see continued support.

Ervand Andersen Lamour County Representative on the Carrington Research and Extension Advisory Board, testified in favor of HB 1021. He utilizes the research results to make farm management decisions on his farm and also relies on the expertise of the staff at the centers. The research at the centers enables the extension service to provide area farmers with sound advice. He stated that the committee's support of the research and extension centers is beneficial and very much appreciated.

Patricia Jensen Believed the testimony was concluded.

Rep. Wald For Dr. Grafton. I haven't seen anything about swine, are you doing any swine research?

Dr. Grafton We do have swine research ongoing at NDSU.

Rep. Wald Only at the main station?

Dr. Grafton Yes. There are some difficulties at this point in time because our swine positions are on the 5% budget cut. One of the positions involved a portion of time spent on research and a portion spent on extension activities. That individual is no longer with NDSU and that position

is on the 5% cut. Another individual that is not on the 5% cut has just recently retired. We are hoping to fill that position. We will be looking at evaluating the position with the new chair of animal and range sciences to determine what direction that position should be in. At this point in time we still have a swine program at the main station at NDSU.

Patricia Jensen Expanded on Dr. Grafton's comments. She talked with the new chair and expressed her concern to make sure that the judging and teaching programs with swine would continue. He has assured her that he has a commitment to the judging programs and to the student activities that they have relative to swine. Ms. Jensen expressed her appreciation for the support given throughout the years.

Chairman Martinson closed the hearing on HB 1021.

2003 HOUSE STANDING COMMITTEE MINUTES

BILL/RESOLUTION NO. 1021

House Appropriations Committee
Education and Environment Division

☐ Check here for Conference Committee

Hearing Date February 14, 2003

Tape Number	Side A	Side B	Meter #
1	X		
Committee Clerk Signature	Gloria Keller		

Minutes:

Chairman Martinson opened the hearing on HB 1021, Experiment Station. All members of the committee were present.

Rep. Brusegaard Rep. Wald had the amendments drafted and I would like him to talk about them.

Rep. Wald Discussed proposed amendments, **see attached.**

Chairman Martinson Does Bismarck know you are taking that spot, the transfer of 1 FTE from Bismarck Extension Service to the Dickinson Research Station?

Rep. Wald Yes, they suggested it.

Rep. Wald moved the amendments 0102.

Chairman Martinson Is there a second?

Rep. Monson Second.

Chairman Martinson Is there any discussion of committee members?

A voice vote on the proposed amendments was taken and the motion carried.

Chairman Martinson We have the amended bill before us.

Rep. Wald I would move HB 1021 as amended.

Rep. Monson Second.

Chairman Martinson It has been moved and seconded, we recommend a do pass on amended HB 1021. Is there any discussion? Asked the clerk to call the roll.

ROLL CALL VOTES ON A DO PASS AS AMENDED

7 YES 0 NO 0 ABSENT

Chairman Martinson Who is going to carry that?

Rep. Wald will carry the bill.

Chairman Martinson closed the hearing on HB 1021.

2003 HOUSE STANDING COMMITTEE MINUTES

BILL/RESOLUTION NO. HB 1021

House Appropriations Committee

☐ Conference Committee

Hearing Date 02-14-03

Tape Number	Side A	Side B	Meter #
3		X	21.3
Committee Clerk Signature	Chris J Uglum		

Minutes:

Chairman Svedjan Opened HB 1021 for discussion. A quorum was present.

Rep. Wald I move amendment number .0102 to HB 1021. 2nd by Rep. Monson.

Rep. Gulleson The position to Dickinson was vacant in Bismarck and you're moving in to Dickinson?

Rep. Wald We're moving a person from the Extension and Experimentation Station.

Motion Carries

Rep. Wald I move a Do Pass As Amended. 2nd by Rep. Monson. Motion Carries 22-0-1.

Rep. Wald will carry this bill to the floor.

38021.0102
Title.0200
Fiscal No. 2

Prepared by the Legislative Council staff for
Representative Wald
February 10, 2003

VR
2/14/03
1 of 5

HOUSE AMENDMENTS TO HOUSE BILL NO. 1021 APP 2-17-03

Page 1, line 14, replace "35,341,437" with "34,415,856"

Page 1, line 15, replace "21,239,318" with "20,500,178"

Page 1, line 16, replace "14,102,119" with "13,915,678"

Page 1, line 19, replace "1,536,257" with "1,524,784"

Page 1, line 20, replace "782,898" with "777,825"

Page 1, line 21, replace "753,359" with "746,959"

HOUSE AMENDMENTS TO HB 1021 APP 2-17-03

Page 2, line 1, replace "10,901,291" with "10,848,064"

Page 2, line 2, replace "10,413,762" with "10,364,776"

Page 2, line 3, replace "487,529" with "483,288"

Page 2, line 6, replace "60,956,183" with "59,757,658"

Page 2, line 7, replace "32,404,239" with "31,519,854"

Page 2, line 8, replace "28,551,944" with "28,237,804"

Page 2, line 11, replace "5,216,097" with "5,282,891"

Page 2, line 12, replace "1,677,073" with "1,669,065"

Page 2, line 13, replace "1,616,622" with "1,523,475"

Page 2, line 14, replace "1,292,947" with "1,283,914"

Page 2, line 15, replace "1,725,235" with "1,714,374"

Page 2, line 16, replace "1,652,770" with "1,644,295"

Page 2, line 17, replace "3,350,876" with "3,329,112"

Page 2, line 18, replace "16,531,620" with "16,447,126"

Page 2, line 19, replace "8,983,676" with "8,968,852"

Page 2, line 20, replace "7,547,944" with "7,478,274"

Page 2, line 23, replace "1,170,385" with "1,166,914

Page 2, line 24, replace "1,170,385" with "1,166,914"

Page 2, line 25, replace "51,442,895" with "50,862,003"

Page 2, line 26, replace "74,994,278" with "73,298,399"

Page 2, line 27, replace "126,437,173" with "124,160,402"

Renumber accordingly

STATEMENT OF PURPOSE OF AMENDMENT:

House Bill No. 1021 - Summary of House Action

	EXECUTIVE BUDGET	HOUSE CHANGES	HOUSE VERSION
Upper Great Plains Transportation Institute			
Total all funds	$10,901,291	($53,227)	$10,848,064
Less estimated income	10,413,762	(48,986)	10,364,776
General fund	$487,529	($4,241)	$483,288
Branch research centers			
Total all funds	$16,531,620	($84,494)	$16,447,126
Less estimated income	8,963,676	(14,824)	8,968,852
General fund	$7,547,944	($69,670)	$7,478,274
NDSU Extension Service			
Total all funds	$35,341,437	($925,581)	$34,415,856
Less estimated income	21,239,318	(739,140)	20,500,178
General fund	$14,102,119	($186,441)	$13,915,678
Northern Crops Institute			
Total all funds	$1,536,257	($11,473)	$1,524,784
Less estimated income	782,696	(5,073)	777,625
General fund	$753,359	($6,400)	$746,959
Main Research Station			
Total all funds	$60,956,183	($1,198,525)	$59,757,658
Less estimated income	32,404,239	(884,385)	31,519,854
General fund	$28,551,944	($314,140)	$28,237,804
Agronomy Seed Farm			
Total all funds	$1,170,385	($3,471)	$1,166,914
Less estimated income	1,170,385	(3,471)	1,166,914
General fund	$0	$0	$0
Bill Total			
Total all funds	$126,437,173	($2,276,771)	$124,160,402
Less estimated income	74,994,278	(1,695,879)	73,298,399
General fund	$51,442,895	($780,892)	$50,662,003

House Bill No. 1021 - Upper Great Plains Transportation Institute - House Action

	EXECUTIVE BUDGET	HOUSE CHANGES	HOUSE VERSION
Upper Great Plains Transportation Institute	$10,901,291	($53,227)	$10,848,064
Total all funds	$10,901,291	($53,227)	$10,848,064
Less estimated income	10,413,762	(48,986)	10,364,776
General fund	$487,529	($4,241)	$483,288
FTE	31.50	0.00	31.50

Dept. 627 - Upper Great Plains Transportation Institute - Detail of House Changes

	REMOVES RECOMMENDED SALARY INCREASE 1	TOTAL HOUSE CHANGES
Upper Great Plains Transportation Institute	($53,227)	($53,227)
Total all funds	($53,227)	($53,227)
Less estimated income	(48,986)	(48,986)
General fund	($4,241)	($4,241)
FTE	0.00	0.00

1 This amendment removes the Governor's recommendation for state employee salary increases and retains the recommended state payment for health insurance premiums.

House Bill No. 1021 - Branch Research Centers - House Action

	EXECUTIVE BUDGET	HOUSE CHANGES	HOUSE VERSION
Dickinson Research Center	$5,216,097	$66,794	$5,282,891
Central Grasslands Research Center	1,677,073	(8,008)	1,669,065
Hettinger Research Center	1,616,622	(93,147)	1,523,475
Langdon Research Center	1,292,947	(9,033)	1,283,914
North Central Research Center	1,725,235	(10,861)	1,714,374
Williston Research Center	1,652,770	(8,475)	1,644,295
Carrington Research Center	3,350,876	(21,764)	3,329,112
Total all funds	$16,531,620	($84,494)	$16,447,126
Less estimated income	8,963,676	(14,824)	8,948,852
General fund	$7,547,944	($69,670)	$7,476,274
FTE	73.65	0.00	73.65

Dept. 628 - Branch Research Centers - Detail of House Changes

	REMOVES FTE AND FUNDING FOR PROFESSIONAL POSITION [1]	TRANSFERS FTE AND FUNDING FROM NDSU EXTENSION SERVICE [2]	REMOVES RECOMMENDED SALARY INCREASE [3]	TOTAL HOUSE CHANGES
Dickinson Research Center		$84,405	($17,611)	$66,794
Central Grasslands Research Center			(8,008)	(8,008)
Hettinger Research Center	($83,669)		(9,478)	(93,147)
Langdon Research Center			(9,033)	(9,033)
North Central Research Center			(10,861)	(10,861)
Williston Research Center			(8,475)	(8,475)
Carrington Research Center			(21,764)	(21,764)
Total all funds	($83,669)	$84,405	($85,230)	($84,494)
Less estimated income	(83,669)	84,405	(15,560)	(14,824)
General fund	$0	$0	($69,670)	($69,670)
FTE	(1.00)	1.00	0.00	0.00

[1] Removes vacant professional position at the Hettinger Research Center and related funding.

[2] Transfers FTE Extension Service position and funding from Bismarck extension office to Dickinson Research Center.

[3] This amendment removes the Governor's recommendation for state employee salary increases and retains the recommended state payment for health insurance premiums.

House Bill No. 1021 - NDSU Extension Service - House Action

	EXECUTIVE BUDGET	HOUSE CHANGES	HOUSE VERSION
NDSU Extension Service	$35,341,437	($925,581)	$34,415,856
Total all funds	$35,341,437	($925,581)	$34,415,856
Less estimated income	21,239,318	(739,140)	20,500,178
General fund	$14,102,119	($186,441)	$13,915,678
FTE	277.67	(7.00)	270.67

Dept. 630 - NDSU Extension Service - Detail of House Changes

	REMOVES FTE POSITIONS AND FUNDING [1]	TRANSFERS FTE AND FUNDING TO DICKINSON RESEARCH CENTER [2]	RECOMMENDED SALARY INCREASE [3]	TOTAL HOUSE CHANGES
NDSU Extension Service	($547,103)	($84,405)	($294,073)	($925,581)
Total all funds	($547,103)	($84,405)	($294,073)	($925,581)
Less estimated income	(547,103)	(84,405)	(107,632)	(739,140)
General fund	$0	$0	($186,441)	($186,441)
FTE	(6.00)	(1.00)	0.00	(7.00)

1 This amendment removes the following vacant FTE positions:

POSITION	FTE	GENERAL FUND	SPECIAL FUNDS	TOTAL
Education services	(1.00)		($54,788)	($54,788)
Extension specialist	(0.75)		(109,858)	(109,858)
4-H agent	(0.80)		(77,311)	(77,311)
Extension specialist	(1.00)		(166,042)	(166,042)
County home economist	(0.50)		(34,220)	(34,220)
County home economist	(0.80)		(55,623)	(55,623)
Administrative secretary	(0.65)		(31,306)	(31,306)
County home economist	(0.50)		(44,955)	(44,955)
Total	(6.00)	$0	($574,103)	($574,103)

2 Transfers FTE Extension Service position and funding from Bismarck extension office to the Dickinson Research Center.

3 This amendment removes the Governor's recommendation for state employee salary increases and retains the recommended state payment for health insurance premiums.

House Bill No. 1021 - Northern Crops Institute - House Action

	EXECUTIVE BUDGET	HOUSE CHANGES	HOUSE VERSION
Northern Crops Institute	$1,536,257	($11,473)	$1,524,784
Total all funds	$1,536,257	($11,473)	$1,524,784
Less estimated income	782,898	(5,073)	777,825
General fund	$753,359	($6,400)	$746,959
FTE	8.17	0.00	8.17

Dept. 638 - Northern Crops Institute - Detail of House Changes

	REMOVES RECOMMENDED SALARY INCREASE 1	TOTAL HOUSE CHANGES
Northern Crops Institute	($11,473)	($11,473)
Total all funds	($11,473)	($11,473)
Less estimated income	(5,073)	(5,073)
General fund	($6,400)	($6,400)
FTE	0.00	0.00

1 This amendment removes the Governor's recommendation for state employee salary increases and retains the recommended state payment for health insurance premiums.

House Bill No. 1021 - Main Research Station - House Action

	EXECUTIVE BUDGET	HOUSE CHANGES	HOUSE VERSION
Main Research Station	$60,956,183	($1,196,525)	$59,757,658
Total all funds	$60,956,183	($1,196,525)	$59,757,658
Less estimated income	32,404,239	(884,385)	31,519,854
General fund	$28,551,944	($314,140)	$28,237,804
FTE	358.55	(9.36)	349.19

Dept. 640 - Main Research Station - Detail of House Changes

	REMOVES FTE POSITIONS AND FUNDING 1	REMOVES RECOMMENDED SALARY INCREASE 2	TOTAL HOUSE CHANGES
Main Research Station	($739,918)	($456,607)	($1,196,525)
Total all funds	($738,918)	($456,607)	($1,196,525)
Less estimated income	(739,918)	(144,467)	(884,385)
General fund	$0	($314,140)	($314,140)
FTE	(9.36)	0.00	(9.36)

585

1 This amendment removes the following vacant FTE positions. Funding for the associate professor and acting chair positions were removed by the Main Research Station to meet the 9% percent budget request. The related FTEs are removed in this amendment.

POSITION	FTE	GENERAL FUND	SPECIAL FUNDS	TOTAL
Academic staff	(1.00)		($138,339)	($138,339)
Academic staff	(1.00)		(101,067)	(101,067)
Professional	(1.00)		(92,601)	(92,601)
Research assistant	(1.00)		(71,578)	(71,578)
Professional	(1.00)		(60,577)	(60,577)
Academic staff	(1.00)		(68,339)	(68,339)
Professional	(1.00)		(62,994)	(62,994)
Academic staff	(1.00)		(64,403)	(64,403)
Associate professor	(0.71)			0
Acting chair	(0.95)			0
Total	(9.36)	$0	($739,918)	($739,918)

2 This amendment removes the Governor's recommendation for state employee salary increases and retains the recommended state payment for health insurance premiums.

House Bill No. 1021 - Agronomy Seed Farm - House Action

	EXECUTIVE BUDGET	HOUSE CHANGES	HOUSE VERSION
Agronomy Seed Farm	$1,170,385	($3,471)	$1,166,914
Total all funds	$1,170,385	($3,471)	$1,166,914
Less estimated income	1,170,385	(3,471)	1,166,914
General fund	$0	$0	$0
FTE	2.67	0.00	2.67

Dept. 649 - Agronomy Seed Farm - Detail of House Changes

	REMOVES RECOMMENDED SALARY INCREASE 1	TOTAL HOUSE CHANGES
Agronomy Seed Farm	($3,471)	($3,471)
Total all funds	($3,471)	($3,471)
Less estimated income	(3,471)	(3,471)
General fund	$0	$0
FTE	0.00	0.00

1 This amendment removes the Governor's recommendation for state employee salary increases and retains the recommended state payment for health insurance premiums.

Date: February 14, 2003
Roll Call Vote #: 1

2003 HOUSE STANDING COMMITTEE ROLL CALL VOTES
BILL/RESOLUTION NO. 1021

House Appropriations Education and Environment Division Committee

☐ Check here for Conference Committee

Legislative Council Amendment Number LC # 38021.0102

Action Taken Do Pass As Amended

Motion Made By Rep. Wald Seconded By Rep. Monson

Representatives	Yes	No	Representatives	Yes	No
Representative Martinson	X				
Representative Brusegaard	X				
Representative Monson	X				
Representative Rennerfeldt	X				
Representative Wald	X				
Representative Aarsvold	X				
Representative Gulleson	X				

Total (Yes) 7 No 0

Absent 0

Floor Assignment Rep. Wald

If the vote is on an amendment, briefly indicate intent: See Proposed Amendments.

REPORT OF STANDING COMMITTEE (410)
February 17, 2003 10:11 a.m.

Module No: HR-30-2884
Carrier: Wald
Insert LC: 38021.0102 Title: .0200

REPORT OF STANDING COMMITTEE

HB 1021: Appropriations Committee (Rep. Svedjan, Chairman) recommends **AMENDMENTS AS FOLLOWS** and when so amended, recommends **DO PASS** (22 YEAS, 0 NAYS, 1 ABSENT AND NOT VOTING). HB 1021 was placed on the Sixth order on the calendar.

Page 1, line 14, replace "35,341,437" with "34,415,856"

Page 1, line 15, replace "21,239,318" with "20,500,178"

Page 1, line 16, replace "14,102,119" with "13,915,678"

Page 1, line 19, replace "1,536,257" with "1,524,784"

Page 1, line 20, replace "782,898" with "777,825"

Page 1, line 21, replace "753,359" with "746,959"

Page 2, line 1, replace "10,901,291" with "10,848,064"

Page 2, line 2, replace "10,413,762" with "10,364,776"

Page 2, line 3, replace "487,529" with "483,288"

Page 2, line 6, replace "60,956,183" with "59,757,658"

Page 2, line 7, replace "32,404,239" with "31,519,854"

Page 2, line 8, replace "28,551,944" with "28,237,804"

Page 2, line 11, replace "5,216,097" with "5,282,891"

Page 2, line 12, replace "1,677,073" with "1,669,065"

Page 2, line 13, replace "1,616,622" with "1,523,475"

Page 2, line 14, replace "1,292,947" with "1,283,914"

Page 2, line 15, replace "1,725,235" with "1,714,374"

Page 2, line 16, replace "1,652,770" with "1,644,295"

Page 2, line 17, replace "3,350,876" with "3,329,112"

Page 2, line 18, replace "16,531,620" with "16,447,126"

Page 2, line 19, replace "8,983,676" with "8,968,852"

Page 2, line 20, replace "7,547,944" with "7,478,274"

Page 2, line 23, replace "1,170,385" with "1,166,914

Page 2, line 24, replace "1,170,385" with "1,166,914"

Page 2, line 25, replace "51,442,895" with "50,862,003"

Page 2, line 26, replace "74,994,278" with "73,298,399"

Page 2, line 27, replace "126,437,173" with "124,160,402"

Renumber accordingly

STATEMENT OF PURPOSE OF AMENDMENT:

House Bill No. 1021 - Summary of House Action

	EXECUTIVE BUDGET	HOUSE CHANGES	HOUSE VERSION
Upper Great Plains Transportation Institute			
Total all funds	$10,901,291	($53,227)	$10,848,064
Less estimated income	10,413,762	(48,986)	10,364,776
General fund	$487,529	($4,241)	$483,288
Branch research centers			
Total all funds	$16,531,620	($84,494)	$16,447,126
Less estimated income	8,963,676	(14,824)	8,966,852
General fund	$7,547,944	($69,670)	$7,478,274
NDSU Extension Service			
Total all funds	$35,341,437	($925,581)	$34,415,856
Less estimated income	21,239,318	(739,140)	20,500,178
General fund	$14,102,119	($186,441)	$13,915,678
Northern Crops Institute			
Total all funds	$1,536,257	($11,473)	$1,524,784
Less estimated income	782,698	(5,073)	777,625
General fund	$753,359	($6,400)	$746,959
Main Research Station			
Total all funds	$60,956,183	($1,198,525)	$59,757,658
Less estimated income	32,404,239	(884,385)	31,519,854
General fund	$28,551,944	($314,140)	$28,237,804
Agronomy Seed Farm			
Total all funds	$1,170,385	($3,471)	$1,166,914
Less estimated income	1,170,385	(3,471)	1,166,914
General fund	$0	$0	$0
Bill Total			
Total all funds	$126,437,173	($2,276,771)	$124,160,402
Less estimated income	74,994,278	(1,695,879)	73,298,399
General fund	$51,442,895	($580,892)	$50,862,003

House Bill No. 1021 - Upper Great Plains Transportation Institute - House Action

	EXECUTIVE BUDGET	HOUSE CHANGES	HOUSE VERSION
Upper Great Plains Transportation Institute	$10,901,291	($53,227)	$10,848,064
Total all funds	$10,901,291	($53,227)	$10,848,064
Less estimated income	10,413,762	(48,986)	10,364,776
General fund	$487,529	($4,241)	$483,288
FTE	31.50	0.00	31.50

Dept. 627 - Upper Great Plains Transportation Institute - Detail of House Changes

	REMOVES RECOMMENDED SALARY INCREASE [1]	TOTAL HOUSE CHANGES
Upper Great Plains		

Transportation Institute	(53,227)	(53,227)
Total all funds	($53,227)	($53,227)
Less estimated income	(48,986)	(48,986)
General fund	($4,241)	($4,241)
FTE	0.00	0.00

1 This amendment removes the Governor's recommendation for state employee salary increases and retains the recommended state payment for health insurance premiums.

House Bill No. 1021 - Branch Research Centers - House Action

	EXECUTIVE BUDGET	HOUSE CHANGES	HOUSE VERSION
Dickinson Research Center	$5,216,097	$66,794	$5,282,891
Central Grasslands Research Center	1,677,073	(8,008)	1,669,065
Hettinger Research Center	1,616,622	(93,147)	1,523,475
Langdon Research Center	1,292,947	(9,033)	1,283,914
North Central Research Center	1,725,235	(10,861)	1,714,374
Williston Research Center	1,652,770	(8,475)	1,644,295
Carrington Research Center	3,350,876	(21,764)	3,329,112
Total all funds	$16,531,620	($84,494)	$16,447,126
Less estimated income	8,963,676	(14,824)	8,968,852
General fund	$7,547,944	($69,670)	$7,478,274
FTE	73.65	0.00	73.65

Dept. 628 - Branch Research Centers - Detail of House Changes

	REMOVES FTE AND FUNDING FOR PROFESSIONAL POSITION 1	TRANSFERS FTE AND FUNDING FROM NDSU EXTENSION SERVICE 2	REMOVES RECOMMENDED SALARY INCREASE 3	TOTAL HOUSE CHANGES
Dickinson Research Center		$84,405	($17,611)	$66,794
Central Grasslands Research Center			(8,008)	(8,008)
Hettinger Research Center	($83,669)		(9,478)	(93,147)
Langdon Research Center			(9,033)	(9,033)
North Central Research Center			(10,861)	(10,861)
Williston Research Center			(8,475)	(8,475)
Carrington Research Center			(21,764)	(21,764)
Total all funds	($83,669)	$84,405	($85,230)	($84,494)
Less estimated income	(83,669)	84,405	(15,560)	(14,824)
General fund	$0	$0	($69,670)	($69,670)
FTE	(1.00)	1.00	0.00	0.00

1 Removes vacant professional position at the Hettinger Research Center and related funding.

2 Transfers FTE Extension Service position and funding from Bismarck extension office to Dickinson Research Center.

3 This amendment removes the Governor's recommendation for state employee salary increases and retains the recommended state payment for health insurance premiums.

House Bill No. 1021 - NDSU Extension Service - House Action

	EXECUTIVE BUDGET	HOUSE CHANGES	HOUSE VERSION
NDSU Extension Service	$35,341,437	($925,581)	$34,415,856

Total all funds	$35,341,437	($925,581)	$34,415,856
Less estimated income	21,239,318	(739,140)	20,500,178
General fund	$14,102,119	($186,441)	$13,915,678
FTE	277.57	(7.00)	270.57

Dept. 630 - NDSU Extension Service - Detail of House Changes

	REMOVES FTE POSITIONS AND FUNDING [1]	TRANSFERS FTE AND FUNDING TO DICKINSON RESEARCH CENTER [2]	RECOMMENDED SALARY INCREASE [3]	TOTAL HOUSE CHANGES
NDSU Extension Service	($547,103)	($84,405)	($294,073)	($925,581)
Total all funds	($547,103)	($84,405)	($294,073)	($925,581)
Less estimated income	(547,103)	(84,405)	(107,632)	(739,140)
General fund	$0	$0	($186,441)	($186,441)
FTE	(6.00)	(1.00)	0.00	(7.00)

1 This amendment removes the following vacant FTE positions:

POSITION	FTE	GENERAL FUND	SPECIAL FUNDS	TOTAL
Education services	(1.00)		($54,788)	($54,788)
Extension specialist	(0.75)		(109,858)	(109,858)
4-H agent	(0.60)		(77,311)	(77,311)
Extension specialist	(1.00)		(166,042)	(166,042)
County home economist	(0.50)		(34,220)	(34,220)
County home economist	(0.80)		(55,623)	(55,623)
Administrative secretary	(0.65)		(31,306)	(31,306)
County home economist	(0.50)		(44,955)	(44,955)
Total	(6.00)	$0	($574,103)	($574,103)

2 Transfers FTE Extension Service position and funding from Bismarck extension office to the Dickinson Research Center.

3 This amendment removes the Governor's recommendation for state employee salary increases and retains the recommended state payment for health insurance premiums.

House Bill No. 1021 - Northern Crops Institute - House Action

	EXECUTIVE BUDGET	HOUSE CHANGES	HOUSE VERSION
Northern Crops Institute	$1,536,257	($11,473)	$1,524,784
Total all funds	$1,536,257	($11,473)	$1,524,784
Less estimated income	782,698	(5,073)	777,625
General fund	$753,359	($6,400)	$746,959
FTE	8.17	0.00	8.17

Dept. 638 - Northern Crops Institute - Detail of House Changes

	REMOVES RECOMMENDED SALARY INCREASE [1]	TOTAL HOUSE CHANGES
Northern Crops Institute	($11,473)	($11,473)
Total all funds	($11,473)	($11,473)
Less estimated income	(5,073)	(5,073)

General fund	($6,400)	($6,400)
FTE	0.00	0.00

1 This amendment removes the Governor's recommendation for state employee salary increases and retains the recommended state payment for health insurance premiums.

House Bill No. 1021 - Main Research Station - House Action

	EXECUTIVE BUDGET	HOUSE CHANGES	HOUSE VERSION
Main Research Station	$60,956,183	($1,196,525)	$59,757,658
Total all funds	$60,956,183	($1,196,525)	$59,757,658
Less estimated income	32,404,239	(884,385)	31,519,854
General fund	$28,551,944	($314,140)	$28,237,804
FTE	358.55	(9.36)	349.19

Dept. 640 - Main Research Station - Detail of House Changes

	REMOVES FTE POSITIONS AND FUNDING 1	REMOVES RECOMMENDED SALARY INCREASE 2	TOTAL HOUSE CHANGES
Main Research Station	($739,918)	($456,607)	($1,196,525)
Total all funds	($738,918)	($458,607)	($1,196,525)
Less estimated income	(739,918)	(144,467)	(884,385)
General fund	$0	($314,140)	($314,140)
FTE	(9.36)	0.00	(9.36)

1 This amendment removes the following vacant FTE positions. Funding for the associate professor and acting chair positions were removed by the Main Research Station to meet the 95 percent budget request. The related FTEs are removed in this amendment.

POSITION	FTE	GENERAL FUND	SPECIAL FUNDS	TOTAL
Academic staff	(1.00)		($138,339)	($138,339)
Academic staff	(1.00)		(101,087)	(101,087)
Professional	(1.00)		(92,601)	(92,601)
Research assistant	(1.00)		(71,578)	(71,578)
Professional	(1.00)		(80,577)	(80,577)
Academic staff	(1.00)		(88,339)	(88,339)
Professional	(1.00)		(82,994)	(82,994)
Academic staff	(1.00)		(84,403)	(84,403)
Associate professor	(0.71)			0
Acting chair	(0.65)			0
Total	(9.36)	$0	($739,918)	($739,918)

2 This amendment removes the Governor's recommendation for state employee salary increases and retains the recommended state payment for health insurance premiums.

House Bill No. 1021 - Agronomy Seed Farm - House Action

	EXECUTIVE BUDGET	HOUSE CHANGES	HOUSE VERSION
Agronomy Seed Farm	$1,170,385	($3,471)	$1,166,914
Total all funds	$1,170,385	($3,471)	$1,166,914
Less estimated income	1,170,385	(3,471)	1,166,914
General fund	$0	$0	$0
FTE	2.87	0.00	2.87

REPORT OF STANDING COMMITTEE (410)
February 17, 2003 10:11 a.m.

Module No: HR-30-2884
Carrier: Wald
Insert LC: 38021.0102 Title: .0200

Dept. 649 - Agronomy Seed Farm - Detail of House Changes

	REMOVES RECOMMENDED SALARY INCREASE 1	TOTAL HOUSE CHANGES
Agronomy Seed Farm	(\$3,471)	(\$3,471)
Total all funds	(\$3,471)	(\$3,471)
Less estimated income	(3,471)	(3,471)
General fund	\$0	\$0
FTE	0.00	0.00

1 This amendment removes the Governor's recommendation for state employee salary increases and retains the recommended state payment for health insurance premiums.

2003 SENATE APPROPRIATIONS

HB 1021

2003 SENATE STANDING COMMITTEE MINUTES

BILL/RESOLUTION NO. HB 1021

Senate Appropriations Committee

☐ Conference Committee

Hearing Date March 4, 2003

Tape Number	Side A	Side B	Meter #
Tape #2	x		909 - 2050
Tape #2	x		4557 - end
Tape #2 (Extension)		x	0- 4878
Committee Clerk Signature	Jan Hendrickson		
Tape #3	x		0

Minutes:

Senator Holmberg opened the hearing on HB 1021 **Upper Great Plans Transportation Institute, NDSU.**

Gene Griffin, Director (#933) Written testimony is Exhibit #1 which is attached. The legislature created an advisory council to the Institute according to law. Dale Anderson, President of GNDA is chairman of that advisory council. He would be more than happy to answer any question that the committee might have. Mr. Griffin would like to report to the committee some of the accomplishments of the North Dakota's Transportation Institute in the thematic area of *Rural and Small Urban Transportation and Logistics.* The goal of the Institute is to make an important contribution to ND's economy and socialization through improving mobility of freight and people. This is achieved by 3 things. 1. Carrying on the development of knowledge, information & innovation and assisting in applying it to private & public sector

interests to improve competitiveness, efficiency, safety, and personal mobility. 2. Continuing to educate, train and mentor the transportation practitioners and leaders for the future in a rapidly advancing and increasingly complex field with sophisticated technology applications. 3. Enhancing our status as a nationally recognized center of excellence that attracts the necessary talent and funding enabling the Institute to contribute to North Dakota's economy and society, and the state's image. He went on to talk about 4 areas of accomplishments that he felt were good for North Dakota and for NDSU.

---1. Established the Ag Transport Center working with the Agriculture marketing service and USDA. A lot of work in agriculture has been done, but never any real secure funding to continue to address those problems. A partnership with the Transportation Marketing Division. A couple of projects that taken place under this program, there is a project with the Bureau of Transportation stats looking at changes in grain transportation and marketing, not in the state, not in the region, but all the way from Texas to Canada in the great plains area. and intermountain region. Another project is evaluating some of the impacts of deregulation.

--2. Strategic Transportation Analysis Program which the legislature endorsed a number of biennium ago. This biennium they are looking at manufacturing an intermodal. North Dakota needs economically viable access to intermodal transportation service if it is to participate in the changing agriculture and manufacturing economy of the 21st century. He also stated that there is legislation in this session to facilitate the development of port authorities.

--3. Small Urban and Rural Transit Center to address the public transportation mobility needs of the less fortunate. The older residents who live in small communities and the farmers where they made their living, they are looking at addressing issues of what are the absolute needs of these

people. How do they coordinate with Health & Human Services and between the programs that DOT supports.

--4. They were fortunate that they were able to offer a doctoral program in Transportation and logistics, which was approved by the State Board of Higher Education, resulting in NDSU becoming one of the few universities in the United States to offer such a degree. The program is truly interdisciplinary being offered through three colleges, four departments and the Transportation Institute. Six students are currently enrolled with inquiries from as far away as California and several foreign countries. Student involvement at the Institute this year currently consist of 41 students, 6 doctoral candidates, 9 in the masters degree programs and 26 undergraduate students .Denver Tolliver is Director, Ph.D Program in Transportation & Logistics in Fargo.

Questions: (#1747)

Senator Mathern: Another bill is being considered regarding the rail rates, is the Institute capable of demonstrating the need for a rail rate case? The discussion has been about looking at outside experts, do we have the experts right here that could tell us how the rates are inappropriate, etc. Or is that not what you are about? **Gene** replied that the Institute has provided that information and he thinks that is the basis for why the request is being made. They have meet with the PSC, the Grain Dealers, Wheat Commission, held some independent seminars on the campus, and gave them some information, we have given them the costing. He also stated that an academic is not the person you want standing up regarding the legal aspects. You need someone who could put the best face on the case.

With no other testimony on the Transportation Institute, the hearing on this part of HB 1021 was closed.

Hearing HB 1021 continued with Pat Jensen, Dean of Agricultural at NDSU (#4772).

Pat presented the Biennial Budget for 2003-05 (Exhibit # 2) which is attached. She stated that they had visited all of the counties in the state and from those visits have learned a lot of information about what it is as a land-grant institution should provide in the interests of the citizens of the state. The budget has had a lot of impute and a lot of development, whether from the county visits, survey and others. She referred to a report called "The Roll of Ag in North Dakota Economy". (This was not given to the committee) The report stated that ag remained the main economy of North Dakota. It also stated that North Dakota economy is increased every year by $6 billion because of agriculture. She stated that every year they do a student survey. These are all ag students and they are asked what they expectations are from agricultural and their future in North Dakota. One of the questions they were asked if "why are you in farming?" They didn't say because their family is, but they said because they are interested in it. They want to be in it. About 70% would like to stay in North Dakota. 40% said they wanted to be in production Ag. 59% said they wanted to farm after graduation. Then they were asked about what their concerns were about agriculture in North Dakota. 26% they were a little worried about startup opportunities, 26% said they were worried about economic return. Then they were asked what they thought the greatest benefit of being in North Dakota was. The students replied it was the community spirit. 90% believe that Ag will continue to be North Dakota's largest industry. The final question to the students was: What should the top priorities be at NDSU in the Ag. Dept?

The students said it was to continue to attract young people to agriculture; to create value-added, and to expand market opportunities for them. So, again, the talk is Economic Development.

As the budget was put together, it was kept in mind what was wanted from the community. She asked for support of the Executive Budget as was presented. It is reduced from that since coming from the House, reduced somewhat in salary increases. She stated that as the committee heard testimony this afternoon on the different departments, that the committee would help them with those salary increases. Pat stated that they just learned that of a $2 million earmark, over and above, any other earmark they had gotten before from Congress, this is a new earmark for biosurveillance. This earmark will enable us to take the dollars the legislature gives the department as our state appropriation to leverage that with federal dollars to set up a biosurveillance system in this state. They are working with the department of health, who gave the dept. money to take our biosafety level 2 lab to the biosafety level 3, which is a level to study diseases, such as west Nile virus. This also allows us into the National Data System. Pat continued regarding who was going to speak on the various different depts. **Tape #2, side A ends, Tape #2, Side B begins.**

Senator Holmberg stated that there would be a subcommittee working on this, Senator Bowman will chair the subcommittee, Senator Lindaas and Senator Holmberg.

Jerry Doan, producer from Mckenzie, ND, SBARE, which is the State Board of Ag Research and Education. His testimony is Exhibit # 3 which is attached. He stated that **Senator Randy Christmann** has just been appointed to this board. He stated that SBARE is 6 years old and they bring that producer prospective to NDSU. It is a team but we bring the producer side of it. They need to rely on the faculty and administration for the scientific background and their expertise,

but then we bring the producers prospective and hopefully it is a better system. The mission is basically to identify the problems out there in North Dakota agriculture and then to address them through research and extension. Jerry went to the handout State Board of Agricultural Research and Education Highlights 2001-03, Exhibit #4, which is attached. This shows what SBARE has done over the past 2 years. He talked about the areas that SBARE has implemented to help North Dakota producers, which included Crops Subcommittees, Livestock Subcommittee, and Engagement Subcommittee. He talked about what each did. Other area SBARE has addressed includes the Langdon Learning Center; Dickinson Research Extension Center; made the recommendation for ending the fish farm program at Carrington Research Extension Center; flexibility within the ag budget to respond to current issues; and improved communication between ag producers, NDSU faculty and administrators and legislators. He continued with other comments on what SBARE has done in the past 6 years, holding meetings with legislators and citizens to see what they should be doing or what they should not be doing. Those concerns expressed by the producers were then used to help build the budget. They support the Governor's budget, they also have concerns regarding the salaries.

Question: (#1602)

Senator Andrist: He wanted SBARE's opinion on GMO wheats? Is there something the legislature should be doing or no doing? **Jerry** responded that this is a tough issue, a number of groups have come in on both sides of the issue, you aren't doing enough or don't do anything. SBARE went back to their policy to make sure they had some boundary lines that they were doing as much as they could to make sure they weren't getting anything mixed up. SBARE's position has been there is a need for balance, to make sure that the move is toward research,

make sure it is done responsibility, and to try to make sure the job is done the best way that can be done. Senate Andrist continued: He wanted to know if NDSU was responsive to their concerns? Larry replied that they were. **Senator Bowman**: He wanted to know how the legislature would know how the money was spent from the last session ($50,000) and how is farming being more profitable? **Larry** responded that **Dr. Grafton** has the specifics to address that.

With no other questions on the State board of Agricultural Research and Education, this part of the hearing was closed. (#1909)

Dr. Ken Grafton, Director, ND Agricultural Experiment Station and **Sharon Anderson**, Director, NDSU Extension Service were the next presenters. They talked briefly on some of the highlights of 2001-03 from the Experiment Station and from the Extension side. **Dr. Grafton** stated that in one year wheat (what kind? #2067) contributed more than $100 million to the state's economy which more than offset the amount of general fund moneys this legislature provided. (This was in response to **Senator Bowman's** question.) Another possible impact has been the cereal disease forecasting system that was developed by scientists at NDSU using various crop models and data collected from across the state. This forecasting procedure is available by both telephone and on-line via the web. In 2002 there was over 19,000 hits on the web site, which means that producers are using this system in order to determine whether or not to spray for crop epidemics. This saves them time and costs by not spraying when they don't have to or by telling them to spray when there is a potential epidemic. This is a real boom to the producers. **Dr. Grafton** stated that they are always evaluating their programs to make sure that they are going in the right direction. **Senator Mathern** (#2282): He wanted to know what kind of

return there is on the new variety of wheat that was produced. **Dr. Grafton** That $100 million doesn't come back to the University. **Senator Mathern** wanted to know if the state got something for developing that variety? **Dr. Grafton** replied that the money goes back to an endowment for hard red wheat and he thought it was about $900,000.

Dr. Sharon Anderson (#2440) explained the Extension service and what it has done in the past 2 years. They are located in 52 county offices and on the NDSU campus. Their focus has been to focus on economics. The bottom line good decision making and that pertains to agricultural, community development, families, and youth. She referred to Exhibit #5 which is attached.

Both **Dr. Grafton** and **Dr. Anderson** talked on the Governor's budget and the House action on the bill. (this can be found on page 3-8 in Exhibit #2) They also stated what impacts the reductions would have on the departments. They asked the Senate to help them anyway they could.

Questions: (#3789)

Senator Andrist: Is video conferencing in all of the counties? **Dr. Anderson** stated that they received a grant from the federal government about 3 years ago, which they used to set up three sites, one of which was Divide. There are about 15 counties that now have this. They partner with the county commissioners and jointly fund it. They continue to add sites all the time.

Senator Krauter: He stated that he saw that more than just the salaries were eliminated. He wanted to know if he was reading that correctly? **Don Wolf** (? He didn't give his name) from Legislative council stated that the salary package was eliminated on the House side, also some vacant FTE's that were eliminated. **Senator Krauter** stated that there was a page and half of other general funds and special funds that were eliminated in position, equipment, and operating.

Don continued that the figures they have the only reductions they have were in the salary package.

More clarification on what was eliminated which was for a one time fund for a building, etc.

Senator Holmberg stated that he understood that 95% budget is where the positions that were filled were cut? In order for the 95% to be met that, this is where the cuts would have to come from, and later the House said that under some criteria you have x-number of vacant positions that we are going to eliminate. The answer was yes. Senator Holmberg stated that they didn't have the luxury of raising tuition in order to cover the lost revenue. **Larry Ketchman** stated that he had made a mistake in telling **Senator Bowman** the amount of the endowment, it should be about $200,000 not $900,000.

(#4360) Director of the Central Grasslands Research and Extension Center, Paul Nylon (?--no written testimony--signature is unreadable on registration form). He thanked the Senate Legislators for supporting them in the past. He reminded the committee that as researchers, they deal consistently with the impact of the environment on their research and this type of research can't be imported. The research centers are vital to the areas they are located in. It is their goal that in time the central grasslands will become a nationally recognized laboratory for natural resource studies. He gave some statistics about the department and that in 1999 the legislature authorized an initiative to fund 5 graduate research assistantships to NDSU to work on projects at the different research centers. He then gave the places that the students were placed. No questions.

Kathy Hawken, Representative from District 46 (#4766) in Fargo. No written testimony. She served on the advisory committee for the Extension. It was an outstanding learning experience

for her. She didn't know if she had ever been involved with a group that did so much with what they have. She hoped that the committee could help them as much as possible.

(#4967) Gary Nelson, farmer from Cass County and State Executive Director of Farm Service Agency. No written testimony was submitted. He wanted to talk about the relationship that the Farm Service Agency has had with working Extension. There is a new farm bill that is being worked on, which is a somewhat complicated process, and a real overload on the staff members of the agency, but more than it is a difficult process for North Dakota producers. The agency has been able to help the producers of the state in the corporation with the Extension, etc. They can help producers understand what is available.

Questions: (#5531)

Senator Krauter: He stated that the only information he got from his local FFA office had the Texas A& M web site on it and not the NDSU one, now he understands why, it was a contract from above you. The NDSU web site is much easier to read and it works. **Mr. Nelson** stated that the Extension already had a mean and lean budget and has been cut by the House and he believed that the job that they were doing in educating the North Dakota producers that they have a very efficient budget.

Timothy Faller, Director of the NDSU Research Extension Center in Hettinger. (#5760). His written testimony is Exhibit #6 which is attached. (Tape #2 Side B ended during his testimony, it is continued on Tape #3 Side A) He talked about the House amendment that would result in reduction in staff, etc. He also went over the overview of the agency which is attached. He also talked about the major accomplishments of the agency. He talked about the future critical issues which are also found in his written testimony.

Jay Fisher, Director of the North Central Research Extension Center in Minot. His written testimony is exhibit #7 and # 8 which is attached. He wanted the committee to look at the last page of exhibit t#8 that shows the crops that ND is #1 in. The number of different crops that North Dakota grows is truly economic development. He also brought in a jar of flax to show the committee.

Jack Dalrymple. Lt. Governor of North Dakota (#547). He wanted the committee to know about a resolution that passed the House that calls for the creation of a Center of Generic Research at NDSU and NDSU to become the central point of management and recommendation and the handling of all generic research and generic crop activity. That obviously has spending implications, he thought there was some money appropriated to go with that in the House, it probably needs to be talked about in the context in the main station research budget, that is just his opinion but somebody is going to have to decide how that fits in to the big picture. The other thing to be aware of is something called the Beef Center of Excellence which was an idea passed by the House, that is going to have to find a home whether in Commerce or Higher Education or Experiment Station or whatever. These things are going to have to be looked at in a coordinated way. If there are subcommittees on these things, he would be happy to work with them.

Tom Teigen, Director of the Agronomy Seed Farm at Casselton. (#748) No written testimony. The mission hasn't changed much in the 52 of 53 years that it has been in existence. Not much new. The only source of income is seed sales and grain sales. The budget that came from the House is acceptable to them. It was better as it came from the Governor's recommendation but it is perfectly acceptable. He stated that because in spite of no pay i ease for himself and his workers, somehow the farmer has to pay for those increases. Most of there reserve is gone. They

can live with the budget as it is and he isn't real optimistic about the outlook and so he doesn't look for any additional expenses, and he is sure that the committee will do what they can do.

(#989) Pat Burgled, Director of the Northern Crops Institute on the campus at NDSU. Her written testimony is Exhibit #9 which is attached. She stated that the Northern Crops Institute (NCI) 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. The NCI continues to focus on education and technical services as mandated in the Century code. Their 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. NCI continues to receive regional funding, however with out the support of North Dakota, they would not be able to continue the level of work documented here. She talked about the major accomplishments during the current biennium. She also talked about the budget on page 4. She stated that the House amendments took out the salaries but otherwise matched the governor's recommendation. On page 5 shows the regional funding, which is about 4724,426 from the ND General Fund and $732,697 from other states, commodity check-off and miscellaneous income.

Questions: #1756:

Senator Krauter: He wanted to know the breakdown from the other states on how much they contributed to this. **Dr. Burglund** stated that the $50,000 from South Dakota is biennial and the other $170,000 from Minnesota. **Senator Krauter** continued regarding the commodity checkoff, that is the 4 states. Dr. Burgled stated it is 4 states and a mix of funding for all of the different commodities. **Senator Krauter** continued: As we bring these companies, these countries, in for

the grain procurement process, is there a follow up done 2, 3 years down the road, are they actually buying these commodities from the US or do we just educate them and then 2 years later, they are going to some other country. **Dr. Burgled** stated that typically you don't see an immediate purchase, however, they have had a few groups in where they buy right away, but the change is usually 2 -3 years, however, they see that price and quality in the mix and sometimes they see changes, however depending on the value of the US dollar is and price of our commodity, and the quality that can be provided the year they want it, they can't guarantee it will be a purchase. But generally speaking, they see return interest and have had some people who might have been here. **Senator Tallackson**: He wondered if the other states involved do more than just give money? **Dr. Burgled** responded that they do have a Northern Crops Council that is made up of representatives of all four of the states. There is some input, there is an advisory committee that is made up of all of the commodities groups from those four states. There are guidelines that are given to us. **Senator Mathern**: Is the Northern Crops Institute limited to certain crops? Are you able to work with crops as conditions change? Dr. Burgled responded that they have broaden . **Senator Mathern** continued: He wanted to know if the legislature has limited her? **Dr. Berglund** said that they were only limited by the abilities and knowledge they have, and they are always trying to broaden that.

Brian Kaae (#2387), Vice chair of the Northern Crops Council, which is the governing body of the Northern Crops Institute. Written testimony is Exhibit #10 which is attached. He is a producer of durum wheat and other crops. He wanted to add his support, the support of producers in the four states and especially those who serve on the Northern Crops Council for NCI.

Tom Christianson (#2620), chairman of the North Dakota State Soil Conservation Committee. His written testimony is Exhibit #11, which is attached. He was in support of HB 1021 which addresses the operational needs of the NDSSCC and Soil Conservation District Assistance Program. The charge of the NDSSCC is contained in his written testimony. He continued with his testimony. He would like continued support of the budget request. He talked about the 46 applications requesting $985,500 for the 2003-05 biennium. There has been an increase use by participating Districts to use this program to generate additional federal funds. His testimony also included a map showing the soil conservation districts; a page showing the districts who requested funds, how much they asked for, their score and how much they received, if any. There was also a page on the Soil Conservation District Assistance Program He would like the Senate subcommittee to consider giving them more identify within the budget, that is giving them a line item similar to the Extension station in North Dakota. They feel they are important enough for that and with that comes responsibility to justify that, and the committee is ready to accept that responsibility at this time. **Senator Bowman**: He wanted to know if he wants an individual line item for our budget? **Mr. Christianson** replied that was correct. **Senator Bowman** then asked if they had talked to rest of the people and if they were in support of that. **Mr. Christianson** replied that they were in support of that.

Martin Platz, (#2963) written testimony, Exhibit #12 which is attached. He testified that is a 16 year old from Devils Lake who has been in the Ramsey County 4-H for 6 years. He is highly active in the 4-H program that is operated by the NDSU Extension Service. He told how the 4-H club has changed his life, but mostly his leadership activities and skills. He is involved in the Technology Team through 4-H. These young people all have the same interest in technology and

they are willing to go out and teach others Because of this Technology Team he has developed some valuable skills that he will be able to use all of his life. He plans to attend NDSU to study Business Administration and then to start and operate his own business in North Dakota.

Nick Sinner (#3263) Executive administrator for the ND Barley Council. No written testimony. He wanted to speak in favor of HB 1021 on behalf of the barely growers of North Dakota. He talked about the research on barley growing in North Dakota and Montana. He also talked about the other uses of barley. The non-malting barley possibilities, feeding livestock; trying to get a heart-healthy label and attach it to barley produced in the U.S., and they think it is doing some of the same things in lowering cholesterol that oats is doing; and the use of barley in the making of ethanol will be looked at in the future.

Neil Fisher (#3701) administrator of the North Dakota Wheat Commission. No written testimony. He wanted to testify in support of HB 1021.

Paul Thomas, (#3778) administrator of the North Dakota Ag Coalition. No written testimony. He stated that they were made up of 39 member organizations. He thought it was because of the research and communication that NDSU has provided over the past 10 years over the development of the many alternative crops in N.D. His organization supported HB 1021.

Lance Gartner, (#3871), He has a calf operation by Glen Ullin. He wanted to talk to the committee about the marketing clubs. No written testimony. The funds that was given to the Extension for these marketing clubs help his group in the Glen Ullin/ Herbron area. They started in November 1991 and the first year was an educational year. Since then they have grown and now have several speakers from NDSU, feedlot speakers from South Dakota, and others from different states to help them. He talked about what the marketing club has helped them do. They

have rented out the school van to attend other meeting across the state and other states to talk to other farmers, producers and it has opened up a lot of possibilities for ND farmers.

(#4359) **Gene Goven**, farmer/rancher north of Turtle Lake. Written testimony is Exhibit #13. He was in support of the Extension Services. He talked about the size of his farm and the things he has done on this farm and how the Extension Centers have helped him.

With no other testimony, the hearing was closed on HB 1021. (#4764)

2003 SENATE STANDING COMMITTEE MINUTES

BILL/RESOLUTION NO. HB 1021 Vote

Senate Appropriations Committee

☐ Conference Committee

Hearing Date 4-8-03

Tape Number	Side A	Side B	Meter #
1		X	4430-end
2	X		1-250
Committee Clerk Signature			

Minutes:

Senator Holmberg opened the discussion on HB1021. All committee members are present. This bill addresses the Upper Great Plains Transportation Institute, NDSU.

Senator Bowman (mtr #4492) - Handed out amendment #38021.0204, explained the intent and the impact on the bill.

Senator Holmberg (mtr #4848) - Question regarding the pool. Should be a $20,000.00 pool.

Allen Knudsen (mtr #4910) - Is researching to answer Senator Holmbergs question.

Senator Grindberg (mtr #5028) - Question regarding the Northern Crop Institute. Had testimony that funding from other states is unknown. Anything further?

Senator Bowman (mtr #4135) - 12% reduction in IT and a readjustment of health insurance, was a slight savings there.

Senator Holmberg (mtr #5175) - Answered a previous question regarding where the 1 million dollars came from. The Governor moved the funds. Went back to previous question regarding

the $20,000.00 pool, is in the .0204 amendment. Only difference is at the top of page 5.

Addresses the $20,000 funding pool.

Senator Bowman (mtr #5550) - In answer to previous question, yes, Dr. Ode helped to start this up.

Senator Holmberg (mtr #5726) - Comment, this has to earn 2:1 match, to get the state dollars.

Senator Bowman (mtr #5787) - Also have to demonstrate that they will go back into ND to create jobs.

Senator Krauter (mtr #5899) - Additional question, where are you planning on getting the additional million dollars, if these are general fund increases, is there a plan.

Senator Holmberg (mtr #5937) - Already in the budget and was moved from 1003.

Senator Krauter (mtr #5966) - When looking at research station, significant increase in funding.

Senator Holmberg (mtr #6000) - Most of the money exchanged in this bill, came from 1003. Was already there, was in the Governors budget. Was transferred in this bill. There is a corresponding reduction in HB1003.

Senator Krauter (mtr #6181) - Also questioned what we are doing for the Hettinger Research Center. How to defend in Conference Committee

Senator Bowman (mtr #6228) - The debate is that they aren't receiving any money. To give them a 4% hit, they nothing to take from.

Tape 2, Side A

Debate between Senator Krauter and Senator Bowman regarding the 4%.

Senator Holmberg - There is a motion on the floor to amend the bill. Moved by Senator Bowman, Second by Senator Grindberg. Voice vote to amend. Amendment passes.

Senator Bowman moves a Do Pass as Amended. Second by Senator Andrist.

Roll call vote 14 yea, 0 nay, 0 absent. Carrier is Senator Bowman.

38021.0204
Title.0300
Fiscal No. 4

Prepared by the Legislative Council staff for
Senate Appropriations
April 7, 2003

4-8-03
1 of 5

PROPOSED AMENDMENTS TO ENGROSSED HOUSE BILL NO. 1021

Page 1, line 3, after "farm" insert "; and to provide legislative intent"

Page 1, after line 13, insert:

"Extension service	$33,575,779
Soil conservation committee	778,679"

Page 1, line 14, replace "34,415,856" with "34,354,458"

Page 1, line 15, replace "20,500,178" with "20,486,830"

Page 1, line 16, replace "13,915,678" with "13,867,628"

Page 1, line 19, replace "1,524,784" with "1,523,449"

Page 1, line 20, replace "777,825" with "777,345"

Page 1, line 21, replace "746,959" with "746,104"

Page 2, line 1, replace "10,848,064" with "10,844,753"

Page 2, line 2, replace "10,364,776" with "10,361,651"

Page 2, line 3, replace "483,288" with "483,102"

Page 2, line 6, replace "59,757,658" with "60,721,498"

Page 2, line 7, replace "31,519,854" with "31,506,474"

Page 2, line 8, replace "28,237,804" with "29,215,024"

Page 2, line 11, replace "5,282,891" with "5,281,134"

Page 2, line 12, replace "1,669,065" with "1,667,578"

Page 2, line 13, replace "1,523,475" with "1,521,669"

Page 2, line 14, replace "1,283,914" with "1,282,925"

Page 2, line 15, replace "1,714,374" with "1,712,676"

Page 2, line 16, replace "1,644,295" with "1,643,154"

Page 2, line 17, replace "3,329,112" with "3,326,724"

Page 2, line 18, replace "16,447,126" with "16,435,860"

Page 2, line 19, replace "8,968,852" with "8,967,403"

Page 2, line 20, replace "7,478,274" with "7,468,457"

Page 2, line 23, replace "1,166,914" with "1,166,604"

Page 2, line 24, replace "1,166,914" with "1,166,604"

Page 2, line 25, replace "50,862,003" with "51,780,315"

Page 2, line 26, replace "73,298,399" with "73,266,307"

Page 2, line 27, replace "124,160,402" with "125,046,622"

Page 3, after line 31, insert:

"**SECTION 8. LEGISLATIVE INTENT - BEEF SYSTEMS CENTER OF EXCELLENCE.** It is the intent of the fifty-eighth legislative assembly that a beef systems center of excellence be established by the department of animal and range science with the $1,000,000 appropriation provided in subdivision 4 of section 1 of this Act in accordance with the provisions of 2003 Senate Bill No. 2334."

Renumber accordingly

STATEMENT OF PURPOSE OF AMENDMENT:

House Bill No. 1021 - Summary of Senate Action

	EXECUTIVE BUDGET	HOUSE VERSION	SENATE CHANGES	SENATE VERSION
Transportation Institute				
Total all funds	$10,901,291	$10,848,064	($3,311)	$10,844,753
Less estimated income	10,413,762	10,364,776	(3,125)	10,361,651
General fund	$487,529	$483,288	($186)	$483,102
Branch research centers				
Total all funds	$16,531,620	$16,447,126	($11,266)	$16,435,860
Less estimated income	8,983,676	8,968,852	(1,449)	8,967,403
General fund	$7,547,944	$7,478,274	($9,817)	$7,468,457
NDSU Extension Service				
Total all funds	$35,341,437	$34,415,856	($61,398)	$34,354,458
Less estimated income	21,239,318	20,500,178	(13,348)	20,486,830
General fund	$14,102,119	$13,915,678	($48,050)	$13,867,628
Northern Crops Institute				
Total all funds	$1,536,257	$1,524,784	($1,335)	$1,523,449
Less estimated income	782,896	777,825	(480)	777,345
General fund	$753,359	$746,959	($855)	$746,104
Main Research Station				
Total all funds	$60,956,183	$59,757,658	$963,840	$60,721,498
Less estimated income	32,404,239	31,519,854	(13,380)	31,506,474
General fund	$28,551,944	$28,237,804	$977,220	$29,215,024
Agronomy Seed Farm				
Total all funds	$1,170,385	$1,166,914	($310)	$1,166,604
Less estimated income	1,170,385	1,166,914	(310)	1,166,604
General fund	$0	$0	$0	$0
Bill Total				
Total all funds	$126,437,173	$124,160,402	$886,220	$125,046,622
Less estimated income	74,994,276	73,298,399	(32,092)	73,266,307
General fund	$51,442,895	$50,862,003	$918,312	$51,780,315

House Bill No. 1021 - Transportation Institute - Senate Action

	EXECUTIVE BUDGET	HOUSE VERSION	SENATE CHANGES	SENATE VERSION
Transportation Institute	$10,901,291	$10,848,064	($3,311)	$10,844,753
Total all funds	$10,901,291	$10,848,064	($3,311)	$10,844,753
Less estimated income	10,413,762	10,364,776	(3,125)	10,361,651
General fund	$487,529	$483,288	($186)	$483,102
FTE	31.50	31.50	0.00	31.50

Dept. 627 - Transportation Institute - Detail of Senate Changes

	REDUCES RECOMMENDED FUNDING FOR HEALTH INSURANCE [1]	REDUCES FUNDING FOR INFORMATION TECHNOLOGY COSTS [2]	TOTAL SENATE CHANGES
Transportation Institute	($3,302)	($9)	($3,311)
Total all funds	($3,302)	($9)	($3,311)
Less estimated income	(3,125)		(3,125)
General fund	($177)	($9)	($186)
FTE	0.00	0.00	0.00

1 This amendment reduces the funding for state employee health insurance premiums from $493 to $488.70 per month.

2 This amendment reduces funding for information technology by $9 from the general fund, which represents a reduction in information technology funding from the general fund of approximately 4 percent.

House Bill No. 1021 - Branch Research Centers - Senate Action

	EXECUTIVE BUDGET	HOUSE VERSION	SENATE CHANGES	SENATE VERSION
Dickinson Research Center	$5,216,037	$5,282,891	($1,757)	$5,281,134
Central Grasslands Research Center	1,677,073	1,669,065	(1,487)	1,667,578
Hettinger Research Center	1,616,632	1,523,475	(1,806)	1,521,669
Langdon Research Center	1,292,947	1,283,914	(989)	1,282,925
North Central Research Center	1,725,235	1,714,374	(1,698)	1,712,676
Williston Research Center	1,652,770	1,644,295	(1,141)	1,643,154
Carrington Research Center	3,350,676	3,329,112	(2,388)	3,326,724
Total all funds	$16,531,620	$16,447,126	($11,266)	$16,435,860
Less estimated income	8,983,076	8,968,852	(1,449)	8,967,403
General fund	$7,547,944	$7,478,274	($9,817)	$7,468,457
FTE	73.65	73.65	0.00	73.65

Dept. 628 - Branch Research Centers - Detail of Senate Changes

	REDUCES RECOMMENDED FUNDING FOR HEALTH INSURANCE [1]	REDUCES FUNDING FOR INFORMATION TECHNOLOGY COSTS [2]	TOTAL SENATE CHANGES
Dickinson Research Center	($1,757)		($1,757)
Central Grasslands Research Center	(724)	($763)	(1,487)
Hettinger Research Center	(1,028)	(778)	(1,806)
Langdon Research Center	(827)	(162)	(989)
North Central Research Center	(1,035)	(663)	(1,698)
Williston Research Center	(824)	(317)	(1,141)
Carrington Research Center	(1,958)	(430)	(2,388)
Total all funds	($8,153)	($3,113)	($11,266)
Less estimated income	(1,449)		(1,449)
General fund	($6,704)	($3,113)	($9,817)
FTE	0.00	0.00	0.00

1 This amendment reduces the funding for state employee health insurance premiums from $493 to $488.70 per month.

2 This amendment reduces funding for information technology by $3,113 from the general fund, which represents a reduction in information technology funding from the general fund of approximately 4 percent.

House Bill No. 1021 - NDSU Extension Service - Senate Action

	EXECUTIVE BUDGET	HOUSE VERSION	SENATE CHANGES	SENATE VERSION
NDSU Extension Service	$35,341,437	$34,415,856	($840,077)	$33,575,779
Soil Conservation Committee			778,679	778,679
Total all funds	$35,341,437	$34,415,856	($61,398)	$34,354,458
Less estimate income	21,239,318	20,500,178	(13,348)	20,486,830
General fund	$14,102,119	$13,915,678	($48,050)	$13,867,628

FTE	277.57	270.57	0.00	270.57

Dept. 630 - NDSU Extension Service - Detail of Senate Changes

	CREATES SOIL CONSERVATION COMMITTEE LINE ITEM [1]	REDUCES RECOMMENDED FUNDING FOR HEALTH INSURANCE [2]	REDUCES FUNDING FOR INFORMATION TECHNOLOGY COSTS [3]	TOTAL SENATE CHANGES
NDSU Extension Service	($778,679)	($28,669)	($32,729)	($840,077)
Soil Conservation Committee	778,679			778,679
Total all funds	$0	($28,669)	($32,729)	($61,398)
Less estimated income		(13,348)		(13,348)
General fund	$0	($15,321)	($32,729)	($48,050)
FTE	0.00	0.00	0.00	0.00

1 This amendment creates a separate line item under NDSU Extension Service for the Soil Conservation Committee and transfers $778,679 from the general fund to the line item.

2 This amendment reduces the funding for state employee health insurance premiums from $493 to $488.70 per month.

3 This amendment reduces funding for information technology by $32,729 from the general fund, which represents a reduction in information technology funding from the general fund of approximately 4 percent.

House Bill No. 1021 - Northern Crops Institute - Senate Action

	EXECUTIVE BUDGET	HOUSE VERSION	SENATE CHANGES	SENATE VERSION
Northern Crops Institute	$1,536,257	$1,524,784	($1,335)	$1,523,449
Total all funds	$1,536,257	$1,524,784	($1,335)	$1,523,449
Less estimated income	782,896	777,825	(480)	777,345
General fund	$753,359	$746,959	($855)	$746,104
FTE	8.17	8.17	0.00	8.17

Dept. 638 - Northern Crops Institute - Detail of Senate Changes

	REDUCES RECOMMENDED FUNDING FOR HEALTH INSURANCE [1]	REDUCES FUNDING FOR INFORMATION TECHNOLOGY COSTS [2]	TOTAL SENATE CHANGES
Northern Crops Institute	($929)	($406)	($1,335)
Total all funds	($929)	($406)	($1,335)
Less estimated income	(480)		(480)
General fund	($449)	($406)	($855)
FTE	0.00	0.00	0.00

1 This amendment reduces the funding for state employee health insurance premiums from $493 to $488.70 per month.

2 This amendment reduces funding for information technology by $406 from the general fund, which represents a reduction in information technology funding from the general fund of approximately 4 percent.

House Bill No. 1021 - Main Research Station - Senate Action

	EXECUTIVE BUDGET	HOUSE VERSION	SENATE CHANGES	SENATE VERSION
Main Research Station	$60,956,183	$59,757,658	$963,840	$60,721,498
Total all funds	$60,956,183	$59,757,658	$963,840	$60,721,498
Less estimated income	32,404,239	31,519,854	(13,380)	31,506,474
General fund	$28,551,944	$28,237,804	$977,220	$29,215,024
FTE	358.55	349.19	0.00	349.19

5065

Dept. 640 - Main Research Station - Detail of Senate Changes

	PROVIDES FUNDING FOR BEEF SYSTEMS CENTER OF EXCELLENCE [1]	REDUCES RECOMMENDED FUNDING FOR HEALTH INSURANCE [2]	REDUCES FUNDING FOR INFORMATION TECHNOLOGY COSTS [3]	PROVIDES FUNDING FOR INTERACTIVE VIDEO NETWORK COSTS [4]	TOTAL SENATE CHANGES
Main Research Station	$1,000,000	($39,020)	($17,140)	$20,000	$963,840
Total all funds	$1,000,000	($39,020)	($17,140)	$20,000	$963,840
Less estimated income		(13,360)			(13,360)
General fund	$1,000,000	($25,640)	($17,140)	$20,000	$977,220
FTE	0.00	0.00	0.00	0.00	0.00

1 This amendment provides $1 million to the Main Research Center for establishment of a beef systems center of excellence in the Department of Animal and Range Science, pursuant to the provisions of 2003 Senate Bill No. 2334.

2 This amendment reduces the funding for state employee health insurance premiums from $493 to $488.70 per month.

3 This amendment reduces funding for information technology by $17,140 from the general fund, which represents a reduction in information technology funding from the general fund of approximately 4 percent.

4 This amendment provides $20,000 to the Main Research Center to be distributed to branch research centers to assist in offsetting interactive video network costs in remote areas.

House Bill No. 1021 - Agronomy Seed Farm - Senate Action

	EXECUTIVE BUDGET	HOUSE VERSION	SENATE CHANGES	SENATE VERSION
Agronomy Seed Farm	$1,170,395	$1,166,914	($310)	$1,166,604
Total all funds	$1,170,395	$1,166,914	($310)	$1,166,604
Less estimated income	1,170,395	1,166,914	(310)	1,166,604
General fund	$0	$0	$0	$0
FTE	2.87	2.87	0.00	2.87

Dept. 649 - Agronomy Seed Farm - Detail of Senate Changes

	REDUCES RECOMMENDED FUNDING FOR HEALTH INSURANCE [1]	TOTAL SENATE CHANGES
Agronomy Seed Farm	($310)	($310)
Total all funds	($310)	($310)
Less estimated income	(310)	(310)
General fund	$0	$0
FTE	0.00	0.00

1 This amendment reduces the funding for state employee health insurance premiums from $493 to $488.70 per month.

Amendment
Bowman
Grindberg

Date: 4-8-03
Roll Call Vote #: 1

2003 SENATE STANDING COMMITTEE ROLL CALL VOTES
BILL/RESOLUTION NO. 1021

Senate Appropriations Committee

☐ Check here for Conference Committee

Legislative Council Amendment Number 38021.0203

Action Taken Do Pass

Motion Made By Bowman Seconded By Andrist

Senators	Yes	No	Senators	Yes	No
Senator Holmberg, Chairman	✓				
Senator Bowman, Vice Chair	✓				
Senator Grindberg, Vice Chair	✓				
Senator Andrist	✓				
Senator Christmann	✓				
Senator Kilzer	✓				
Senator Krauter	✓				
Senator Kringstad	✓				
Senator Lindaas	✓				
Senator Mathern	✓				
Senator Robinson	✓				
Senator Schobinger	✓				
Senator Tallackson	✓				
Senator Thane	✓				

Total (Yes) 14 No

Absent

Floor Assignment Bowman

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

REPORT OF STANDING COMMITTEE

HB 1021, as engrossed: 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). Engrossed HB 1021 was placed on the Sixth order on the calendar.

Page 1, line 3, after "farm" insert "; and to provide legislative intent"

Page 1, after line 13, insert:

"Extension service	$33,575,779
Soil conservation committee	778,679"

Page 1, line 14, replace "34,415,856" with "34,354,458"

Page 1, line 15, replace "20,500,178" with "20,486,830"

Page 1, line 16, replace "13,915,678" with "13,867,628"

Page 1, line 19, replace "1,524,784" with "1,523,449"

Page 1, line 20, replace "777,825" with "777,345"

Page 1, line 21, replace "746,959" with "746,104"

Page 2, line 1, replace "10,848,064" with "10,844,753"

Page 2, line 2, replace "10,364,776" with "10,361,651"

Page 2, line 3, replace "483,288" with "483,102"

Page 2, line 6, replace "59,757,658" with "60,721,498"

Page 2, line 7, replace "31,519,854" with "31,506,474"

Page 2, line 8, replace "28,237,804" with "29,215,024"

Page 2, line 11, replace "5,282,891" with "5,281,134"

Page 2, line 12, replace "1,669,065" with "1,667,578"

Page 2, line 13, replace "1,523,475" with "1,521,669"

Page 2, line 14, replace "1,283,914" with "1,282,925"

Page 2, line 15, replace "1,714,374" with "1,712,676"

Page 2, line 16, replace "1,644,295" with "1,643,154"

Page 2, line 17, replace "3,329,112" with "3,326,724"

Page 2, line 18, replace "16,447,126" with "16,435,860"

Page 2, line 19, replace "8,968,852" with "8,967,403"

Page 2, line 20, replace "7,478,274" with "7,468,457"

Page 2, line 23, replace "1,166,914" with "1,166,604"

Page 2, line 24, replace "1,166,914" with "1,166,604"

Page 2, line 25, replace "50,862,003" with "51,780,315"

Page 2, line 26, replace "73,298,399" with "73,266,307"

Page 2, line 27, replace "124,160,402" with "125,046,622"

Page 3, after line 31, insert:

"**SECTION 8. LEGISLATIVE INTENT - BEEF SYSTEMS CENTER OF EXCELLENCE.** It is the intent of the fifty-eighth legislative assembly that a beef systems center of excellence be established by the department of animal and range science with the $1,000,000 appropriation provided in subdivision 4 of section 1 of this Act in accordance with the provisions of 2003 Senate Bill No. 2334."

Renumber accordingly

STATEMENT OF PURPOSE OF AMENDMENT:

House Bill No. 1021 - Summary of Senate Action

	EXECUTIVE BUDGET	HOUSE VERSION	SENATE CHANGES	SENATE VERSION
Transportation Institute				
Total all funds	$10,901,291	$10,848,064	($3,311)	$10,844,753
Less estimated income	10,413,762	10,364,776	(3,125)	10,361,651
General fund	$487,529	$483,288	($186)	$483,102
Branch research centers				
Total all funds	$16,531,620	$16,447,126	($11,266)	$16,435,860
Less estimated income	8,963,676	8,968,852	(1,449)	8,967,403
General fund	$7,547,944	$7,476,274	($9,817)	$7,466,457
NDSU Extension Service				
Total all funds	$35,341,437	$34,415,856	($61,398)	$34,354,458
Less estimated income	21,239,319	20,500,178	(13,348)	20,486,830
General fund	$14,102,119	$13,915,678	($48,050)	$13,867,628
Northern Crops Institute				
Total all funds	$1,536,257	$1,524,784	($1,335)	$1,523,449
Less estimated income	782,898	777,825	(480)	777,345
General fund	$753,359	$746,959	($855)	$746,104
Main Research Station				
Total all funds	$60,956,183	$59,757,658	$963,840	$60,721,498
Less estimated income	32,404,239	31,519,854	(13,380)	31,506,474
General fund	$28,551,944	$28,237,804	$977,220	$29,215,024
Agronomy Seed Farm				
Total all funds	$1,170,385	$1,166,914	($310)	$1,166,604
Less estimated income	1,170,385	1,166,914	(310)	1,166,604
General fund	$0	$0	$0	$0
Bill Total				
Total all funds	$126,437,173	$124,160,402	$886,220	$125,046,622
Less estimated income	74,994,278	73,298,399	(32,092)	73,266,307
General fund	$51,442,895	$50,862,003	$918,312	$51,780,315

House Bill No. 1021 - Transportation Institute - Senate Action

	EXECUTIVE BUDGET	HOUSE VERSION	SENATE CHANGES	SENATE VERSION
Transportation Institute	$10,901,291	$10,848,064	($3,311)	$10,844,753
Total all funds	$10,901,291	$10,848,064	($3,311)	$10,844,753

Less estimated income	10,413,762	10,364,776	(3,125)	10,361,651
General fund	$487,529	$483,288	($186)	$483,102
FTE	31.50	31.50	0.00	31.50

Dept. 627 - Transportation Institute - Detail of Senate Changes

	REDUCES RECOMMENDED FUNDING FOR HEALTH INSURANCE [1]	REDUCES FUNDING FOR INFORMATION TECHNOLOGY COSTS [2]	TOTAL SENATE CHANGES
Transportation Institute	($3,302)	($9)	($3,311)
Total all funds	($3,302)	($9)	($3,311)
Less estimated income	(3,125)		(3,125)
General fund	($177)	($9)	($186)
FTE	0.00	0.00	0.00

[1] This amendment reduces the funding for state employee health insurance premiums from $493 to $488.70 per month.

[2] This amendment reduces funding for information technology by $9 from the general fund, which represents a reduction in information technology funding from the general fund of approximately 4 percent.

House Bill No. 1021 - Branch Research Centers - Senate Action

	EXECUTIVE BUDGET	HOUSE VERSION	SENATE CHANGES	SENATE VERSION
Dickinson Research Center	$5,216,097	$5,282,891	($1,757)	$5,281,134
Central Grasslands Research Center	1,677,073	1,669,065	(1,487)	1,667,578
Hettinger Research Center	1,616,622	1,523,475	(1,806)	1,521,669
Langdon Research Center	1,292,947	1,283,914	(989)	1,282,925
North Central Research Center	1,725,235	1,714,374	(1,698)	1,712,676
Williston Research Center	1,652,770	1,644,295	(1,141)	1,643,154
Carrington Research Center	3,350,876	3,329,112	(2,388)	3,326,724
Total all funds	$16,531,620	$16,447,126	($11,266)	$16,435,860
Less estimated income	8,983,676	8,968,652	(1,449)	8,967,403
General fund	$7,547,944	$7,478,274	($9,817)	$7,468,457
FTE	73.65	73.65	0.00	73.65

Dept. 628 - Branch Research Centers - Detail of Senate Changes

	REDUCES RECOMMENDED FUNDING FOR HEALTH INSURANCE [1]	REDUCES FUNDING FOR INFORMATION TECHNOLOGY COSTS [2]	TOTAL SENATE CHANGES
Dickinson Research Center	($1,757)		($1,757)
Central Grasslands Research Center	(724)	($763)	(1,487)
Hettinger Research Center	(1,028)	(778)	(1,806)
Langdon Research Center	(827)	(162)	(989)
North Central Research Center	(1,035)	(663)	(1,698)
Williston Research Center	(824)	(317)	(1,141)
Carrington Research Center	(1,958)	(430)	(2,388)
Total all funds	($8,153)	($3,113)	($11,266)
Less estimated income	(1,449)		(1,449)
General fund	($6,704)	($3,113)	($9,817)

FTE	0.00	0.00	0.00

1 This amendment reduces the funding for state employee health insurance premiums from $493 to $466.70 per month.

2 This amendment reduces funding for information technology by $3,113 from the general fund, which represents a reduction in information technology funding from the general fund of approximately 4 percent.

House Bill No. 1021 - NDSU Extension Service - Senate Action

	EXECUTIVE BUDGET	HOUSE VERSION	SENATE CHANGES	SENATE VERSION
NDSU Extension Service	$35,341,437	$34,415,656	($840,077)	$33,575,779
Soil Conservation Committee			778,679	778,679
Total all funds	$35,341,437	$34,415,656	($61,398)	$34,354,458
Less estimate income	21,239,318	20,500,178	(13,348)	20,486,830
General fund	$14,102,119	$13,915,678	($48,050)	$13,867,628
FTE	277.57	270.57	0.00	270.57

Dept. 630 - NDSU Extension Service - Detail of Senate Changes

	CREATES SOIL CONSERVATION COMMITTEE LINE ITEM [1]	REDUCES RECOMMENDED FUNDING FOR HEALTH INSURANCE [2]	REDUCES FUNDING FOR INFORMATION TECHNOLOGY COSTS [3]	TOTAL SENATE CHANGES
NDSU Extension Service	($778,679)	($28,669)	($32,729)	($840,077)
Soil Conservation Committee	778,679			778,679
Total all funds	$0	($28,669)	($32,729)	($61,398)
Less estimated income		(13,348)		(13,348)
General fund	$0	($15,321)	($32,729)	($48,050)
FTE	0.00	0.00	0.00	0.00

1 This amendment creates a separate line item under NDSU Extension Service for the Soil Conservation Committee and transfers $778,679 from the general fund to the line item.

2 This amendment reduces the funding for state employee health insurance premiums from $493 to $466.70 per month.

3 This amendment reduces funding for information technology by $32,729 from the general fund, which represents a reduction in information technology funding from the general fund of approximately 4 percent.

House Bill No. 1021 - Northern Crops Institute - Senate Action

	EXECUTIVE BUDGET	HOUSE VERSION	SENATE CHANGES	SENATE VERSION
Northern Crops Institute	$1,536,257	$1,524,784	($1,335)	$1,523,449
Total all funds	$1,536,257	$1,524,784	($1,335)	$1,523,449
Less estimated income	782,898	777,825	(480)	777,345
General fund	$753,359	$746,959	($855)	$746,104
FTE	8.17	8.17	0.00	8.17

Dept. 638 - Northern Crops Institute - Detail of Senate Changes

	REDUCES RECOMMENDED FUNDING FOR HEALTH INSURANCE [1]	REDUCES FUNDING FOR INFORMATION TECHNOLOGY COSTS [2]	TOTAL SENATE CHANGES
Northern Crops Institute	($929)	($406)	($1,335)
Total all funds	($929)	($406)	($1,335)
Less estimated income	(480)		(480)
General fund	($449)	($406)	($855)
FTE	0.00	0.00	0.00

[1] This amendment reduces the funding for state employee health insurance premiums from $493 to $488.70 per month.

[2] This amendment reduces funding for information technology by $406 from the general fund, which represents a reduction in information technology funding from the general fund of approximately 4 percent.

House Bill No. 1021 - Main Research Station - Senate Action

	EXECUTIVE BUDGET	HOUSE VERSION	SENATE CHANGES	SENATE VERSION
Main Research Station	$60,956,163	$59,757,658	$963,840	$60,721,498
Total all funds	$60,956,163	$59,757,658	$963,840	$60,721,498
Less estimated income	32,404,239	31,519,654	(13,380)	31,506,474
General fund	$28,551,944	$28,237,804	$977,220	$29,215,024
FTE	358.55	349.19	0.00	349.19

Dept. 640 - Main Research Station - Detail of Senate Changes

	PROVIDES FUNDING FOR BEEF SYSTEMS CENTER OF EXCELLENCE [1]	REDUCES RECOMMENDED FUNDING FOR HEALTH INSURANCE [2]	REDUCES FUNDING FOR INFORMATION TECHNOLOGY COSTS [3]	PROVIDES FUNDING FOR INTERACTIVE VIDEO NETWORK COSTS [4]	TOTAL SENATE CHANGES
Main Research Station	$1,000,000	($39,020)	($17,140)	$20,000	$963,840
Total all funds	$1,000,000	($39,020)	($17,140)	$20,000	$963,840
Less estimated income		(13,380)			(13,380)
General fund	$1,000,000	($25,640)	($17,140)	$20,000	$977,220
FTE	0.00	0.00	0.00	0.00	0.00

[1] This amendment provides $1 million to the Main Research Center for establishment of a beef systems center of excellence in the Department of Animal and Range Science, pursuant to the provisions of 2003 Senate Bill No. 2334.

[2] This amendment reduces the funding for state employee health insurance premiums from $493 to $488.70 per month.

[3] This amendment reduces funding for information technology by $17,140 from the general fund, which represents a reduction in information technology funding from the general fund of approximately 4 percent.

[4] This amendment provides $20,000 to the Main Research Center to be distributed to branch research centers to assist in offsetting interactive video network costs in remote areas.

House Bill No. 1021 - Agronomy Seed Farm - Senate Action

	EXECUTIVE BUDGET	HOUSE VERSION	SENATE CHANGES	SENATE VERSION
Agronomy Seed Farm	$1,170,385	$1,166,914	($310)	$1,166,604

Total all funds	$1,170,385	$1,166,914	($310)	$1,166,604
Less estimated income	1,170,385	1,166,914	(310)	1,166,604
General fund	$0	$0	$0	$0
FTE	2.87	2.87	0.00	2.87

Dept. 649 - Agronomy Seed Farm - Detail of Senate Changes

	REDUCES RECOMMENDED FUNDING FOR HEALTH INSURANCE 1	TOTAL SENATE CHANGES
Agronomy Seed Farm	($310)	($310)
Total all funds	($310)	($310)
Less estimated income	(310)	(310)
General fund	$0	$0
FTE	0.00	0.00

1 This amendment reduces the funding for state employee health insurance premiums from $493 to $488.70 per month.

2003 HOUSE APPROPRIATIONS

CONFERENCE COMMITTEE

HB 1021

2003 HOUSE STANDING COMMITTEE MINUTES

BILL/RESOLUTION NO. 1021

House Appropriations Committee
Education and Environment Division

☑ Check here for Conference Committee

Hearing Date April 14, 2003

Tape Number	Side A	Side B	Meter #
1	X		30.8
Committee Clerk Signature	Celeste Wilkins		

Minutes:

Chairman Brusegaard opened the conference committee on HB 1021, Agriculture Extension Experiment Station. Chairman Brusegaard asked the Senate to run through their amendments.

Senator Bowman We basically did four things in this budget. We adjusted the 4% reduction in information technology. There was a small reduction in health care cost. There was an increase of $20,000 to the branch stations for those that receive zero dollars for their IVN network. The 4% reduction, if you get nothing, is a direct hit to their base budget, and because they receive no funding for their IVN costs, we put back $20,000 of that 4% reduction in that million. We put the million dollars back in for the beef centers of excellence project. We felt that the project has tremendous merit for the future of the livestock industry and indirectly related to the farming industry because you feed 400,000 or 500,000 head of cattle, you feed a tremendous amount of feed which gives your farmers two opportunities to produce grain either going directly to the feed

lot or to the elevator. It is probably one of the best initiatives that we've put forth for rural North Dakota for many years in this body. We put the accountability into the Department of Animal and Range Sciences at NDSU. We wanted to make sure that we would have accountability of $1 million. It wasn't just going to go to research, it was going to go for this particular program. They are going to raise $1 million of private money and they are applying for a $1 million dollar grant from the government. This is just a small portion of what this cost will be.

Senator Holmberg This is not new money over and above the governor's budget. In HB 1003, Higher Education, the House added $1 million over the governor's budget into EPSCOR. We took that million dollars used to fund this. EPSCOR is an outstanding and wonderful program. You get back $2.00 for what you put in and it works within that research community and that money goes out and adds to research capacity and income in the state. We wanted to bridge that money through such things as the design center, which has been funded, and to get that research more commercialized and, through Centers of Excellence, get that out in the community and create more jobs and economic activity. The money in this budget is not new money.

Chairman Brusegaard On the higher education budget, will you have $2 million in there for Centers of Excellence?

Senator Holmberg It is still there.

Chairman Brusegaard Did the definitions on those change?

Senator Holmberg The actual language about Centers of Excellence is in HB 1019, which is Commerce. **See attached handout.** There was no additional money added in this budget except what was transferred over.

The basic core of this language is not only do we want to have Centers of Excellence that are defined, but also they have to prove themselves not only by the fact that they are getting a one time infusion of state money, but also the fact that they are going to have to get some matching money. They need to get a 2 to 1 match in order for this to be accomplished.

Rep. Wald I believe you said $1 million in private moneys will have to be raised before this is released?

Senator Bowman No. When I met with NDSU as we worked on this initiative, they talked about the three funding sources. The three funding sources were the state, private and the federal.

Rep. Wald And another million federal?

Senator Bowman Right. 3 million total.

Chairman Brusegaard There is no guarantee on either the federal or the state money?

Senator Bowman They have to follow the guidelines that we set forth. All of them have to follow those Centers of Excellence guidelines, that is why we set that in statute so someone can't find a loophole to get around it. It is imperative that if we are going to go into Centers of Excellence, that they all go in with the same initiative. The real bottom line is to be able to bring that research right back out into rural North Dakota and apply that research for new job creation.

Chairman Brusegaard How does the Center of Beef Excellence work with the Beef line project?

Senator Bowman This takes North Dakota into the next link. The weakest link in the whole system is the feed lots, the processing, the meat plants and the marketing of the beef. That is the link that we are trying to put the whole chain together with. We don't currently have that link in

North Dakota. We do know that we can feed cattle successfully. As producers, we can take it to the feed lot, we can fatten cattle, but where we go with the fat cattle is where we really have the problem. Currently we have to go to Colorado or Kansas to get these animals processed. We lose $30.00 a head as soon as they go on the truck. That is money we hope we can directly keep in our state. For every 500,000 head of cattle, it generates about $400 million dollars of new wealth if we slaughter them here.

Rep. Wald This would entail building a slaughtering plant?

Senator Bowman A portable slaughtering plant. A meat marketing science department where they study the meats. As everyone started to work together towards this project, it really was an eye opener for me to see how excited they were about this project and the potential that this could do for the rest of the state.

Chairman Brusegaard Someone talked to me about changes to the extension service budget. It transferred $778,000 from the general fund to a line item for the soil conservation services, is that requested in the part of extension?

Senator Bowman It was requested on the part of all of them.

Chairman Brusegaard Is that historically a valid figure for what we have been spending on soil conservation service in the past?

Senator Holmberg Roughly, that's my understanding.

Rep. Wald Would you explain the $20,000 for the interactive video?

Senator Bowman After we came out with this 4% reduction on the information technology part, a fellow from one of the experiment stations met with me and explained that they don't get any money for this particular part of their budget. They have always had to try to raise what is in

their budget. Now they take another 4% hit and they don't get the money to begin with. That means that they go out there and lay off another person or something to try to find the extra money. It is not a lot of money. This would be spread out amongst all of the research centers that currently receive no dollars for that part of the budget. The total reduction was $53,000 and we replaced $20,000.

Chairman Brusegaard recessed the conference committee on HB 1021, Agriculture Extension Experiment Station.

2003 HOUSE STANDING COMMITTEE MINUTES

BILL/RESOLUTION NO. 1021

House Appropriations Committee
Education and Environment Division

☑ Check here for Conference Committee

Hearing Date April 16, 2003

Tape Number	Side A	Side B	Meter #
1	X		0.1

Committee Clerk Signature Alicia Keller

Minutes:

Chairman Brusegaard opened the conference committee on HB 1021, Agriculture Extension Experiment Station. All members of the conference committee were present.

Chairman Brusegaard I see the Centers of Excellence in three different ways There is a long held desire and need at NDSU for an updated meats lab. I see a little bit of marketing direction and helping producers learn how to market their beef and trying to involve extension and getting that information out to producers. The third component I see is a revamping or retry at a Northern Plains quality beef. Is that kind of how you see it coming together?

Senator Bowman You are partly right. I believe the push on Northern Plains premium beef set a new tone for the state as far as looking at the potential to have a packing plant, feeding more cattle in the state and being able to market. This is a main scale model of what we need to make a project like Northern Plains ever become a reality. In North Dakota we really lack the expertise

in this area. What their concept is, is we already do research with cattle. What we are going to do is utilize what we have within the extension system but take it the next level. We know we can feed cattle. We take the cattle that we feed, we run them through that mini processing plant, we take the meat science lab and advance it with something that can really do some good for the people that are going through those departments. The marketing aspect we have very little knowledge in. Without that component, this will never be successful to market out into rural North Dakota. That is really the key element of this whole program. We've got the cattle, we know we can feed the cattle, and we've got the university system set up to do it through the extension services. The cattle that we have we can now take to the next step through the miniature packing plant, do the studies on the meats, and then take it into the next phase of marketing. The whole project will be complete, if we can get a model. We are looking for hope for rural North Dakota and there is a lot of potential for this to grow the rural economy. On 500,000 cattle, you'll raise the bar about $400 million directly back to rural North Dakota.

Chairman Brusegaard Do you have any idea how much out of the $3 million would be spent as far as the meats lab would go?

Senator Bowman I haven't seen their plan exactly. The miniature processing plant that they looked at was in New Zealand. It is like a portable unit that can come in and they can set that up, and that would also be portable to move if they decided that they wanted to move that out into the area. I am not sure what the cost is on that. The cost to build a 100,000 head plant is about $35 million dollars.

Chairman Brusegaard What was the capacity on the New Zealand one?

Senator Bowman I don't know what the capacity is. We wanted to bring this idea forward so they could get started on it.

Chairman Brusegaard Would Dr. Ode have specific numbers on what the plant would cost?

Senator Bowman If you give me time to call him I sure will.

Chairman Brusegaard I can give him a call.

Rep. Wald In your discussions, did anything ever surface about the tribes having some money and being a preferred provider providing beef for the federal government?

Senator Bowman We discussed the tribes because I had met with the tribes up in New Town about a year and a half ago when I brought this concept forward and talked to them about the tanning industry and relating that to the Lewis and Clark centennial coming up. They are so skilled in the leather industry that I thought here would be a new opportunity to work with the tribes and they were very receptive to that. In marketing you will look at every potential to help any industry in North Dakota move forward. Marketing is one phase of this. If the tribes have access to a market, they will look at every potential to help any entity in North Dakota move forward. The majority of hides end up going to China or Mexico and we think there is potential to leave those hides in our state and develop another industry off of this. The other industry they are doing research on right now is rendering. That is a big issue and they are looking at some science to change the rendering industry so that we would have one within our state to take care of what they can't take care of any other way.

Chairman Brusegaard The other funding that we've talked about in connection with this, is there federal funds that are already available?

Senator Bowman The way I understand, in the current ag. budget, there was grants for value added agriculture. Because this project is a direct value added agriculture project, they thought that they would be able to tap that resource. I believe that there was $1 million dollars to apply for in grants from that particular funding source. That same funding source was available four years ago, so it is not something that is brand new, it has been around for awhile. One of the things they are addressing is out migration. One of the issues that is directly related to this program is to slow this out migration down in our rural areas of the state. When you can start putting feed lots in, and you start putting a packing plant in, all of sudden you have to start hiring people and there is some job security for those people. If it slows down out migration, I think it is worth a lot as an investment to this state.

Chairman Bruesegaard adjourned the conference committee on HB 1021, Agriculture Extension Experiment Station.

2003 HOUSE STANDING COMMITTEE MINUTES

BILL/RESOLUTION NO. 1021

House Appropriations Committee
Education and Environment Division

☑ Check here for Conference Committee

Hearing Date April 18, 2003

Tape Number	Side A	Side B	Meter #
1		X	6.9
Committee Clerk Signature	Celeste Keller		

Minutes:

Chairman Brusegaard opened the conference committee on HB 1021, Agriculture Extension Experiment Station. All members of the conference committee were present.

Chairman Brusegaard The amendments that I will be presenting will contain funding at $750,000 for the Beef System Centers of Excellence coupled with the million dollar transfer from federal funds and from private funds both of which are to be collected before the million dollars from the state. What is your reaction to that?

Senator Holmberg I have been involved in some discussions on this. The discussions centered around the various Centers of Excellence all taking a hit of roughly the same and the discussions we were having were that the Beef Centers of Excellence and these other ones that were funded at a million would go down to $800,000. I don't think there is anything wrong with your amendment. We might want to look at it when it comes down because I think by Monday or so

that is going to firm up as far as the dollar amounts. That is what we had looked at was $800,000.

Senator Bowman Why would you think that they would want to have to come up with the other money before they could utilize this money to get the project going? It takes a lot of money to get a project like this on line. To put them in a cash flow weakness before you ever give them an opportunity to go out and capture those private dollars and the federal dollars, it seems like you are trying to stop the program before it ever gets started. I understand the reduction and I understand why the reduction from what I've been told, but as we look at the process of what legislation is all about, this particular bill had a hearing in the House and the Senate. This is the funding source for it. The other Centers of Excellence, I don't believe were an independent bill that stood on its own merits other than the funding. It seems to me like we are going to bring something into the mix that was never part of discussion in the legislative process. I am not opposed to it, but our particular budget had a hearing in both the House and the Senate and it was overwhelmingly passed to the concept. This is a new idea that has not been brought forward through the legislative process and now we are going to spend another million or close to it with us not knowing where the money is going to go, what's going to happen and how they are going to use it. We need a lot of answers before we can see how that is going to work into the overall picture, especially being it has never had a hearing. We understand that there is another Centers of Excellence that is going to come out of the savings or something. That is the way it was explained to me.

Chairman Brusegaard That might have been discussion, I wasn't a part of that discussion at the meeting, I don't know anything about it. If you are referring to the center for biotech

research, that did have a hearing and did go through the legislative process. It was in 3031 and it passed unanimously on both floors. Regardless, that is not in the budget in front of us right now.

Senator Bowman Is this the reduction of this budget for the beef centers, is that what we are going to discuss?

Chairman Brusegaard The direction that I have received in conversations with leadership is that the Centers of Excellence that are under consideration right now are going to receive similar or consistent reduction in funding across the board.

Senator Bowman I was also told this morning that it would be $800,000 and now it is $50,000 less.

Senator Holmberg From the standpoint of our discussion, it is going to be $800,000.

Chairman Brusegaard I was just throwing that out for discussion.

Senator Bowman I understand that you are trying to get this finalized, I just want to make sure that I understand what is happening so that the people that I have been working with since last fall understand what we are doing. The only thing that I would be really concerned about is if you strap them from not having any money to bring a project forward, as soon as you start working on a project you have costs.

Chairman Brusegaard The idea of making sure that they have secured federal and private funding before giving the state funding up was one that occurred to a significant number of people in House Appropriations that talked to me about it. I wasn't firmly convinced until I had a conversation with Dr. Ode. He brought it up before I had.

Senator Bowman If that is fine with him, that's fine with me. We need to be consistent with the money.

Chairman Brusegaard I am sure every attempt to be consistent will be made.

Senator Holmberg I believe the way the legislation has moved forward so far is that on all of these Centers of Excellence that we putting out money for programs, that they have to secure their matching dollars before they receive their money, I know that is the way it is on Aerospace.

Senator Bowman I am not opposed to looking at amendments. I want to make sure that it is the same as all the rest of them.

Senator Holmberg The other one that was talked about was a encouragement resolution.

Chairman Brusegaard The center for biotech research is something that was never a part of Centers of Excellence but because it had the word center, it kind of got drawn in. That issue isn't settled yet.

Senator Holmberg You would do the 5%, which is not in addition to the 4%, it is in place of the 4%?

Chairman Brusegaard That is correct.

Senator Holmberg We are not in a disagreement about the IVN extraordinary costs.

Senator Bowman With all of the research dollars that are in that pool of money, if a project was finished and there was some money left over for that project, would the SBAR have the ability to transfer some of those dollars?

Rep. Wald I think the worst that could happen is coming before the budget section for a transfer.

Senator Bowman I would agree with that as long as we follow the money.

Chairman Brusegaard adjourned the conference committee on HB 1021, Agriculture Extension Experiment Station.

2003 HOUSE STANDING COMMITTEE MINUTES

BILL/RESOLUTION NO. 1021

House Appropriations Committee
Education and Environment Division

☑ Check here for Conference Committee

Hearing Date April 21, 2003

Tape Number	Side A	Side B	Meter #
1	X		9.7

Committee Clerk Signature Celeste Keller

Minutes:

Chairman Brusegaard opened the conference committee on HB 1021, Agriculture Extension and Experiment Station. All members of the conference committee were present. Amendments .0209 were distributed for HB 1021. **See amendments.**

Rep. Wald moved that the Senate recede from their amendments and further amend the bill as indicated on .0209 and Senator Bowman seconded.

Senator Bowman (Inaudible).

Chairman Brusegaard We put some general fund dollars in this session, the previous balance was 1.7 so this would bring it down to $900,000.

Senator Bowman Is it enough to cover their indebtedness?

Chairman Brusegaard Yes.

Senator Holmberg With interest rate as low as they are, they are going elsewhere and they are not utilizing this money. This would be a good investment.

ROLL CALL VOTE ON A DO PASS AS AMENDED

6 Yes 0 No 0 Absent

Rep. Brusegaard will carry the bill.

Chairman Brusegaard closed the conference committee on HB 1021, Agriculture Extension and Experiment Station.

38021.0209
Title.
Fiscal No. 5

Prepared by the Legislative Council staff for
Representative Brusegaard
April 21, 2003

PROPOSED AMENDMENTS TO ENGROSSED HOUSE BILL NO. 1021

That the Senate recede from its amendments as printed on pages 1448-1452 of the House Journal and pages 1269-1274 of the Senate Journal and that Engrossed House Bill No. 1021 be amended as follows:

Page 1, line 3, after "farm" insert "; to provide legislative intent; and to provided for a transfer"

Page 1, after line 13, insert:

"Extension service	$33,567,597
Soil conservation committee	778,679"

Page 1, line 14, replace "34,415,856" with "34,346,276"

Page 1, line 15, replace "20,500,178" with "20,486,830"

Page 1, line 16, replace "13,915,678" with "13,859,446"

Page 1, line 19, replace "1,524,784" with "1,523,347"

Page 1, line 20, replace "777,825" with "777,345"

Page 1, line 21, replace "746,959" with "746,002"

Page 2, line 1, replace "10, 848,064" with "10,844,750"

Page 2, line 2, replace "10,364,776" with "10,361,651"

Page 2, line 3, replace "483,288" with "483,099"

Page 2, line 6, replace "59,757,658" with "60,517,214"

Page 2, line 7, replace "31,519,854" with "32,306,474"

Page 2, line 8, replace "28,237,804" with "28,210,740"

Page 2, line 11, replace "5,282,891" with "5,281,134"

Page 2, line 12, replace "1,669,065" with "1,667,387"

Page 2, line 13, replace "1,523,475" with "1,521,475"

Page 2, line 14, replace "1,283,914" with "1,282,885"

Page 2, line 15, replace "1,714,374" with "1,712,510"

Page 2, line 16, replace "1,644,295" with "1,643,075"

Page 2, line 17, replace "3,329,112" with "3,326,616"

Page 2, line 18, replace "16,447,126" with "16,435,082"

Page 2, line 19, replace "8,968,852" with "8,967,403"

Page 2, line 20, replace "7,478,274" with "7,467,679"

Page 2, line 23, replace "1,166,914" with "1,166,604"

Page 2, line 24, replace "1,166,914" with "1,166,604"

Page 2, line 25, replace "50,862,003" with "50,766,966"

Page 2, line 26, replace "73,298,399" with "74,066,307"

Page 2, line 27, replace "124,160,402" with "124,833,273"

Page 3, after line 31, insert:

"SECTION 8. LEGISLATIVE INTENT - BEEF SYSTEMS CENTER OF EXCELLENCE. It is the intent of the fifty-eighth legislative assembly that a beef systems center of excellence be established by the department of animal and range science with the $800,000 appropriation provided in subdivision 4 of section 1 of this Act in accordance with the provisions of 2003 Senate Bill No. 2334.

SECTION 9. AGRICULTURE PARTNERSHIP IN ASSISTING COMMUNITY EXPANSION FUND - TRANSFER. Notwithstanding the provisions of chapter 6-09.13, the Bank of North Dakota shall transfer $800,000 from the agriculture partnership in assisting community expansion fund to the main research center. The transfer shall not be made until $1,000,000 of federal funds and $1,000,000 of special funds from private contributions has been collected for the establishment of a beef systems center of excellence."

Renumber accordingly

STATEMENT OF PURPOSE OF AMENDMENT:

House Bill No. 1021 - Summary of Conference Committee Action

	EXECUTIVE BUDGET	HOUSE VERSION	CONFERENCE COMMITTEE CHANGES	CONFERENCE COMMITTEE VERSION	SENATE VERSION	COMPARISON TO SENATE
Transportation Institute						
Total all funds	$10,901,291	$10,848,064	($3,314)	$10,844,750	$10,844,753	($3)
Less estimated income	10,413,762	10,364,776	(3,125)	10,361,651	10,361,651	
General fund	$487,529	$483,288	($189)	$483,099	$483,102	($3)
Branch research centers						
Total all funds	$16,531,620	$16,447,126	($12,044)	$16,435,082	$16,435,860	($778)
Less estimated income	8,983,676	8,968,852	(1,449)	8,967,403	8,967,403	
General fund	$7,547,944	$7,478,274	($10,595)	$7,467,679	$7,468,457	($778)
NDSU Extension Service						
Total all funds	$35,341,437	$34,415,856	($69,580)	$34,346,276	$34,354,458	($8,182)
Less estimated income	21,239,318	20,500,178	(13,348)	20,486,830	20,486,830	
General fund	$14,102,119	$13,915,678	($56,232)	$13,859,446	$13,867,628	($8,182)
Northern Crops Institute						
Total all funds	$1,536,257	$1,524,784	($1,437)	$1,523,347	$1,523,449	($102)
Less estimated income	782,898	777,825	(480)	777,345	777,345	
General fund	$753,359	$746,959	($957)	$746,002	$746,104	($102)
Main Research Station						
Total all funds	$60,956,183	$59,757,658	$759,556	$60,517,214	$60,721,498	($204,284)
Less estimated income	32,404,239	31,519,654	786,620	32,306,474	31,506,474	800,000
General fund	$28,551,944	$28,237,804	($27,064)	$28,210,740	$29,215,024	($1,004,284)
Agronomy Seed Farm						
Total all funds	$1,170,385	$1,166,914	($310)	$1,166,604	$1,166,604	$0
Less estimated income	1,170,385	1,166,914	(310)	1,166,604	1,166,604	
General fund	$0	$0	$0	$0	$0	$0

Bill Total						
Total all funds	$126,437,173	$124,160,402	$672,871	$124,833,273	$125,046,622	($213,349)
Less estimated income	74,994,278	73,298,399	767,908	74,066,307	73,266,307	800,000
General fund	$51,442,895	$50,862,003	($95,037)	$50,766,966	$51,780,315	($1,013,349)

House Bill No. 1021 - Transportation Institute - Conference Committee Action

	EXECUTIVE BUDGET	HOUSE VERSION	CONFERENCE COMMITTEE CHANGES	CONFERENCE COMMITTEE VERSION	SENATE VERSION	COMPARISON TO SENATE
Transportation Institute	$10,901,291	$10,848,064	($3,314)	$10,844,750	$10,844,753	($3)
Total all funds	$10,901,291	$10,848,064	($3,314)	$10,844,750	$10,844,753	($3)
Less estimated income	10,413,762	10,364,776	(3,125)	10,361,651	10,361,651	
General fund	$487,529	$483,288	($189)	$483,099	$483,102	($3)
FTE	31.50	31.50	0.00	31.50	31.50	0.00

Dept. 627 - Transportation Institute - Detail of Conference Committee Changes

	REDUCES RECOMMENDED FUNDING FOR HEALTH INSURANCE [1]	REDUCES FUNDING FOR INFORMATION TECHNOLOGY COSTS [2]	TOTAL CONFERENCE COMMITTEE CHANGES
Transportation Institute	($3,302)	($12)	($3,314)
Total all funds	($3,302)	($12)	($3,314)
Less estimated income	(3,125)		(3,125)
General fund	($177)	($12)	($189)
FTE	0.00	0.00	0.00

1 This amendment reduces the funding for state employee health insurance premiums from $493 to $488.70 per month.

2 This amendment reduces funding for information technology by $12 from the general fund, which represents a reduction in information technology funding from the general fund of approximately 5 percent.

House Bill No. 1021 - Branch Research Centers - Conference Committee Action

	EXECUTIVE BUDGET	HOUSE VERSION	CONFERENCE COMMITTEE CHANGES	CONFERENCE COMMITTEE VERSION	SENATE VERSION	COMPARISON TO SENATE
Dickinson Research Center	$5,216,097	$5,282,891	($1,757)	$5,281,134	$5,281,134	
Central Grasslands Research Center	1,677,073	1,669,065	(1,678)	1,667,387	1,667,578	($191)
Hettinger Research Center	1,616,622	1,523,475	(2,000)	1,521,475	1,521,669	(194)
Langdon Research Center	1,292,947	1,283,914	(1,029)	1,282,885	1,282,925	(40)
North Central Research Center	1,725,235	1,714,374	(1,864)	1,712,510	1,712,676	(166)
Williston Research Center	1,652,770	1,644,295	(1,220)	1,643,075	1,643,154	(79)
Carrington Research Center	3,350,876	3,329,112	(2,496)	3,326,616	3,326,724	(108)
Total all funds	$16,531,620	$16,447,126	($12,044)	$16,435,082	$16,435,860	($778)
Less estimated income	8,983,676	8,968,852	(1,449)	8,967,403	8,967,403	
General fund	$7,547,944	$7,478,274	($10,595)	$7,467,679	$7,468,457	($778)
FTE	73.65	73.65	0.00	73.65	73.65	0.00

Dept. 628 - Branch Research Centers - Detail of Conference Committee Changes

	REDUCES RECOMMENDED FUNDING FOR HEALTH INSURANCE [1]	REDUCES FUNDING FOR INFORMATION TECHNOLOGY COSTS [2]	TOTAL CONFERENCE COMMITTEE CHANGES
Dickinson Research Center	($1,757)		($1,757)
Central Grasslands Research Center	(724)	($954)	(1,678)
Hettinger Research Center	(1,028)	(972)	(2,000)
Langdon Research Center	(827)	(202)	(1,029)
North Central Research Center	(1,035)	(829)	(1,864)
Williston Research Center	(824)	(396)	(1,220)
Carrington Research Center	(1,958)	(538)	(2,496)
Total all funds	($8,153)	($3,891)	($12,044)
Less estimated income	(1,449)		(1,449)
General fund	($6,704)	($3,891)	($10,595)

FTE	0.00	0.00	0.00

1 This amendment reduces the funding for state employee health insurance premiums from $493 to $488.70 per month.

2 This amendment reduces funding for information technology by $3,891 from the general fund, which represents a reduction in information technology funding from the general fund of approximately 5 percent.

House Bill No. 1021 - NDSU Extension Service - Conference Committee Action

	EXECUTIVE BUDGET	HOUSE VERSION	CONFERENCE COMMITTEE CHANGES	CONFERENCE COMMITTEE VERSION	SENATE VERSION	COMPARISON TO SENATE
NDSU Extension Service	$35,341,437	$34,415,656	($848,259)	$33,567,597	$33,575,779	($8,182)
Soil Conservation Committee			778,679	778,679	778,679	
Total all funds	$35,341,437	$34,415,656	($69,580)	$34,346,276	$34,354,458	($8,182)
Less estimate income	21,239,318	20,500,178	(13,348)	20,486,830	20,486,830	
General fund	$14,102,119	$13,915,678	($56,232)	$13,859,446	$13,867,628	($8,182)
FTE	277.57	270.57	0.00	270.57	270.57	0.00

Dept. 630 - NDSU Extension Service - Detail of Conference Committee Changes

	CREATES SOIL CONSERVATION COMMITTEE LINE ITEM 1	REDUCES RECOMMENDED FUNDING FOR HEALTH INSURANCE 2	REDUCES FUNDING FOR INFORMATION TECHNOLOGY COSTS 3	TOTAL CONFERENCE COMMITTEE CHANGES
NDSU Extension Service	($778,679)	($26,669)	($40,911)	($848,259)
Soil Conservation Committee	778,679			778,679
Total all funds	$0	($26,669)	($40,911)	($69,580)
Less estimated income		(13,348)		(13,348)
General fund	$0	($15,321)	($40,911)	($56,232)
FTE	0.00	0.00	0.00	0.00

1 This amendment creates a separate line item under NDSU Extension Service for the Soil Conservation Committee and transfers $778,679 from the general fund to the line item.

2 This amendment reduces the funding for state employee health insurance premiums from $493 to $488.70 per month.

3 This amendment reduces funding for information technology by $40,911 from the general fund, which represents a reduction in information technology funding from the general fund of approximately 5 percent.

House Bill No. 1021 - Northern Crops Institute - Conference Committee Action

	EXECUTIVE BUDGET	HOUSE VERSION	CONFERENCE COMMITTEE CHANGES	CONFERENCE COMMITTEE VERSION	SENATE VERSION	COMPARISON TO SENATE
Northern Crops Institute	$1,536,257	$1,524,784	($1,437)	$1,523,347	$1,523,449	($102)
Total all funds	$1,536,257	$1,524,784	($1,437)	$1,523,347	$1,523,449	($102)
Less estimated income	782,898	777,825	(480)	777,345	777,345	
General fund	$753,359	$746,959	($957)	$746,002	$746,104	($102)
FTE	8.17	8.17	0.00	8.17	8.17	0.00

Dept. 638 - Northern Crops Institute - Detail of Conference Committee Changes

	REDUCES RECOMMENDED FUNDING FOR HEALTH INSURANCE 1	REDUCES FUNDING FOR INFORMATION TECHNOLOGY COSTS 2	TOTAL CONFERENCE COMMITTEE CHANGES
Northern Crops Institute	($929)	($508)	($1,437)
Total all funds	($929)	($508)	($1,437)
Less estimated income	(480)		(480)
General fund	($449)	($508)	($957)
FTE	0.00	0.00	0.00

1 This amendment reduces the funding for state employee health insurance premiums from $493 to $488.70 per month.

2 This amendment reduces funding for information technology by $508 from the general fund, which represents a reduction in information technology funding from the general fund of approximately 5 percent.

House Bill No. 1021 - Main Research Station - Conference Committee Action

	EXECUTIVE BUDGET	HOUSE VERSION	CONFERENCE COMMITTEE CHANGES	CONFERENCE COMMITTEE VERSION	SENATE VERSION	COMPARISON TO SENATE
Main Research Station	$60,956,183	$59,757,658	$759,556	$60,517,214	$60,721,498	($204,284)
Total all funds	$60,956,183	$59,757,658	$759,556	$60,517,214	$60,721,498	($204,284)
Less estimated income	32,404,239	31,519,854	786,620	32,306,474	31,506,474	800,000
General fund	$28,551,944	$28,237,804	($27,064)	$28,210,740	$29,215,024	($1,004,284)
FTE	358.55	349.19	0.00	349.19	349.19	0.00

Dept. 640 - Main Research Station - Detail of Conference Committee Changes

	PROVIDES FUNDING FOR BEEF SYSTEMS CENTER OF EXCELLENCE [1]	REDUCES RECOMMENDED FUNDING FOR HEALTH INSURANCE [2]	REDUCES FUNDING FOR INFORMATION TECHNOLOGY COSTS [3]	PROVIDES FUNDING FOR INTERACTIVE VIDEO NETWORK COSTS [4]	TOTAL CONFERENCE COMMITTEE CHANGES
Main Research Station	$800,000	($39,020)	($21,424)	$20,000	$759,556
Total all funds	$800,000	($39,020)	($21,424)	$20,000	$759,556
Less estimated income	800,000	(13,380)			786,620
General fund	$0	($25,640)	($21,424)	$20,000	($27,064)
FTE	0.00	0.00	0.00	0.00	0.00

1 This amendment provides $800,000 to the Main Research Center from the agriculture partnership in assisting community expansion (Ag PACE) fund for establishment of a Beef Systems Center of Excellence in the Department of Animal and Range Science, pursuant to the provisions of 2003 Senate Bill No. 2334.

2 This amendment reduces the funding for state employee health insurance premiums from $493 to $488.70 per month.

3 This amendment reduces funding for information technology by $21,424 from the general fund, which represents a reduction in information technology funding from the general fund of approximately 5 percent.

4 This amendment provides $20,000 to the Main Research Center to be distributed to branch research centers to assist in offsetting Interactive Video Network costs in remote areas.

The Conference Committee replaced the $1 million general fund appropriation for the Beef Systems Center of Excellence with a $800,000 appropriation from the Ag PACE fund. The Conference Committee also added intent that $1 million in federal funds and $1 million in special funds be collected prior to spending the $800,000 appropriation from the Ag PACE fund for the Beef Systems Center of Excellence.

House Bill No. 1021 - Agronomy Seed Farm - Conference Committee Action

	EXECUTIVE BUDGET	HOUSE VERSION	CONFERENCE COMMITTEE CHANGES	CONFERENCE COMMITTEE VERSION	SENATE VERSION	COMPARISON TO SENATE
Agronomy Seed Farm	$1,170,385	$1,166,914	($310)	$1,166,604	$1,166,604	
Total all funds	$1,170,385	$1,166,914	($310)	$1,166,604	$1,166,604	$0
Less estimated income	1,170,385	1,166,914	(310)	1,166,604	1,166,604	
General fund	$0	$0	$0	$0	$0	$0
FTE	2.87	2.87	0.00	2.87	2.87	0.00

Dept. 649 - Agronomy Seed Farm - Detail of Conference Committee Changes

	REDUCES RECOMMENDED FUNDING FOR HEALTH INSURANCE [1]	TOTAL CONFERENCE COMMITTEE CHANGES
Agronomy Seed Farm	($310)	($310)
Total all funds	($310)	($310)
Less estimated income	(310)	(310)
General fund	$0	$0
FTE	0.00	0.00

1 This amendment reduces the funding for state employee health insurance premiums from $493 to $488.70 per month.

Date: April 21, 2003
Roll Call Vote #: 1

2003 HOUSE STANDING COMMITTEE ROLL CALL VOTES
BILL/RESOLUTION NO. 1021

House Appropriations Education/Environment Division Committee

[X] Check here for Conference Committee

Legislative Council Amendment Number LC # .0209

Action Taken DO PASS AS AMENDED

Motion Made By Rep. Wald Seconded By Senator Bowman

Representatives	Yes	No	Representatives	Yes	No
Representative Brusegaard	X				
Representative Wald	X				
Representative Gulleson	X				
Senator Bowman	X				
Senator Holmberg	X				
Senator Lindaas	X				

Total (Yes) 6 No 0

Absent 0

Floor Assignment Rep. Brusegaard

If the vote is on an amendment, briefly indicate intent: See proposed amendments.

REPORT OF CONFERENCE COMMITTEE

HB 1021, as engrossed: Your conference committee (Sens. Bowman, Holmberg, Lindaas and Reps. Brusegaard, Wald, Gulleson) recommends that the **SENATE RECEDE** from the Senate amendments on HJ pages 1448-1452, adopt amendments as follows, and place HB 1021 on the Seventh order:

That the Senate recede from its amendments as printed on pages 1448-1452 of the House Journal and pages 1269-1274 of the Senate Journal and that Engrossed House Bill No. 1021 be amended as follows:

Page 1, line 3, after "farm" insert "; to provide legislative intent; and to provided for a transfer"

Page 1, after line 13, insert:

"Extension service	$33,567,597
Soil conservation committee	778,679"

Page 1, line 14, replace "34,415,856" with "34,346,276"

Page 1, line 15, replace "20,500,178" with "20,486,830"

Page 1, line 16, replace "13,915,678" with "13,859,446"

Page 1, line 19, replace "1,524,784" with "1,523,347"

Page 1, line 20, replace "777,825" with "777,345"

Page 1, line 21, replace "746,959" with "746,002"

Page 2, line 1, replace "10, 848,064" with "10,844,750"

Page 2, line 2, replace "10,364,776" with "10,361,651"

Page 2, line 3, replace "483,288" with "483,099"

Page 2, line 6, replace "59,757,658" with "60,517,214"

Page 2, line 7, replace "31,519,854" with "32,306,474"

Page 2, line 8, replace "28,237,804" with "28,210,740"

Page 2, line 11, replace "5,282,891" with "5,281,134"

Page 2, line 12, replace "1,669,065" with "1,667,387"

Page 2, line 13, replace "1,523,475" with "1,521,475"

Page 2, line 14, replace "1,283,914" with "1,282,885"

Page 2, line 15, replace "1,714,374" with "1,712,510"

Page 2, line 16, replace "1,644,295" with "1,643,075"

Page 2, line 17, replace "3,329,112" with "3,326,616"

Page 2, line 18, replace "16,447,126" with "16,435,082"

Page 2, line 19, replace "8,968,852" with "8,967,403"

Page 2, line 20, replace "7,478,274" with "7,467,679"

Page 2, line 23, replace "1,166,914" with "1,166,604"

Page 2, line 24, replace "1,166,914" with "1,166,604"

Page 2, line 25, replace "50,862,003" with "50,766,966"

Page 2, line 26, replace "73,298,399" with "74,066,307"

Page 2, line 27, replace "124,160,402" with "124,833,273"

Page 3, after line 31, insert:

"SECTION 8. LEGISLATIVE INTENT - BEEF SYSTEMS CENTER OF EXCELLENCE. It is the intent of the fifty-eighth legislative assembly that a beef systems center of excellence be established by the department of animal and range science with the $800,000 appropriation provided in subdivision 4 of section 1 of this Act in accordance with the provisions of 2003 Senate Bill No. 2334.

SECTION 9. AGRICULTURE PARTNERSHIP IN ASSISTING COMMUNITY EXPANSION FUND - TRANSFER. Notwithstanding the provisions of chapter 6-09.13, the Bank of North Dakota shall transfer $800,000 from the agriculture partnership in assisting community expansion fund to the main research center. The transfer may not be made until $1,000,000 of federal funds and $1,000,000 of special funds from private contributions has been collected for the establishment of a beef systems center of excellence."

Renumber accordingly

STATEMENT OF PURPOSE OF AMENDMENT:

House Bill No. 1021 - Summary of Conference Committee Action

	EXECUTIVE BUDGET	HOUSE VERSION	CONFERENCE COMMITTEE CHANGES	CONFERENCE COMMITTEE VERSION	SENATE VERSION	COMPARISON TO SENATE
Transportation Institute						
Total all funds	$10,901,291	$10,848,064	($3,314)	$10,844,750	$10,844,753	($3)
Less estimated income	10,413,762	10,364,776	(3,125)	10,361,651	10,361,651	
General fund	$487,529	$483,288	($189)	$483,099	$483,102	($3)
Branch research centers						
Total all funds	$16,531,620	$16,447,126	($12,044)	$16,435,082	$16,435,860	($778)
Less estimated income	8,983,676	8,968,852	(1,449)	8,967,403	8,967,403	
General fund	$7,547,944	$7,478,274	($10,595)	$7,467,679	$7,468,457	($778)
NDSU Extension Service						
Total all funds	$35,341,437	$34,415,856	($69,580)	$34,346,276	$34,354,458	($8,182)
Less estimated income	21,239,318	20,500,178	(13,348)	20,486,830	20,486,830	
General fund	$14,102,119	$13,915,678	($56,232)	$13,859,446	$13,867,628	($8,182)
Northern Crops Institute						
Total all funds	$1,536,257	$1,524,784	($1,437)	$1,523,347	$1,523,449	($102)
Less estimated income	782,898	777,825	(480)	777,345	777,345	
General fund	$753,359	$746,959	($957)	$746,002	$746,104	($102)
Main Research Station						
Total all funds	$60,956,183	$59,757,658	$759,556	$60,517,214	$60,721,498	($204,284)
Less estimated income	32,404,239	31,519,854	786,620	32,306,474	31,506,474	800,000
General fund	$28,551,944	$28,237,804	($27,064)	$28,210,740	$29,215,024	($1,004,284)
Agronomy Seed Farm						
Total all funds	$1,170,385	$1,166,914	($310)	$1,166,604	$1,166,604	$0
Less estimated income	1,170,385	1,166,914	(310)	1,166,604	1,166,604	

General fund	$0	$0	$0	$0	$0	$0
Bill Total						
Total all funds	$126,437,173	$124,160,402	$672,871	$124,833,273	$125,046,622	($213,349)
Less estimated income	74,994,278	73,296,399	767,908	74,066,307	73,266,307	800,000
General fund	$51,442,895	$50,862,003	($95,037)	$50,766,966	$51,780,315	($1,013,349)

House Bill No. 1021 - Transportation Institute - Conference Committee Action

	EXECUTIVE BUDGET	HOUSE VERSION	CONFERENCE COMMITTEE CHANGES	CONFERENCE COMMITTEE VERSION	SENATE VERSION	COMPARISON TO SENATE
Transportation Institute	$10,901,291	$10,848,064	($3,314)	$10,844,750	$10,844,753	($3)
Total all funds	$10,901,291	$10,848,064	($3,314)	$10,844,750	$10,844,753	($3)
Less estimated income	10,413,762	10,364,776	(3,125)	10,361,651	10,361,651	
General fund	$487,529	$483,288	($189)	$483,099	$483,102	($3)
FTE	31.50	31.50	0.00	31.50	31.50	0.00

Dept. 627 - Transportation Institute - Detail of Conference Committee Changes

	REDUCES RECOMMENDED FUNDING FOR HEALTH INSURANCE [1]	REDUCES FUNDING FOR INFORMATION TECHNOLOGY COSTS [2]	TOTAL CONFERENCE COMMITTEE CHANGES
Transportation Institute	($3,302)	($12)	($3,314)
Total all funds	($3,302)	($12)	($3,314)
Less estimated income	(3,125)		(3,125)
General fund	($177)	($12)	($189)
FTE	0.00	0.00	0.00

[1] This amendment reduces the funding for state employee health insurance premiums from $493 to $488.70 per month.

[2] This amendment reduces funding for information technology by $12 from the general fund, which represents a reduction in information technology funding from the general fund of approximately 5 percent.

House Bill No. 1021 - Branch Research Centers - Conference Committee Action

	EXECUTIVE BUDGET	HOUSE VERSION	CONFERENCE COMMITTEE CHANGES	CONFERENCE COMMITTEE VERSION	SENATE VERSION	COMPARISON TO SENATE
Dickinson Research Center	$5,216,097	$5,282,891	($1,757)	$5,281,134	$5,281,134	
Central Grasslands Research Center	1,677,073	1,669,065	(1,678)	1,667,387	1,667,578	($191)
Hettinger Research Center	1,616,622	1,523,475	(2,000)	1,521,475	1,521,669	(194)
Langdon Research Center	1,292,947	1,263,914	(1,029)	1,262,885	1,262,925	(40)
North Central Research Center	1,725,235	1,714,374	(1,864)	1,712,510	1,712,676	(166)
Williston Research Center	1,652,770	1,644,295	(1,220)	1,643,075	1,643,154	(79)
Carrington Research Center	3,350,876	3,329,112	(2,496)	3,326,616	3,326,724	(108)
Total all funds	$16,531,620	$16,447,126	($12,044)	$16,435,082	$16,435,860	($778)
Less estimated income	8,983,676	8,968,852	(1,449)	8,967,403	8,967,403	
General fund	$7,547,944	$7,478,274	($10,595)	$7,467,679	$7,468,457	($778)
FTE	73.65	73.65	0.00	73.65	73.65	0.00

Dept. 628 - Branch Research Centers - Detail of Conference Committee Changes

	REDUCES RECOMMENDED FUNDING FOR HEALTH INSURANCE [1]	REDUCES FUNDING FOR INFORMATION TECHNOLOGY COSTS [2]	TOTAL CONFERENCE COMMITTEE CHANGES

Dickinson Research Center	($1,757)		($1,757)
Central Grasslands Research Center	(724)	($954)	(1,678)
Hettinger Research Center	(1,028)	(972)	(2,000)
Langdon Research Center	(827)	(202)	(1,029)
North Central Research Center	(1,035)	(829)	(1,864)
Williston Research Center	(824)	(396)	(1,220)
Carrington Research Center	(1,958)	(538)	(2,496)
Total all funds	($8,153)	($3,091)	($12,044)
Less estimated income	(1,449)		(1,449)
General fund	($6,704)	($3,691)	($10,595)
FTE	0.00	0.00	0.00

1 This amendment reduces the funding for state employee health insurance premiums from $493 to $488.70 per month.

2 This amendment reduces funding for information technology by $3,891 from the general fund, which represents a reduction in information technology funding from the general fund of approximately 5 percent.

House Bill No. 1021 - NDSU Extension Service - Conference Committee Action

	EXECUTIVE BUDGET	HOUSE VERSION	CONFERENCE COMMITTEE CHANGES	CONFERENCE COMMITTEE VERSION	SENATE VERSION	COMPARISON TO SENATE
NDSU Extension Service	$35,341,437	$34,415,856	($848,259)	$33,567,597	$33,575,779	($8,182)
Soil Conservation Committee			778,679	778,679	778,679	
Total all funds	$35,341,437	$34,415,856	($69,580)	$34,346,276	$34,354,458	($8,182)
Less estimate income	21,239,318	20,500,178	(13,348)	20,486,830	20,486,830	
General fund	$14,102,119	$13,915,678	($56,232)	$13,859,446	$13,867,628	($8,182)
FTE	277.57	270.57	0.00	270.57	270.57	0.00

Dept. 630 - NDSU Extension Service - Detail of Conference Committee Changes

	CREATES SOIL CONSERVATION COMMITTEE LINE ITEM [1]	REDUCES RECOMMENDED FUNDING FOR HEALTH INSURANCE [2]	REDUCES FUNDING FOR INFORMATION TECHNOLOGY COSTS [3]	TOTAL CONFERENCE COMMITTEE CHANGES
NDSU Extension Service	($778,679)	($28,669)	($40,911)	($848,259)
Soil Conservation Committee	778,679			778,679
Total all funds	$0	($28,669)	($40,911)	($69,580)
Less estimated income		(13,348)		(13,348)
General fund	$0	($15,321)	($40,911)	($56,232)
FTE	0.00	0.00	0.00	0.00

1 This amendment creates a separate line item under NDSU Extension Service for the Soil Conservation Committee and transfers $778,679 from the general fund to the line item.

2 This amendment reduces the funding for state employee health insurance premiums from $493 to $488.70 per month.

3 This amendment reduces funding for information technology by $40,911 from the general fund, which represents a reduction in information technology funding from the general fund of approximately 5 percent.

House Bill No. 1021 - Northern Crops Institute - Conference Committee Action

	EXECUTIVE BUDGET	HOUSE VERSION	CONFERENCE COMMITTEE CHANGES	CONFERENCE COMMITTEE VERSION	SENATE VERSION	COMPARISON TO SENATE
Northern Crops Institute	$1,536,257	$1,524,784	($1,437)	$1,523,347	$1,523,449	($102)
Total all funds	$1,536,257	$1,524,784	($1,437)	$1,523,347	$1,523,449	($102)

Less estimated income	782,896	777,825	(480)	777,345	777,345	
General fund	$753,359	$746,959	($957)	$746,002	$746,104	($102)
FTE	8.17	8.17	0.00	8.17	8.17	0.00

Dept. 638 - Northern Crops Institute - Detail of Conference Committee Changes

	REDUCES RECOMMENDED FUNDING FOR HEALTH INSURANCE [1]	REDUCES FUNDING FOR INFORMATION TECHNOLOGY COSTS [2]	TOTAL CONFERENCE COMMITTEE CHANGES
Northern Crops Institute	($929)	($508)	($1,437)
Total all funds	($929)	($508)	($1,437)
Less estimated income	(480)		(480)
General fund	($449)	($508)	($957)
FTE	0.00	0.00	0.00

1 This amendment reduces the funding for state employee health insurance premiums from $493 to $486.70 per month.

2 This amendment reduces funding for information technology by $508 from the general fund, which represents a reduction in information technology funding from the general fund of approximately 5 percent.

House Bill No. 1021 - Main Research Station - Conference Committee Action

	EXECUTIVE BUDGET	HOUSE VERSION	CONFERENCE COMMITTEE CHANGES	CONFERENCE COMMITTEE VERSION	SENATE VERSION	COMPARISON TO SENATE
Main Research Station	$60,956,183	$59,757,658	$759,556	$60,517,214	$60,721,498	($204,284)
Total all funds	$60,956,183	$59,757,658	$759,556	$60,517,214	$60,721,498	($204,284)
Less estimated income	32,404,239	31,519,854	786,620	32,306,474	31,506,474	800,000
General fund	$28,551,944	$28,237,804	($27,064)	$28,210,740	$29,215,024	($1,004,284)
FTE	358.55	349.19	0.00	349.19	349.19	0.00

Dept. 640 - Main Research Station - Detail of Conference Committee Changes

	PROVIDES FUNDING FOR BEEF SYSTEMS CENTER OF EXCELLENCE [1]	REDUCES RECOMMENDED FUNDING FOR HEALTH INSURANCE [2]	REDUCES FUNDING FOR INFORMATION TECHNOLOGY COSTS [3]	PROVIDES FUNDING FOR INTERACTIVE VIDEO NETWORK COSTS [4]	TOTAL CONFERENCE COMMITTEE CHANGES
Main Research Station	$800,000	($39,020)	($21,424)	$20,000	$759,556
Total all funds	$800,000	($39,020)	($21,424)	$20,000	$759,556
Less estimated income	800,000	(13,380)			786,620
General fund	$0	($25,640)	($21,424)	$20,000	($27,064)
FTE	0.00	0.00	0.00	0.00	0.00

1 This amendment provides $800,000 to the Main Research Center from the agriculture partnership in assisting community expansion (Ag PACE) fund for establishment of a Beef Systems Center of Excellence in the Department of Animal and Range Science, pursuant to the provisions of 2003 Senate Bill No. 2334.

2 This amendment reduces the funding for state employee health insurance premiums from $493 to $488.70 per month.

3 This amendment reduces funding for information technology by $21,424 from the general fund, which represents a reduction in information technology funding from the general fund of approximately 5 percent.

4 This amendment provides $20,000 to the Main Research Center to be distributed to branch research centers to assist in offsetting Interactive Video Network costs in remote areas.

The Conference Committee replaced the $1 million general fund appropriation for the Beef Systems Center of Excellence with a $800,000 appropriation from the Ag PACE fund. The Conference Committee also added intent that $1 million in federal funds and $1 million in special funds be collected prior to spending the $800,000 appropriation from the Ag PACE fund for the Beef Systems Center of Excellence.

House Bill No. 1021 - Agronomy Seed Farm - Conference Committee Action

	EXECUTIVE BUDGET	HOUSE VERSION	CONFERENCE COMMITTEE CHANGES	CONFERENCE COMMITTEE VERSION	SENATE VERSION	COMPARISON TO SENATE
Agronomy Seed Farm	$1,170,385	$1,166,914	($310)	$1,166,604	$1,166,604	
Total all funds	$1,170,385	$1,166,914	($310)	$1,166,604	$1,166,604	$0
Less estimated income	1,170,385	1,166,914	(310)	1,166,604	1,166,604	
General fund	$0	$0	$0	$0	$0	$0
FTE	2.87	2.87	0.00	2.87	2.87	0.00

Dept. 649 - Agronomy Seed Farm - Detail of Conference Committee Changes

	REDUCES RECOMMENDED FUNDING FOR HEALTH INSURANCE 1	TOTAL CONFERENCE COMMITTEE CHANGES
Agronomy Seed Farm	($310)	($310)
Total all funds	($310)	($310)
Less estimated income	(310)	(310)
General fund	$0	$0
FTE	0.00	0.00

1 This amendment reduces the funding for state employee health insurance premiums from $493 to $488.70 per month.

Engrossed HB 1021 was placed on the Seventh order of business on the calendar.

2003 TESTIMONY

HB 1021

Prepared by the North Dakota Legislative Council
staff for House Appropriations
January 13, 2003

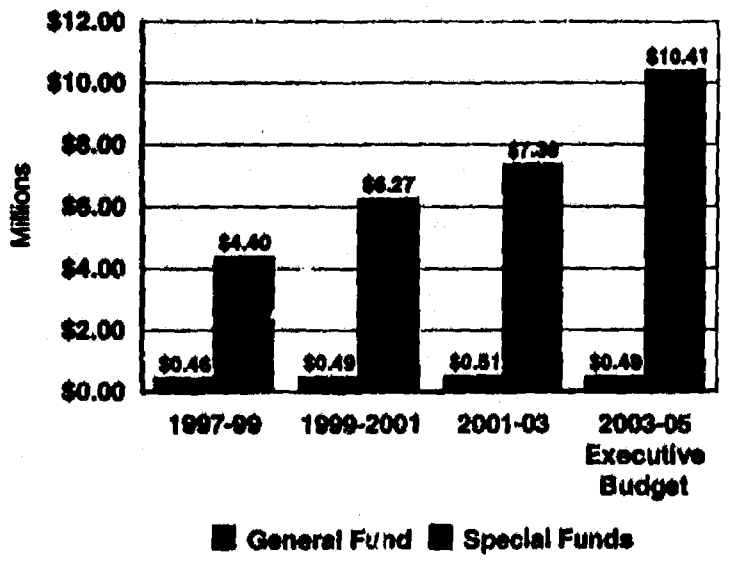
Department 627 - Upper Great Plains Transportation Institute
House Bill No. 1021

	FTE Positions	General Fund	Other Funds	Total
2003-05 Executive Budget	31.50	$487,529	$10,413,762	$10,901,291
2001-03 Legislative Appropriations	28.50[1]	505,079[2]	7,383,348	7,888,427
Increase (Decrease)	3.00	($17,550)	$3,030,414	$3,012,864

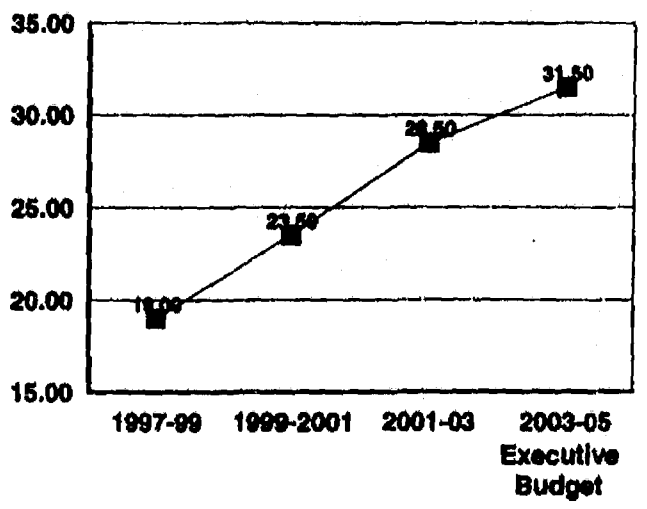
[1] The 2001-03 appropriation is based on 27.75 FTE positions. Section 4 of 2001 Senate Bill No. 2021 authorizes the State Board of Higher Education to adjust FTE positions as needed. The 28.5 FTE positions shown above represent the employee positions reported to the Office of Management and Budget.

[2] The 2001-03 general fund appropriation is the amount appropriated by the 2001 Legislative Assembly and does not include a reduction of $5,303 relating to the 1.05 percent budget allotment ordered by Governor Hoeven in July 2002 and $87,775 carried forward from the 1999-2001 biennium.

Agency Funding



FTE Positions



Executive Budget Highlights

	General Fund	Other Funds	Total
1. Adds funding for 1 FTE research fellow position for the Small Urban and Rural Transit Center to be funded by grants and contracts		$131,682	$131,682
2. Adds funding for 1 FTE research fellow position for the Advanced Traffic Analysis Center to be funded by grants and contracts		$131,682	$131,682
3. Adds funding for 1 FTE research fellow position for the North Dakota Department of Transportation Support Center to be funded by grants and contracts		$131,682	$131,682
4. Increases funding for operating expenses primarily due to additional grants and contracts and reduces the general fund for the 95 percent budget guideline	($27,569)	$1,665,214	$1,637,645
5. Increases funding for salaries and wages due to additional grants and contracts	$2,315	$520,673	$522,988
6. Decreases general fund authority for a 1999-2001 biennium carryover	($87,775)		($87,775)

7.	Increases funding for research grants for programs, including the Small Urban and Rural Transit Center and Mountain Plains Consortium from additional federal funds	$360,000	$350,000

Major Related Legislation

Section 4 of House Bill No. 1021 authorizes the State Board of Higher Education to adjust or increase full-time equivalent positions for the Upper Great Plains Transportation Institute and report any adjustments to the Office of Management and Budget.

Section 5 of House Bill No. 1021 authorizes the carryover of any unexpended general fund appropriation and excess income received by the Upper Great Plains Transportation Institute to the 2005-07 biennium.

House Bill No. 1087 - This bill increases the powers and duties of the Upper Great Plains Transportation Institute to conduct and supervise research in the field of logistics and to use research to influence the socioeconomic systems of the state, region, and country.

Exhibit #1
HB 1021

SENATE APPROPRIATIONS COMMITTEE

Senator Ray Holmberg, Chair
11:15 AM
Tuesday, March 4, 2003

HB 1021
UPPER GREAT PLAINS TRANSPORTATION INSTITUTE
NORTH DAKOTA STATE UNIVERSITY

GENE GRIFFIN, DIRECTOR

UPPER GREAT PLAINS TRANSPORTATION INSTITUTE
NORTH DAKOTA STATE UNIVERSITY

Creating a Better Future for North Dakota
by
Enhancing the Economy and Socialization through Mobility

Mr. Chairman, committee members. I would like to report to you some of the accomplishments of North Dakota's Transportation Institute in the thematic area of *Rural and Small Urban Transportation and Logistics*.

The goal of the Transportation Institute is to make an important contribution to North Dakota's economy and socialization through improving mobility of freight and people. It achieves this by:

1. Carrying on the development of knowledge, information, and innovation and assisting in applying it to private and public sector interests to improve competitiveness, efficiency, safety, and personal mobility.

2. Continuing to educate, train, and mentor the transportation practitioners and leaders for the future in a rapidly advancing and increasingly complex field with sophisticated technology applications.

3. Enhancing our status as a nationally recognized center of excellence that attracts the necessary talent and funding enabling the Institute to contribute to North Dakota's economy and society, and the state's image.

Selected Program Accomplishments

AGRICULTURE TRANSPORT CENTER

- Conducted a national symposium in North Dakota on Agriculture and Transportation Linkages. One of the main findings was that transportation is what keeps the United States competitive in international bulk commodity markets.

- Established a research center devoted to agricultural transportation in cooperation with the USDA. The center is unique in its dedication to research of infrastructure investment, policy development, and technology transfer that enhances the competitiveness of the U.S. agricultural sector.

- Conducted an industry survey of elevators and farm trucks in the Plains region. Research results showed that there is strong expectations for continued consolidation in the country elevator industry and that farm trucks are rapidly increasing in size, either as a result or because of this, or both.

- Completed a study that evaluated capital investment needs of the shortline industry, financing terms available for meeting these needs, and the public benefits of shortline railroads. There is a serious gap between needs and available capital. The findings are being used in the national debate concerning a program to fund shortline railroad infrastructure.

- Completed a study examining the impact of the railroad industry switch to heavier cars on the state of North Dakota. There are indications of important implications for the state's rural road and highway system as heavier cars make many light density lines obsolete.

STRATEGIC TRANSPORTATION ANALYSIS PROGRAM

- Completed the Strategic Freight Program Analysis for grains and oilseeds. Significant findings included the impacts of 110-car loading facilities. This information has been used by the industry to plan for location of facilities as well as public policy makers and the state DoT to plan for the future.

- The Strategic Freight Program evaluated container/trailer intermodal needs for the state. An important conclusion is that North Dakota needs economically viable access to intermodal transportation service if it is to participate in the changing agriculture and manufacturing economy of the 21st Century. Additionally, legislation for port authority will be introduced in this session to facilitate the development of such facilities. Other significant contributions were made in the area of site evaluation and variables contributing to the success of an intermodal facility.

SMALL URBAN AND RURAL TRANSIT CENTER

- Established the Small Urban and Rural Transit Center in cooperation with the Federal Transit Administration. The goal of the center is to improve mobility for transit dependent people, and improve transit availability and attractiveness through research, education, and outreach and training to transit officials in North Dakota, Montana, South Dakota, Wyoming, and Minnesota.

- Completed a study on Intelligent Transportation Systems: Helping Public Transit Support Welfare to Work Initiatives. An important finding was that rural transit systems lag significantly behind urban systems in adopting technologies that can improve service and effectiveness.

- Initiated a project with the Community Transportation Association of America to revise and adopt a transit manager training program. Important impacts include the development of a system for training transit managers in sparsely populated rural regions of the United States through distance learning, as well as on-sight classes.

- Initiated a project to develop an Intelligent Transportation Systems (ITS) toolbox for rural transit systems. This project will help rural systems utilize state-of-the-art technologies to improve efficiency, effectiveness, and overall service to rural small urban customers.

- Currently working with the state and a local transit agency to address the development of a hybridized fixed/flexible route system to better serve transit customers and simultaneously reduce costs.

ADVANCED TRAFFIC ANALYSIS CENTER (ATAC)

- Provided the state DoT with technical assistance in ITS activities, including: (1) Planning for and developing a ND DoT Traffic Operations Center in Fargo; (2) Completing a statewide strategic plan for ITS; and, (3) Assisting the state DoT in developing Regional ITS Architecture. These efforts will help the state and local governments adopt new technologies that will improve mobility.

- Supported traffic operations, traffic management, traffic safety, and transportation planning for ND DoT, Bismarck, Fargo, Grand Forks, and across the state by: (1) Using the ATAC video traffic data collection system; (2) Enhancements to travel demand models; (3) Applying new modeling technologies and systems; (4) Enhancing transportation planning data; (5) Providing expertise for technical assistance; and, (6) Offering training on traffic management tools to local and state practitioners.

- Created a new traffic lab and training facility which is used for conducting the ATAC training programs and also allowing better integration of students into the program.

- Conducted training nationwide on the state-of-the-art VISSIM traffic simulation program. ATAC is the official trainer for VISSIM. This has raised the visibility of the state of North Dakota as a place where high tech activity is taking place.

DOT SUPPORT CENTER

- Developed a study which quantified the economic impacts of various types of transportation investments. This study was prepared as basic information for the Strategic Transportation Plan.

- Developed and completed a study which outlined legislated or directed roles and responsibilities for transportation management in North Dakota. Again this was a basic element of the Strategic Transportation Plan. This study also illuminated current areas where duplication existed and significant transportation management issues to be solved.

- Completed a pilot study which integrated global positioning system and geographic information system technology into highway maintenance program management. Personal digital assistants (PDA's), coupled with portable GPS units, were programmed

to collect highway condition information and assist maintenance managers in determining annual maintenance programs.

- A study was completed which described current technology and standards for the collection and analysis of ride data. Also described were other state's specifications for attaining smoother pavements. This study is a base document supporting the ND DoT objective of improving ride quality on the state system 10 percent by March of 2007.

- To date, state DoT engineers on campus and with student support, have completed designs on 19 projects worth over $41,000,000. Four of the students in this program have graduated and have been hired by the DoT. This program has become an excellent recruiting tool for the DoT as well as a hands-on training device for students who are employed by both the private and public sector.

- During the biennium, students provided support and assistance to the DoT IT staff by completing system maintenance, staff training and small IT projects. This program also provides students with hands-on experience.

TRANSPORTATION SAFETY SYSTEMS CENTER

- In addition to the continuous enhancements of its commercial vehicle enforcement software, the *Transportation Safety Systems Center* developed and deployed Query Central, a web-based intelligent query system. Query Central consolidates real-time commercial vehicle, driver, and company safety information for use by Federal and State motor carrier safety specialists nationwide, thereby improving compliance and enforcement of truck safety regulations and laws.

- The *Transportation Safety Systems Center* continued its safety-related research with the completion of a landmark study regarding the use of driver traffic conviction data to identify high safety risk commercial vehicle companies. This study will assist in better focusing of enforcement efforts to reduce crashes on our highways.

TEL8 DISTANCE LEARNING SYSTEM

- TEL8 expanded its network again the past year. Additional Department of Transportation (DoT) district sites were tested and added to the system bringing the total number of sites affiliated with TEL8 to 30, thereby increasing coverage and improving exchange of information and ideas among transportation practitioners and leaders in the region.

- DoT district sites significantly increased their on-line participation in the network, almost doubling their TEL8 bridge activity, validating the usefulness of this program in improving training and program performance.

- The MPC short courses and the MPC-X seminar series were initiated. The PE exam MPC short course has had more than 150 participants located across a dozen sites in the upper midwest and mountain states. MPC-X seminars offered over TEL8 included traffic analysis of the 2002 Winter Olympics and a presentation on Modeling Land Use Relationships.

EDUCATION

- A doctoral program in transportation and logistics was approved by the State Board of Higher Education, resulting in NDSU becoming one of the few universities in the United States to offer such a degree. Further, the program is truly interdisciplinary being offered through three colleges, four departments, and the Transportation Institute. Six students are currently enrolled with inquires from as far away as California and several foreign countries.

- Student involvement at the Institute this year currently consists of 41 students, 6 doctoral candidates, 9 in the masters degree programs, and 26 undergraduate students.

MOUNTAIN PLAINS CONSORTIUM (MPC)

- Continued our successful consortium partnership with Colorado State University, University of Wyoming, and University of Utah, and won the U.S. DOT competition for the University Transportation Centers Program for Federal Region 8, for the TEA-21 period.

- Thus far during the TEA-21 period, 675 graduate students have enrolled in transportation-related degree programs offered at the MPC universities. During this period, MPC has delivered 155 undergraduate and 216 graduate transportation and transportation-related courses. A total of 10,235 students have completed these courses, including 3,518 students in FY 2001-2002. Thus far during the TEA-21 period, 175 students have received advance transportation-related degrees at the four MPC universities, including 33 doctoral degrees. Forty of the advanced degrees were awarded in FY 2001-2002.

- Thus far during the TEA-21 period, MPC has published 28 transportation research reports, including 11 reports in 2002. A total of 248 students have been involved in these research projects, including 111 in FY 2001-2002.

OTHER

- Continuation of Low Volume Roads Program of Research & Service.
  - Completion of Regional Rural Road Needs Assessment for the tri states of North Dakota, South Dakota, and Montana. The findings provide information to assist decision makers as they make difficult decisions regarding their road systems.

Prepared by the North Dakota Legislative Council
staff for House Appropriations
January 21, 2003

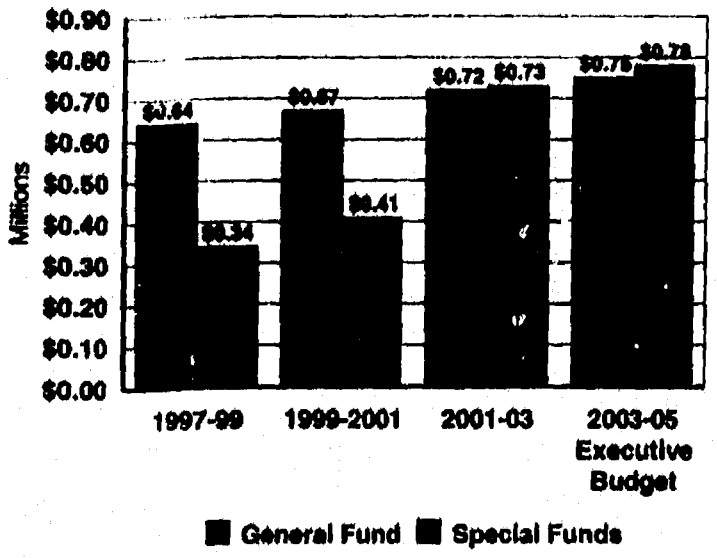
Department 638 - Northern Crops Institute
House Bill No. 1021

	FTE Positions	General Fund	Other Funds	Total
2003-05 Executive Budget	8.17	$753,359	$782,898	$1,536,257
2001-03 Legislative Appropriations	8.17[1]	724,426[2]	732,697	1,457,123
Increase (Decrease)	0.00	$28,933	$50,201	$79,134

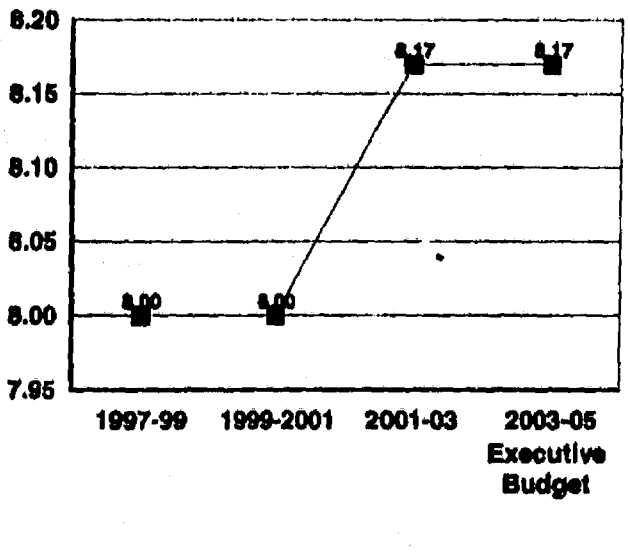
[1] The 2001-03 appropriation is based on 8.0 FTE positions. Section 4 of 2001 Senate Bill No. 2021 authorizes the State Board of Higher Education to adjust FTE positions as needed. The 8.17 FTE positions shown above represent the employee positions reported to the Office of Management and Budget.

[2] The 2001-03 general fund appropriation is the amount appropriated by the 2001 Legislative Assembly and does not include a reduction of $7,606 relating to the 1.05 percent budget allotment ordered by Governor Hoeven in July 2002.

Agency Funding



FTE Positions



Executive Budget Highlights

	General Fund	Other Funds	Total
1. Decreases funding for salaries and wages and operating expenses to meet the 95 percent guideline	($36,221)	($14,988)	($51,209)
2. Restores funding for salaries and wages which were reduced to meet the 95 percent budget guideline	$21,520	$50,745	$72,265
3. Increases funding for cost to continue salary increases ($10,889) and operating inflation ($17,591)	$28,480		$28,480

Major Related Legislation

Section 3 of House Bill No. 1021 authorizes transfer appropriation authority between the Main Research Center, the branch research centers, NDSU Extension Service, and Northern Crops Institute.

Section 4 of House Bill No. 1021 authorizes the State Board of Higher Education to adjust or increase full-time equivalent positions for Northern Crops Institute and report any adjustments to the Office of Management and Budget.

Section 5 of House Bill No. 1021 authorizes the carryover of any unexpended general fund appropriation and excess income received by the Northern Crops Institute.

Exhibit #10

Testimony for Northern Crops Institute

Good afternoon, Chairman Holmberg and committee members.

My name is Brian Kaae. I am Vice-Chair of the Northern Crops Council, the governing board of the Northern Crops Institute. I am a producer of durum wheat and other crops from Dagmar, Montana and a Director of the Montana Wheat and Barley Committee (past chair). As you are aware, the NCI represents four states including Montana. I would like to add my support, the support of producers in our four states, and especially those who serve on the Northern Crops Council for NCI.

The importance of the NCI is even greater today than in the past because of increasing global competition for market share of crops produced in our region of the U.S. As an example, because there are new global competitors today (such as those in the Black Sea region) who can provide lower priced wheat to many of our traditional U.S. wheat import markets, we need a competitive advantage. Emphasis on high quality and advantages of our wheat for specific end-uses must be emphasized. NCI programs 1) promote the quality of our crops, 2) provide the processing technology to end-users and 3) teach how to purchase crops through the complicated U.S. system. In addition, they have been very effective in developing excellent relationships with our buyers over their 20 year history.

If we are to remain competitive in the global marketplace, we must support programs at the NCI, our only regional organization that focuses on quality, technology and purchasing. Please support the budget request before you.

Thank you.

PATRICIA Berglund
HB 1021

Northern Crops Institute

Connecting in the Global Marketplace

January 2003

NCI NORTHERN CROPS INSTITUTE

Prepared for the North Dakota Legislature

Introduction

The Northern Crops Institute (NCI) 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. The staff and governing board of the Northern Crops Institute extend their sincere thanks for your past support.

Although the events of 2001 greatly impacted travel and the potential numbers of international visitors for training and trade teams, to date we have educated and met with representatives of 55 countries during this biennium.

Some of our major accomplishments are highlighted in these materials. The NCI continues to focus on education and technical services as mandated in the Century Code. Our 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 economy of our entire region is less than desirable, but the severe extended drought in Montana has already impacted NCI's funding. Deficits in Minnesota and South Dakota also may affect NCI funding in the next year or two.

The executive recommendation for our budget is very supportive of our work and will allow us to carry on the excellent work that the NCI staff has done in the past. I ask you to support the executive recommendation of the NCI budget before you.

Thank you for your continued interest and support.

Respectfully submitted,
Patricia T. Berglund, Ph.D.
Director
Northern Crops Institute

Northern Crops Institute

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.

Major Accomplishments (Current Biennium):

1. Contributed to market development and global awareness of North Dakota and four-state regional crop quality and availability through programs listed.

2. Educated 500 participants in NCI short courses and trade teams.

3. 2001 and 2002 "Grain Procurement Management for Importers" courses attained record enrollments with a total of 93 people from 33 countries and 5 continents.

4. Provided customized grain procurement courses in soybeans, wheat and corn for regional companies and international buyers.

5. Taught courses overseas: "Price Analysis and Risk Management Strategies" to 45 representatives of mills, trading companies and government buying agencies in Tunisia, Algeria, Libya, and Morocco; and "Pasta Technology" to 50 university and milling/pasta industry representatives in Mexico.

6. Offered courses in partnership with U.S. Wheat Associates, American Soybean Association, U.S. Grains Council, American Society for Brewing Chemists, Association of Operative Millers, American Association of Cereal Chemists, Association of Oil Chemists Society, USDA/FAS Cochran Program, NDSU Extension Service and others.

7. Hosted and promoted regional agriculture to over 1500 visitors, short course participants and lecturers from 55 countries.

8. Added value to northern-grown crops through technical services in the form of processing, and providing consulting and processing solutions to processors and users of regional commodities in the region, U.S., and around the globe.

9. NCI's Feed Production Center offers educational programs and produces complete feeds, concentrates, supplements and custom premixes, which are used in animal research. Since becoming operational in 1991, the NCI feed production center has provided in excess of 21,000 tons of feed. Average yearly feed production is 2,000-2,500 tons, mostly for NDSU Experiment Station and Research and Extension Centers.

10. Provided quality assurance/quality control workshops for livestock and poultry feed producers in Tunisia, Morocco and Albania.

11. Provided lectures and demonstrations for NDSU, SDSU and other regional universities.

12. Established 23-member Industry Advisory Board from the four-state agricultural supply and processing industry and grain trade to broaden regional support.

Budget Summary

Funding Source	2001-2003 Appropriation	2003-2005 Executive Recommendation
General Fund	$ 724,426	$ 753,359
Special Funds	$ 732,697	$ 782,898
	$ 1,457,123	$ 1,536,257

2003-2005 Executive Recommendation HB 1021

	General Fund	Special Funds	Total Funds
95% Budget Request	$ 688,205	$ 717,709	$ 1,405,914
Adjustments:			
Reinstate .8 FTE in request	21,520	50,745	72,265
Reinstate cuts to fund cost	10,889		10,889
Updates of facilities and personnel training	17,591		17,591
Fund salary and health insurance increases	15,154	14,444	29,598
Total per executive recommendation	$ 753,359	$ 782,898	$ 1,536,257
Unfunded:			
NCI Feedmill utilities	$ 14,701		

Northern Crops Institute

Regional Funding

2001-2003

NCI's budget is a mix of funding from the four-state region.

ND General Fund:		**$ 724,426 ***
Special Funds:		
Other State Revenues (SD and MN)	240,000	
Commodity Check-off	205,500	
Miscellaneous Income	287,197	
		$ 732,697 **
Total Revenue		**$ 1,457,123**

* In FY03, there was a 1.05% allotment of $7,606.

** It is anticipated that there may be a shortfall in special funds.

Impact

The Northern Crops Institute (NCI) does not buy or sell crops – we make it easier for everyone else to do so.

- NCI programs focus on issues that assist in developing and maintaining markets for agricultural producers in N.D. and the region.
- NCI provides technical information on crop utilization by means of educational programs, technical processing and consulting, and special services.

Examples of Success:

Representatives of Jalaisco, Mexico made a trade visit to NCI in June 2001. The visit contributed to the sale of more than $1 million worth of Minnesota soybeans in 2002. The group, sponsored by Minnesota's Department of Agriculture, came to NCI to learn more about the region's soybeans.

NCI returned to Tunisia in April 2002 to teach "Price Analysis and Risk Management Strategies" to 45 people from commercial trading companies, mills, and government buyers from Algeria, Libya, Morocco and Tunisia. The first overseas Grain Procurement Management for Importers short course was taught in Tunisia and Morocco in 1999. Libya's interest in U.S. durum wheat was rekindled after the 1999 course in Tunisia. In that same year, Libya made its first purchase of U.S. durum since sanctions were lifted.

After last year's success, the Brazilian Pasta Association requested a repeat of NCI's 2001 Brazilian pasta course. In August, a team of Brazilian pasta manufacturers came to NCI to train at the "Pasta: Raw Materials and Processing Technology" short course. The Brazilian Pasta Association ABIMA proclaimed the course, "Excellent in every aspect-very good program with a great balance between theory and practical lessons." The course was sponsored by the USDA Cochran Fellowship program and U.S. Wheat Associates.

Results from educational programs are long-term. One must look at what the NCI does in the same way as one looks at 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.

The NCI is the prime source of educational and technical programs for northern grown crops. Demand continues to increase for its programs and services. Such demand is also a reflection of the success of its activities to date and the credibility of the information provided through its programs.

Northern Crops Institute

Promotion of Regional Agriculture and Northern-Grown Crops

In 2001 and 2002, NCI hosted over 1,800 visitors, short course participants and lecturers from 55 countries:

Albania
Algeria
Australia
Austria
Belgium
Bolivia
Bosnia & Herzegovina
Brazil
Canada
Colombia
Costa Rica
Croatia
Dominican Republic
Egypt
El Salvador
European Union
France
Georgia
Germany
Indonesia
Ireland
Italy
Ivory Coast
Japan
Lebanon
Libya
Mexico
Morocco
Netherlands
Nigeria
People's Republic of China
Peru
Philippines
Poland
Puerto Rico
Romania
Russia
Senegal
Slovenia
South Africa
South Korea
Spain
Taiwan
Tanzania
Thailand
Tunisia
Turkmenistan
United Arab Emirates
United Kingdom
USA
Uzbekistan
Venezuela
Yemen
Yugoslavia
Zimbabwe

2001-2003 Highlights

Education Programs

2001 Grain Procurement Course/18 Nations

Representatives from eighteen countries attended NCI's annual Grain Procurement courses in 2001. Thirty-six grain buyers, processors, millers, and government representatives gathered for two separate courses to learn more about the U.S. grain merchandising system. The Advanced Grain Procurement Strategies course was held in April. Grain Procurement Management for Importers course was held in September. Countries represented were:

- Belgium
- Bolivia
- Costa Rica
- Egypt
- El Salvador
- Germany
- Indonesia
- Italy
- Netherlands
- Nigeria
- People's Rep. of China
- Peru
- Philippines
- South Africa
- United Arab Emirates
- United Kingdom
- USA
- Zimbabwe

2002 Grain Procurement Course/22 Nations

Forty-one participants from 22 nations accounted for a record enrollment at NCI Grain Procurement Course in September 2002. The group learned the fine points of the U.S. grain merchandising system and how to effectively buy northern-grown crops. The professionals come from national food buying agencies, flour mills, grain trading companies, pasta manufacturers, and food distributors on five continents. Countries represented included:

- Austria
- Brazil
- Dominican Republic
- Egypt
- Indonesia
- Italy
- Ivory Coast
- Japan
- Lebanon
- Netherlands
- People's Rep. of China
- Philippines
- Poland
- Romania
- Slovenia
- South Africa
- Spain
- Taiwan
- Tanzania
- Tunisia
- Yemen
- Yugoslavia

Comments from International Course Participants:

Tunisia, North Africa:
"It is very important to be in the U.S., to see the farms and to meet the farmers. It is very helpful to meet so many contacts face-to-face because you can listen to their strategies in exports."

Yugoslavia, Eastern Europe:
"The course is very important to us from Eastern Europe especially. In our country, Yugoslavia, we are just in the first steps of the exchange market. The quality system in America is important. The course is excellent."

Poland, Northern Europe:
"Due to the fact that the U.S. is one of biggest grain exporters, it is very important for us to see how grain, and wheat especially, is grown, how the logistic facilities work and how the grain is handled here in the U.S. I have learned a lot especially about future trading and basis. The level of the lecturers was very, very high. I think the course was managed very well with a small staff of people. The course was a great performance by the staff of Northern Crops Institute."

Philippines, Asia:
"This course was very helpful to me. Some of the things discussed were things that I didn't know were actually needed in purchasing, like logistics and quality inspections. I enjoyed most of all the Minneapolis Grain Exchange. That's a place that's especially close to me, because every day I have to look at the price of wheat, whether it went up or went down. Now I have a better idea of how the prices are determined and how exactly the commodities are traded here. Going to the farms and the elevators and port of Duluth to see the operations was important. Talking to the farmers themselves and seeing the new technologies they are using on their farms gives us an idea of what will happen in the next few years regarding our purchases of U.S. wheat."

Education Programs (con't.)

Overseas Procurement Course/North Africa
NCI returned to Tunisia in April 2002 to teach "Price Analysis and Risk Management Strategies" to 45 people from commercial trading companies, mills, and government buyers from Algeria, Libya, Morocco and Tunisia. The first overseas Grain Procurement Management for Importers short course was taught in Tunisia and Morocco in 1999.

Barley/Korea
Seven Korean food processors and researchers participated in a three-day program on food uses of barley at the NCI in August 2002. This is a follow-up to research and promotion of barley for food conducted at NDSU and NCI.

Durum Wheat/Brazil
In 2001, twelve members of Brazilian Millers Association (ABITRIGO) and Brazilian Pasta Association (ABIMA) attended a pasta course at NCI. The course was designed to provide production managers with technical information on durum varieties, commercial pasta production, including hands-on demonstrations of extrusion and drying processes. In 2002, ABIMA asked NCI to repeat the course, which attracted 10 pasta manufacturers. The Brazilian Pasta Association ABIMA proclaimed the 2002 course, "Excellent in every aspect—very good program with a great balance between theory and practical lessons."

Durum Wheat/Colombia
Two food engineers from Pastas Doria, the l rgest pasta producer in Colombia, came to NCI in 2001 to study blending of U.S. wheat classes for pasta products. Pastas Doria currently has a 48% share of the pasta market in Colombia and is interested in exploring the use of U.S. wheat for pasta.

Durum Wheat/US Pasta Industry
Fourteen pasta manufacturers participated in NCI's annual Pasta and Noodles: Raw Materials and Processing course in April 2002. Course highlights included fundamentals associated with manufacture of extruded, sheeted, and precooked pasta, and quality tests employed in the evaluation of raw materials (wheat, semolina, flour) and finished products.

Durum Wheat/Mexico
A new course to be offered off-site, "Processing Technology of Durum and Pasta," will be taught in Mexico in February 2003. Estimated enrollment approaches 70 participants, who represent the pasta and milling industries of Mexico, Central and South America. The course is sponsored by the Mexican Milling Association. The course gives NCI staff an opportunity to educate this group about the qualities of northern durum.

Soybeans/China
Soybean procurement management was the focus of a sixteen-member team from People's Republic of China who came to NCI in July 2001. China is currently among the largest importers of American soybeans. During the two-week course, the group learned about U.S. soybean production and processing, quality characteristics, commodity analysis, futures trading, U.S. export and inspection systems, and price risk management.

Soybeans/Mexico
Eight representatives of the state of Jalisco in Mexico came to NCI in June 2001 to learn more about soybeans produced in this region and their use in poultry production. Minnesota's Department of Agriculture (MDA) sponsored the trip. The visit contributed to the sale of more than $1 million worth of Minnesota soybeans to the Jalisco in 2002, according to the Minnesota Department of Agriculture.

Wheat/China
Nine grain traders from China's Sinograin Company attended a Grain Procurement Management for Importers course in July 2001 at NCI, sponsored by U.S. Wheat Associates, to learn more about the U.S. grain trading system. Sinograin is one of three key central government bodies dealing with wheat purchases in China.

Livestock and Poultry Feed/Morocco
In September 2002, twenty-eight feed millers attended quality assurance/quality control workshops in Morocco taught by NCI's feedmill manager. The seminars, sponsored by the American Soybean Association, were repeats of last year's workshops in Tunisia.

2001-2003 Highlights

Technical Processing and Analytical Testing

Corn
NCI processed corn for a project at the University of Illinois, in which new varieties/hybrids are evaluated using extrusion processing. Initial results were promising.

Flax
NCI produced fish food containing flax for a nutritional study at NDSU.

Pasta Processing
Continued processing and technical assistance to Dakota Growers Pasta Company has resulted in a close relationship that has resulted in NCI being considered their product development center.

Soybeans
NCI provided processing expertise and necessary equipment for the development of a soy-based, high-protein breakfast cereal and a meat analog product made from texturized soy protein isolate. All testing was carried out in the NCI Processing Laboratory utilizing the Wenger TX-52 twin-screw extruder. The Minnesota based company built a plant and purchased equipment based on the information and experience gained from their involvement with NCI.

Soybeans
NCI staff is testing bread utilizing soy flour, soybean oil and soymilk. A short course on variety breads is planned in the near future.

Soybeans
NCI teamed up with FarmConnect to assist in identifying markets for a soy powder developed by SoyLink. FarmConnect is a cooperative of farmers from North Dakota, South Dakota and Minnesota that identifies and develops market opportunities.

Soybeans
A soybean project at NCI is a continuation of work done about two years ago for a regional university. NCI staff is testing the introduction of soy into pasta and third-generation snack foods.

Soybeans, Corn, Barley
NCI's Feed Production Center offers educational programs and produces complete feeds, concentrates, supplements and custom premixes, which are used in animal research. In September 2002, NCI's Feed School attracted over 20 persons to learn more about the principles of feedlot production, nutrition, management, and marketing. The feed products are used by the NDSU on-campus livestock units and out-state Research and Extension Center in day-to-day feeding, as well as experimental feeding programs. The feed production center can reduce the particle size of grains, oilseeds, pulses, or other material for inclusion into diets or for further processing into pellets. The feed production center provides "hands-on" experience in feed manufacturing technology to undergraduate and graduate students. Since becoming operational in 1991, the NCI feed production center has provided in excess of 21,000 tons of feed.

Sunflowers
A new roasted sunflower spread food product (Sunbutter) was evaluated in a variety of food products for SunGold Foods (Red River Commodities) of Fargo, North Dakota. Also a processing facts sheet and testing summary were prepared for distribution in press kit for news conference at IFT meeting in Anaheim, at SunGold's booth at IFT and at two local unveiling ceremonies attended by ND Governor Hoeven, ND Lt. Governor Jack Dalrymple, ND Ag Commissioner Roger Johnson and area mayors.

Sunflowers and Wheat
NCI did development work with a regional company for a pelleted product comprised of sunflower hull dust, wheat straw dust and sawdust from completed fiber board sizing. The work resulted in the company's purchase of a pellet mill. They are producing approximately 20 tons/day of pellets that are being sold as a feed ingredient for ruminants.

Technical Processing and Analytical Testing (con't.)

Durum Wheat
NCI personnel provide technical assistance to the pasta industry, with several recent examples involving the production of frozen pasta products. Our connection with the pasta industry, equipment manufacturers and the NDSU durum breeding, quality and pasta research personnel give us unique insight into issues that face pasta processors.

Wheat
In June 2002, the NCI coordinated a meeting with a large, U.S. wheat exporting firm, a major wheat buyer from the United Kingdom and personnel from NDSU Durum and HRS Breeding programs, NDSU Extension Service and the departments of Agribusiness and Applied Economics and Cereal and Food Sciences, to discuss the specific end product quality needs of the U.K. market and ways to provide wheat varieties that provide that provide specific quality.

Wheat and Soy in Pasta
NCI provides pilot scale pasta processing to the U.S. pasta industry. NCI's unique capabilities in terms of technical expertise, pilot-scale pasta press (extruder) and computer controlled dryer provide processing and final product quality information for accurate scale-up to commercial production. Recent testing includes die design evaluation and the pilot scale production of whole-wheat pasta and the incorporation of soy protein isolate into pasta.

Wheat, Barley, Oats
Processing capabilities and expertise have been provided for one North Dakota and two South Dakota entities developing new food products from whole grains (wheat, barley and oats).

Wheat
Four wheat varieties were evaluated for analytical and physical quality for a regional organic supplier. NCI also developed and presented a custom training course for the company on HRS wheat quality characteristics and quality analysis testing.

Durum Milling
NCI's pilot-scale durum mill continues to be used in providing technical assistance and education. Recent uses include annual cleaning, milling and processing of durum samples for the Wheat Quality Council. To optimize the mill, a durum wheat sizing and milling study was recently completed. Our staff has tested semolina for large U.S. durum milling company and provided technical assistance to a N.D. durum milling company regarding wheat blend performance. NCI staff have been involved in overseeing the storage conditions of the recently acquired Nestle Mill. Together with the Association of Operative Millers, NCI offers a durum milling course for the durum milling industry. Participants have opportunity to see demonstrations, have hands-on experiences in the pilot-scale durum mill, and classroom lectures from durum milling experts.

Analytical Work
NCI's Grain Grading and Analytical Laboratories are equipped with grain, flour and final product quality measurement instruments, routinely analyzing grains and flour samples for quality; including a sample of U.S. Hard Red Spring wheat recently brought back from China to help with a quality complaint. NCI continues to provide product quality analysis testing. NCI provides check samples for analytical laboratories in the US and internationally through the American Association of Cereal Chemists (AACC).

Crop Quality
NCI hosts a number of producer tours, trade teams and educational programs each year, and our personnel and facilities are utilized in preparation of current testing data to demonstrate the high quality of the crops grown in the Northern Great Plains. Recent examples include HRS wheat blending functionality for a Chinese wheat millers team, and durum and bread wheat pasta production and testing for a special course for Brazilian pasta processors.

2001-2002 Accomplishments

Educational Programs

NCI short courses educated over 500 participants plus representatives of their regions and interpreters in the past two years. NCI offers short courses in partnership with U.S. Wheat Associates, American Society for Brewing Chemists, Association of Operative Millers, American Association of Cereal Chemists, U.S. Grains Council, and National Pasta Association.

2001 Short Course Participation

International Protocol (MN Soybean) 31 participants from MN and ND	March 26
Pasta and Noodles: Raw Materials & Processing 16 participants from USA and Dominican Republic	April 4 – 6
Advanced Grain Procurement Strategies 19 participants from Bolivia, Costa Rica, Egypt, El Salvador, USA, Nigeria, Peru, Philippines, China, South Africa, United Arab Emirates	April 23 – 27
Pasta Doria (Colombia) Blending of US Wheat Classes 2 participants from Colombia	May 14 – 18
Mexican Soybean Trade Mission (MN Dept. of Ag)	June 12
Chinese Sinograin Grain Procurement (US Wheat) 10 participants from People's Republic of China	July 9 – 12
Brazilian Pasta: Raw Materials and Processing Technology (US Wheat) 12 participants from Brazil	July 16 – 20
Chinese Corn Study Team (USGC) 11 participants from People's Republic of China and 2 USGC Staff	July 26 – 27
Chinese Soybean Procurement (ASA) 16 participants from People's Republic of China	July 30 – Aug. 9
Grain Procurement Management for Importers 17 participants from Belgium, Germany, USA, Indonesia, The Netherlands, Philippines, Italy, People's Republic of China, Egypt, United Kingdom, Zimbabwe	Sept. 10 – 21
Feedlot Management 25 participants from MN, ND, and SD	Sept. 11 – 12
Basic & Advanced Feed Microscopy (AOCS)	Nov. 1 – 3

2002 Short Course Participation

Price Analysis and Risk Management (in Tunisia) 45 participants from Algeria, Libya, Morocco, and Tunisia	April 9 – 12
Pasta and Noodles: Raw Materials and Processing 14 participants from the USA	April 10 – 12
HRS Wheat Technical Study Team 7 participants from the People's Republic of China	June 12 – 14
Pasta: Raw Materials and Processing 10 participants from Brazil	June 24 – 28
AOCS Advanced Feed Microscopy 14 participants from USA, Puerto Rico and Nigeria	August 15 – 17
Food Barley Study Team 7 participants from South Korea	August 25 – 28
Grain Procurement Management for Importers 41 participants from 22 countries	Sept. 9 – 20
Feedlot Management School 20 participants from USA	Sept. 9 – 10
Feed Quality Assurance/Quality Control Seminars (in Morocco) 28 participants from Morocco	September
ASBC Barley Malt Quality Evaluation 17 participants from USA and Belgium	November 5 – 8

NCI hosted the following Trade Team Delegations:

2001	2002	
Mexico	Mexico	
Algeria	United Kingdom	
Australia	Peru	
Senegal	European Union	After the 9/11/01 incident, a significant drop occurred in the number of trade teams coming to the region.
Bosnia	South Africa	
Croatia	Japan	
Philippines		

Governance:

Northern Crops Council 2002 - 2003

MN Soybean Growers Association
MT Wheat & Barley Committee
ND Wheat Commission
NDSU President
ND Commissioner of Agriculture
MN Wheat Research/Promotion Council
ND Oilseed Council
ND Barley Council
ND Soybean Council
SD Wheat Commission
SD Corn Utilization Council
General Mills
SK Food International

Sherwood Peterson, Chair
Brian Kaae, Vice Chair
Maynard Satrom, Past Chair
Dr. Joseph Chapman
Roger Johnson
Ellsworth Danielson
Doyle Burkhardt
Richard Groven
Matt Mechtel
Richard Kuecker
Don Pugh
Ray Lottie
Jennifer Tesch

Northern Crops Advisory Board

The Northern Crops Advisory Board is made up of key decision makers for the four-state region including commissioners of agriculture, commodity group administrators and other agriculture leaders.

Industry Advisory Board

Twenty-three national and regional agricultural companies are represented on the new Industry Advisory Board (IAB), that was formed by Northern Crops Institute in 2002. The IAB provides a sounding board for the regional food and feed processing industry, as well as provides input to NCI for educational programs and advanced technology. The board is co-chaired by David Berg, vice president of agriculture at American Crystal Sugar, Moorhead, MN, and Jennifer Tesch, marketing manager at SK Food International, Fargo, ND.

Administrative Responsibility

Dr. Patricia T. Berglund
Director
Northern Crops Institute
North Dakota State University

Vice President Patricia Jensen
Vice President and Dean of Agriculture
North Dakota State University

Dr. Joseph Chapman
President
North Dakota State University

Northern Crops Institute is located on campus of North Dakota State University at Fargo. NCI is not part of NDSU's academic programs.

Cooperation

The broad spectrum of short courses presented by NCI requires input from outside experts. Guest speakers participating in NCI programs contribute to the success of its activities.

The following represent contributing resources:

- North Dakota State University
  - Department of Cereal Science
  - Dept. of Agribusiness & Applied Economics
  - Department of Plant Sciences
  - Department of Animal and Range Sciences
  - College of Business
  - Extension Service
- South Dakota State University
- University of Minnesota
- Montana State University
- USDA Federal Grain Inspection Service and Foreign Agricultural Service
- Grain Trade
- Financial institutions
- Regional commodity check-off organizations
- Grain/feed processors
- Food industry
- North Dakota Mill & Elevator
- Port of Duluth
- Minneapolis Grain Exchange
- Individual producers
- Country and terminal elevators

Facilities

NCI's $4.3 million facility contains:

- Auditorium (with simultaneous language translation) with state-of-the-art presentation and Internet technology
- Pasta extrusion/drying lab
- Food processing/twin screw extrusion lab
- Analytical lab
- Commodity grading lab
- Baking lab
- Conference room
- Durum pilot mill
- Feed mill with classroom, quality control lab, and meeting room

NCI's program base includes milling, processing of food for human consumption, feed grain processing and utilization, and durum wheat milling/semolina/pasta production technology.

It is important to note that commodity check-off groups in the region provided major funding towards the completion of these facilities.

Northern Crops Institute Staff

Patricia Berglund, Ph.D.	Director
John Crabtree	Assistant Director
Brian Sorenson	Technical Director
Kim Koch, Ph.D.	Feed Production Center Manager
Sally Sologuk	Public Relations/Communications Specialist
Wes Twombly	Extrusion Specialist
Bonnie Jacobson	Food Technologist
Will Robinson	Durum Milling Specialist
Linda Briggs	Office Manager

Northern Crops Institute

Update

www.northern-crops.com

November, 2002

Connecting in the Global Marketplace

Record Enrollment at NCI's 2002 Grain Procurement Course

22 Nations – 41 Participants

NCI's annual Grain Procurement course in September was a gathering akin to a mini-United Nations. Twenty-two flags encircling NCI's Auditorium represented the countries that the forty-one course participants call home.

The group enrolled to learn the fine points of the U.S. grain marketing system and how to effectively buy northern-grown crops. "Going to the farms and elevators and the Port of Duluth to see the operations was important," said Jose Blanco of the Philippines.

"Talking to farmers themselves and seeing the new technologies they are using on their farms gives us an idea of what will happen in the next few years regarding our purchases of U.S. wheat," Blanco concluded.

The two-week course covered the full gamut of grain procurement management, including grain grading standards, hedging, futures, contracts, price risk management, commodity analysis, biotechnology, credit, and finance.
(continued on p 2)

Photo by JMD Photography

Grain Procurement course participants representing 22 nations listen to John Crabtree, NCI Assistant Director, during course.

Countries Represented at 2002 Grain Procurement Course:

Austria	Philippines
Brazil	Poland
Dominican Republic	Romania
Egypt	Slovenia
Indonesia	South Africa
Italy	Spain
Ivory Coast	Taiwan
Lebanon	Tanzania
Japan	Tunisia
Netherlands	Yugoslavia
People's Republic of China	Yemen

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2002 Grain Procurement Course

(continued from page one)

Darius Kuzias of Poland commented, "Due to the fact that the U.S. is one of the biggest grain exporters, it is very important for us to see how grain, and wheat especially, is grown, how the logistic facilities work and how the grain is handled here in the U.S."

During the second week, the group traveled to the Port of Duluth to learn more about port operations. They also toured the Duluth Cargill grain terminal.

Karima Ben Moussa Riahi of Tunisia said, "It is very important to be in the U.S., to see the farms and to meet the farmers. It is very helpful to meet so many contacts face-to-face because you can listen to their export strategies."

According to Regina Vasiljevic, control department manager of Yugoslav Grain Association, "The course is very important to us from Eastern Europe especially. In our country, we are just in the first steps of the exchange market. The quality system in America and contact with people from other countries is very important. It is the way to development."

Participants spent several days at the Minneapolis Grain Exchange later in the second week. This opportunity allowed them to spend time on the trading floor with traders and to participate in a mock trading exercise on the floor of the Exchange.

The final stop for the course was the Cenex Harvest States terminal and barge facilities at Savage, MN, where Clint Gergen, superintendent, explained shipping logistics on the Mississippi River system.

Participants practice mock trading with Helen Pound of Goldenberg, Hehmeyer & Co.

In Duluth, the group met with Port Authority officials and toured the harbor where they saw ships being loaded.

A Big Thank You

Thanks to our speakers who make the Grain Procurement Management for Importers short course possible:

Dr. Bill Wilson, NDSU
Mr. Art Boline, GIPSA/USDA
Mr. Brad Kjar, Hunter Grain Co.**
Mr. Jim Howe, Casselton, ND
Dr. David Bullock, MN Dept. of Agriculture
Mr. Neal Fisher, ND Wheat Commission
Dr. George Flaskerud, NDSU
Mr. John Redd, Monsanto Co.
Mr. Porter Little, CoBank
Mr. Mike Krueger, The Money Farm
Mr. Davis Helberg, Duluth Port Authority
Ms. Lisa Marciniak, Duluth Port Authority
Mr. Roger Juhl, Cargill
Mr. Kent Horsager, Minneapolis Grain Exchange
Ms. Teri Huffaker, Minneapolis Grain Exchange
Mr. John Stich, General Mills
Mr. Rick Dusek, Cenex Harvest States
Mr. Steve Lucas, Louis Dreyfus Corp.
Ms. Helen Pound, Goldenberg, Hehmeyer & Co.
Mr. Brad Hibbs, Cargill
Mr. Todd Becker, ConAgra
Mr. Scott Nagel, ADM-Benson Quinn
Mr. Randy Narloch, ADM-Benson Quinn
Mr. Chris Matzdorf, Prudential Securities
Mr. Ron DeJongh, AGP Grain Ltd.**
Dr. John Oades, US Wheat Associates
Mr. Clint Gergen, Cenex Harvest States

**Member of NCI's Industrial Advisory Board

Our thanks also to: Louis Dreyfus, Cargill, Cenex Harvest States, and AGP Grain, who sponsored breaks during the seminars at the Minneapolis Grain Exchange.

New Siberian Islands

Wrangel Island

Mongolia

China

Commodity: Wheat

A Technical Team from People's Republic of China came to NCI in June to evaluate hard red spring wheat for flour and baking quality. The team studied blending functionality of various bread formulas to show the impact of HRS wheat as a blending wheat in U.S. style white pan breads. In 2001-2002, People's Republic of China imported 5.9 million bushels of hard red spring wheat.

S Korea Japan

China

Nepal Bhu.

Bang. Myanmar (Burma) Taiwan

dia Laos

Thailand Vietnam Philippines

China

Commodity: Wheat

Brian Sorenson, NCI's Technical Director, promoted wheat in June during a tour in China with U.S. Wheat Associates. The team met with officials from many companies including COFCO, China's grain-purchasing agency, where they discussed hard red spring wheat quality and the status of the 2002 crop. Sorenson also spoke at the U.S. Wheat Healthy Noodle Seminar in Taiwan.

Japan

Commodity: Barley

NCI hosted a Japanese delegation of feed and food barley company representatives in July. The group was sponsored by the U.S. Grains Council. Focus of the mission was to provide information on herbicides and pesticides used for barley in North Dakota, as well as safety issues associated with chemical usage. Cary B. Sifferath, Japan Director for U.S. Grains Council, accompanied the team.

Islands

Kiribati

Solomon Islands

Australia

Tasmania

South Korea

Commodity: Barley

Seven South Korean food processors and researchers participated in a program on food uses of barley at the NCI in August 2002. The group came to increase their knowledge and understanding of barley as a food and snack ingredient. Led by NCI Director Pat Berglund, the participants traveled to Minneapolis where they met with cereal scientists at the University of Minnesota. This was a follow-up to research and promotion of barley for food conducted at NDSU and NCI.

Mexico

Commodity: Wheat, Soybeans

Representatives of ADM/GRUMA spent a training day at NCI in May. GRUMA is the worldwide leader in corn flour and tortilla production and in 1996 entered the wheat flour business through an association with ADM. Last year, the U.S. exported 67.2 million bushels of wheat to Mexico. Good news developed after a trade visit from representatives of Jalisco, Mexico who came to NCI in June 2001. The group, sponsored by Minnesota's Department of Agriculture, came to learn more about the region's soybeans. The visit contributed to the sale of more than $1 million worth of Minnesota soybeans to Jalisco in 2002.

United Kingdom

Commodity: Wheat

In June 2002, the NCI staff coordinated a meeting to discuss the specific end product quality needs of the U.K. market and ways to provide wheat varieties that provide those specific qualities. A U.S. wheat exporting firm, a wheat buyer from the United Kingdom, personnel from NDSU Durum and HRS Breeding programs, NDSU Extension Service and the departments of Agribusiness & Applied Economics and Cereal & Food Sciences also participated.

European Union

Commodity: Wheat

A trade team representing mills in Italy, Denmark, and The Netherlands were at NCI in June for wheat quality training and tours of a local farm and grain elevator. Italy ranked as #1 buyer of U.S. durum in 2001-02 with purchases of 25 million bushels.

Morocco

Commodity: Soybeans

In September 2002, twenty-eight food millers attended quality assurance/quality control workshops in Morocco taught by NCI's foodstuff manager, Dr. Kim Koch. On-site technical assistance was also provided. The seminars, sponsored by the American Soybean Association, were a continuation of last year's workshops in Tunisia.

Tunisia

Commodity: Wheat

NCI returned to Tunisia in April 2002 to teach "Price Analysis and Risk Management Strategies" to 45 people from commercial trading companies, mills, and government buyers from Algeria, Libya, Morocco and Tunisia. The first overseas Grain Procurement Management for Importers short course was taught in Tunisia and Morocco in 1999. In 2001-2002, Algeria ranked #2 in durum imports with 6.9 million bushels in imports. Tunisia was #4 with 1.7 million bushels in imports, according to the ND Wheat Commission.

Brazil

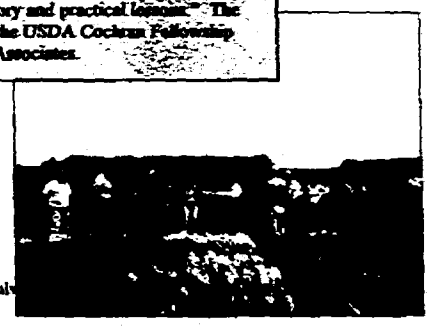
Commodity: Durum Wheat

For the second time in two years, Northern Crops Institute joined a team of Brazilian manufacturers at the "Pasta Raw Materials and Processing Technology" short course in August 2002. The Brazilian Macaroni Industry Associations ABIMA proclaimed the course, "Excellent in every aspect-very good program with a great balance between theory and practical lessons." The course was sponsored by the USDA Cochran Fellowship program and U.S. Wheat Associates.

Peru

Commodity: Wheat

A Peruvian trade delegation came to NCI in September for overviews on the supply and demand outlook for the 2002-03 marketing year. They also learned about end-use performance of U.S. durum wheat, the variety development program, and U.S. grain marketing system. Peru is the second largest pasta consuming country in South America, but very little wheat is produced in Peru. The last sale of U.S. durum to Peruvian millers occurred in 1998-99, according to ND Wheat Commission.



South Africa

Commodity: Wheat

The general manager of the Southern African Grain Laboratory (SAGL) came to NCI in October to learn about durum wheat quality testing and the U.S. Federal Grain Inspection Service grading standards. SAGL is a private quality analysis laboratory that works mainly with wheat and corn (maize). South Africa will import approximately 2.65 million tons wheat to meet domestic consumption this year, according to SAGL.

Connecting in the Global Marketplace

Director's Corner

Patricia Berglund, Ph.D.
NCI Director

This issue of Update highlights the ways NCI continues to meet the challenges of developing markets for regional producers. Many of NCI's educational programs are the result of continuing relationships and excellence. A few examples include the second offering of "Price Risk Analysis and Risk Management Strategies" in Tunisia, the second annual Brazilian "Pasta: Raw Materials and Processing Technology" course, a program for Korean Barley Processors, and the record enrollment in "Grain Procurement Management for Importers."

Berglund

Our technical processing continues to serve current clients while we assist new customers in adding value to their products. In 2002 we assisted in processing a wide array of northern grown crops for many companies.

We look forward to an exciting 2003 and invite you to celebrate our 20 years of success. When you visit our facility for the celebration in June, you will find a rejuvenated, updated look - one that will provide a professional setting to carry out the NCI educational and technical programs. As we approach 2003, we look forward to the many opportunities of our future journey serving regional producers through education of international buyers of northern grown crops.

Pat Berglund

A Note from NCC Chair

Sherwood Peterson
Sabin, Minnesota
MN Soybean Growers Association

Are You Up to the Challenge?

The production season is over. The leaves are gone, and our blanket of snow is here. Now reality sets in. What kind of agricultural season did we have?

The season provided a range from excellence to disaster...but we're always optimistic for next year. The farm bill complexities need answers soon. The markets, be it surpluses, labor problems or transportation difficulties, are haunting us. Life is a basketful of challenges.

Peterson

NCI, representing the four-state northern-grown crops region, has a planned journey to face some of these challenges.

The new Industry Advisory Board is a part of that journey and this group put a lot of beneficial advice on the table at their first meeting. Our thanks go to them.

NCI staff continues to spread the word through their programs about the advantages of northern-grown crops and their benefits to our present and future customers. We can be very proud of our staff. Thanks.

The support of the four states and commodity groups is essential to meeting the challenges of our mission. Thanks to them, and we ask for their continued support.

The Northern Crops Council has played an important part in the region for the past 20 years, so we are planning to celebrate on June 30, 2003. The NCC could not have carried the ball that many years without excellent staff, programs, participants in the courses and you, the grass roots connection throughout the four-state region. Thanks for your help.

Keep up to the challenges and make it to our celebration on June 30, 2003.

Sherwood Peterson

Northern Crops Council

Doyle Burkhardt, a producer from Guelph, ND, represents the North Dakota Oilseed Council.

North Dakota State University President **Joseph Chapman** holds a permanent seat on the NCC. Dr. Chapman assumed the NDSU Presidency in 1999.

Ellsworth Danielson is a producer at Fosston, MN, and represents the Minnesota Wheat Research and Promotion Council.

Richard Groven is a producer from Northwood, ND, and represents the ND Barley Council.

North Dakota's Commissioner of Agriculture **Roger Johnson** occupies a permanent seat on the Northern Crops Council.

Brian Kaae is a producer from Dagmar, MT. He represents the Montana Wheat and Barley Committee. Kaae is NCC's vice chair.

Richard Kuecker, a producer from Webster, SD, represents the South Dakota Wheat Commission.

Ray Lottie is Manager of Cereal & Eastern Grain Operations for General Mills, Minneapolis, MN. He represents processors on the Council.

Matt Mechtel farms near Page, ND and represents the North Dakota Soybean Council.

Don Pugh represents the South Dakota Corn Utilization Council. He is a producer and lives in Miller, SD.

Maynard Satrom, a producer from Oriska, ND, is NCC's past chair. He represents the North Dakota Wheat Commission.

Jennifer Tesch is marketing manager at SK Food International, Fargo, ND. She represents processors on the Council.


Burkhardt


Chapman


Danielson


Groven


Johnson


Kaae


Kuecker


Lottie


Mechtel


Pugh


Satrom


Tesch


Ben Handcock, executive director of Wheat Quality Council, presents NCI Director Pat Berglund with a recognition plaque from the WQC. Berglund is the only person who has served two terms as WQC chair.

NCI Achieves Results in Value-Enhanced Services

Wheat

Four wheat varieties were evaluated for analytical and physical quality for an organic supplier. NCI also developed and presented a custom training course for the same company on HRS wheat quality characteristics and quality analysis testing.

Soybeans

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Flax

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Dr. Paul Schwarz explains the NDSU Barley Lab to some of the 17 participants enrolled in the Barley Malt Quality Evaluation short course in November. The course was co-sponsored by NCI and ASBC.

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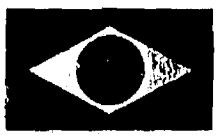
NCI Pasta Courses Promote U.S. Durum Wheat

Personnel from 20 companies were trained at pasta courses held this year at NCI. The companies range from large multi-national corporations to small family-run businesses. In addition, NCI staff provided technical consulting at a Russian pasta company.

In April, NCI's annual pasta course attracted 14 North American pasta manufacturers. The course covers all the fundamentals of pasta manufacturing.

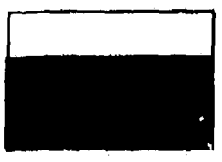
NCI trained a team of Brazilian pasta manufacturers at a July short course. USDA Cochran Fellowship Program and U.S. Wheat Associates sponsored the Brazilians for the second time in two years. The Brazilian Pasta Association (ABIMA) nominated the participants.



ABIMA representative Marina Camasmie said, "The course was excellent in every aspect-very good program with a great balance between theory and practical lessons."

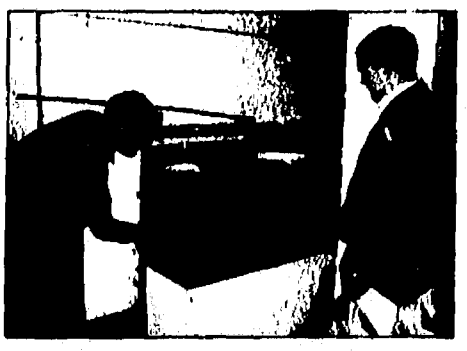
"In Brazil, people are beginning to consume durum wheat. Now we have the basics to work with this raw material," commented one participant.

Wes Twombly, NCI's extrusion specialist, consulted for a Land O'Lakes (USAID) project in Novosibirsk, Russia in October. He worked with AKOR in Western Siberia to assist them with pasta production. Due to the banking collapse in 1997, AKOR and other Russian companies were unable to purchase the Italian pasta production lines they had been considering. AKOR decided to begin producing its own equipment. Their current dryer has no relative humidity control, which is a problem in pasta production since it results in checked pasta. Twombly assisted AKOR staff to layout a new dryer with relative humidity control.



Brazilian pasta course participants inspect a field of U.S. durum wheat near Carrington, ND. They also toured Dakota Growers Pasta Company.

"Eighty percent of the U.S. durum crop is grown in our region," according to Brian Sorenson, NCI's Technical Director. "A strong pasta industry results in increased sales of our crops," he pointed out. "NCI brings grain buyers and processors to our region to see the crops and to meet the people who are locally involved in growing, shipping, milling and processing. By doing this, we build relationships," he said.



Twombly evaluates pasta produced at a pasta plant in Russia.

The impact on sales or exports of durum isn't necessarily going to happen in a week or a year after a course. "Sometimes we are just planting a seed that may not really come to fruition for two or five or even 10 years. But when the market is ready, buyers will remember their experiences at NCI," Sorenson said.

Hahn Endorses Informed Industry

"The pasta course draws a lot of people who work in the pasta industry but don't necessarily make the pasta. It is useful for them to understand what makes good pasta so that they are more intelligent buyers," answers Dr. David Hahn, when he is asked why he returns to NCI year after year to teach in pasta courses.

Hahn

"The pasta industry is not as congenial as it used to be when it was all family-run businesses. But companies still work together on certain kinds of things. This is a good opportunity to talk with people from other companies."

"Also, I feel it's important to give something back to the younger generation of pasta-makers so that they can carry on...to support the development of the industry as a whole," he concluded. Hahn is Director of Research and Technical Service at New World Pasta.

NCI Evaluates Sunflower Product

Sunbutter cookies, Sunbutter muffins, lots of Sunbutter products were tested at NCI this summer. Bonnie Jacobson, NCI's food technologist, evaluated the new roasted sunflower spread food product, Sunbutter, in a variety of food products for SunGold Foods (Red River Commodities) of Fargo, N.D.

To assist in product marketing, NCI staff also prepared a processing facts sheet and testing summary for distribution in a press kit. The media packets were used at a news conference and at SunGold's booth at the Institute of Food Technologists (IFT) meeting in Anaheim, Calif.

Governor John Hoeven, Lt. Gov. Jack Dalrymple, North Dakota Ag. Commissioner Roger Johnson, and area mayors attended two local unveiling ceremonies featuring the Sunbutter products.

ND Ag Commissioner Roger Johnson and ND Governor John Hoeven join NCI Director Pat Berglund and her two granddaughters at the SunButter media event in Fargo this summer.

Linda Briggs Becomes NCI's Office Manager

Linda Briggs joined the staff of Northern Crops Institute in October as Office Manager. She will be responsible for coordinating general office services, maintaining the NCI database, and keeping the Institute's financial records.

Briggs

"I look forward to meeting all of our visitors. This is an exciting opportunity for me to become involved with an aspect of agriculture that reaches all corners of the globe. It is indeed an honor to work with such an experienced staff," Briggs said.

Briggs' previous experience included working with a value-added cooperative where she was responsible for office management and shareholder relations.

2003 Short Course Schedule

(Tentative)

Program:	Date:
Processing Technology of Durum Wheat (Mexico)	Feb. 6-8
Pasta and Noodles: Raw Materials & Processing	April 9-11
Advanced Grain Procurement Strategies	Apr 28-May 2
Blending Wheat for Specialized Uses	May 19-23
NCI/AOM Durum Wheat Milling	June 18-20
Pasta: Raw Materials and Processing Technology (International)	July 21-25
AOCS Feed Microscopy	Summer
Feedlot School	Sept. 9-10
Grain Procurement Management for Importers	Sept. 15-26
Flour Quality for Non-Millers	Oct. 14-16
International Business Protocol	Late Fall

Specialized courses on all northern-grown crops are available upon request.

A Protocol Primer

Outclass Your Competition...

by Patricia Berglund, NCI Director

Have you ever been uncomfortable in a business or social setting? If you answer yes to this question, read on. If you answer no, good for you, but keep reading.

This column will answer some of the most common mistakes in business etiquette and international protocol. These guidelines are always true in the U.S. and may vary somewhat in other parts of the globe.

Handshaking - The Ultimate Greeting

- Shake hands with whomever you meet.
- Extend your hand immediately. This gives you an advantage in being direct, taking initiative and establishing control.
- Exception: In some countries and in some social circles, the savvy man lets the woman extend her hand first. Be aware of the other person's physical inability to shake hands firmly.
- Be ready to initiate or receive a handshake. Keep your right hand free.
- Web-to-web: Keep your hand in a vertical position. The web between your thumb and index finger should connect firmly with the recipient's web area.
- Look the other person in the eye.

Name Badges

- The right side is the most advantageous position so that it is in the line-of-sight for the other person.
- Avoid placing it on other areas of your clothing prompting a search for it, as it breaks eye contact with the person you are meeting.

Permission granted by the Protocol School of Washington®

Need to Increase Your Protocol Comfort Level? Protocol Training Is Available from NCI

Does your business staff or commodity board need a few pointers on international business etiquette? NCI Director Pat Berglund is trained and certified by The Protocol School of Washington® as a Corporate Etiquette and International Protocol Consultant. Call her at 701-231-7736 to set your training date on international protocol, etiquette, and formal dining skills.

Dr. Kim Koch and course participants examine extruded feed products made during the AOCS Advanced Feed Microscopy short course.

AOCS Hosts Second Feed Microscopy Course at NCI

Feed Microscopy with Emphasis on Animal Protein Products was the topic of a short course sponsored at NCI in August. The course was developed in cooperation with the American Association of Feed Microscopy (AAFM) and the American Oil Chemists' Society (AOCS) Feed Microscopy Division.

Fourteen scientists from the U.S., Puerto Rico, and Nigeria gained knowledge on the use of compound microscopy as a means of identifying cellular structures of cereal grains, oilseeds, and animal protein products.

Dr. James Makowski of Messiah College, Grantham, PA, and Patricia Ramsey, California Department of Food and Agriculture (retired), were the course instructors.

Feed Production Center News

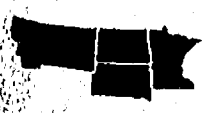
NCI's Feed Production Center offers educational programs and produces complete feeds, concentrates, supplements and custom premixes, which are used in NDSU animal research.

"Since becoming operational in 1991, the NCI feed production center has provided in excess of 21,000 tons of feed," according to Dr. Kim Koch, manager. Average yearly feed production is 2,000-2,500 tons.

In September 2002, NCI's Feedlot School attracted 15 persons who learned more about the principles of feedlot production, nutrition, management, and marketing. The course is offered jointly with NDSU Extension Service

Leaders of NCI's Industry Advisory Board are pictured at the Board's first meeting in July. Left to right: NCI Director Patricia Berglund; Maynard Satrom, NCC past chair; Jennifer Tesch, IAB co-chair; and David Berg, IAB co-chair.

Thank You to Our 2001-2002 Funding Partners



Minnesota Barley Research and Promotion Council
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 Barley Council
North Dakota Corn Utilization Council
North Dakota Soybean Council
North Dakota Wheat Commission
Northarvest Bean Growers
South Dakota Corn Utilization Council
State of South Dakota
South Dakota Wheat Commission

Industry Advisory Board

NCI's Industrial Advisory Board was established in July 2002. Board members include representatives from the agricultural supply and processing industry and the grain trade from the region.

David Berg, Co-Chair
American Crystal Sugar

Jennifer Tesch, Co-Chair
SK Food International

Ron DeJongh
AGP Grain

Ken Ulbrich
Bay State Milling

Dave Holland
Busch Agricultural Resources

Bruce Moe
Cenex Land O'Lakes

Randy Garvert
ConAgra Flour Milling Co.

Carl Schoenfelder
Conte Luna Foods

Carrol Duerr
Earthwise Processors

Ray Lottie
General Mills, Inc.

Mark Dillon
Golden Growers Coop

Gordon Gingras
Gold'N Plump Poultry

Brad Kjar
Hunter Grain Company

Darwin Britzman
International Nutrition Consulting

Mel Schulz
Pasta Montana

Vance Taylor
North Dakota Mill

Curt Stern
Northern Sun/ADM

Robert Majkrzak
Red River Commodities

Joel Dick
Roman Meal Milling

Rodney Christiansen
South Dakota Soybean Processors, Inc.

Mark Stutrud
Summit Brewing

Wayne Fetting
Top Taste Inc

Kimberly Vachal
Upper Great Plains Transportation Institute

Need a Short Program?

Reserve NCI's 12-Minute Video

NCI's new promotional video is available in both English and Spanish versions. If your business or commodity group would like to show the video, just contact our office at 701-231-7736 and ask to have a copy sent to you.

Thank You to Our 2002 Cooperators

North Dakota State University
- Agronomy Seed Farm
- Agribusiness & Applied Economics
- Agricultural & Biosystems Engineering
- Animal and Range Sciences
- Carrington Research and Extension Center
- Cereal and Food Sciences
- Plant Sciences

NDSU Extension Service
ADM/Benson Quinn Company
Minneapolis, Minnesota
AGP Grain
Minneapolis, Minnesota
Agri-Mark, Inc.
West Fargo, North Dakota
American Oil Chemists Society
American Society of Brewing Chemists
St. Paul, Minnesota
American Soybean Association
Anheuser-Busch
St. Louis, Missouri
Barley Foods Consulting
Fargo, North Dakota
Briess Malting Company
Chilton, Wisconsin
Buhler, Inc.
Minneapolis, Minnesota
Busch Ag Resources
West Fargo, North Dakota
Moorhead, Minnesota
CAM Cereales
Paris, France
Cargill, Inc.
Duluth, Minnesota
Geneva, Switzerland
Minneapolis, Minnesota
Cenex Harvest States Cooperatives
Inver Grove Heights, MN
Savage, Minnesota
CoBank
Denver, Colorado
ConAgra Foods
Omaha, Nebraska
Dakota Growers Pasta Company
Carrington, North Dakota
Demaco
Melbourne, Florida
Duluth (MN) Seaway Port Authority
Fimat USA, Inc.
Kansas City, Missouri
Food Ingredient Advisors
St. Louis, Missouri
Froedtert Malting Corporation
Milwaukee, Wisconsin
General Mills
Minneapolis, Minnesota
Goldenberg, Hehmeyer & Co.
Minneapolis, Minnesota
Gold'N Plump
Sauk Rapids, Minnesota
Hornbacher's Foods
Fargo, North Dakota
Howe Farm
Casselton, North Dakota

Hunter Grain Company
Hunter, North Dakota
Land O'Lakes
Arden Hills, Minnesota
Louis Dreyfus Corporation
Paris, France
Wilton, Connecticut
MidAmerica Consulting, Inc.
Fargo, North Dakota
Minneapolis Grain Exchange
Minnesota Dept. of Agriculture
Minnesota Grain and Feed
St. Paul, Minnesota
Minnesota Shippers Association
St. Paul, Minnesota
Minnesota Soybean Growers
Minnesota Trade Office
Monsanto Company
St. Louis, Missouri
Montana State University
New World Pasta
Harrisburg, Pennsylvania
North Dakota Barley Council
North Dakota Grain Inspection Service
Fargo, North Dakota
North Dakota Mill
Grand Forks, North Dakota
North Dakota Soybean Council
North Dakota Wheat Commission
Pinnacle Foods
Cherry Hill, New Jersey
Professional Export Services, Inc.
Eagan, Minnesota
Prudential Securities
Minneapolis, Minnesota
Rahr Malting Company
Shakopee, Minnesota
Roman Meal Milling Company
Fargo, North Dakota
South Dakota Cooperative Extension Service
South Dakota State University
University f Minnesota
USDA Agricultural Research Service
USDA/FAS/CCC
USDA Federal Grain Inspection Service/GIPSA
U.S. Grains Council
U.S. Wheat Associates
West Coast Scientific Co., Inc.
San Francisco, California
Wheat Marketing Center
Portland, Oregon
Regional Commodity Groups
Grain Trade
Financial Institutions
Grain/Feed Processors
Food Industry
Individual Producers
Country and Terminal Elevators

Exhibit #-9

Northern Crops Institute

Connecting in the Global Marketplace

March 4, 2003

Prepared for the North Dakota Legislature

with exception of attached pages Same testimony given to Senate as to House

Northern Crops Institute

Budget Summary

Funding Source	2001-2003 Appropriation	2003-2005 Executive Recommendation	2003-2005 House Amendments HB 1021
General Fund	$ 724,426	$ 753,359	$ 746,959
Special Funds	$ 732,697	$ 782,898	$ 777,825
	$ 1,457,123	$ 1,536,257	$ 1,524,784

2003-2005 Executive Recommendation and HB 1021 House Amendments

	General Fund	Special Funds	Total Funds
95% Budget Request	$ 688,205	$ 717,709	$ 1,405,914
Adjustments:			
Reinstate .8 FTE in request	21,520	50,745	72,265
Reinstate cuts to fund cost to continue salary increases	10,889		10,889
Updates of facilities and personnel training	17,591		17,591
Fund salary and health insurance increases	15,154	14,444	29,598
Total per executive recommendation amendments	$ 753,359	$ 782,898	$ 1,536,257
(Remove salary funding increase)	(6,400)	(5,073)	
Total per House Amendments	$ 746,959	$ 777,825	
Unfunded:			
NCI Feedmill utilities	$ 14,701		

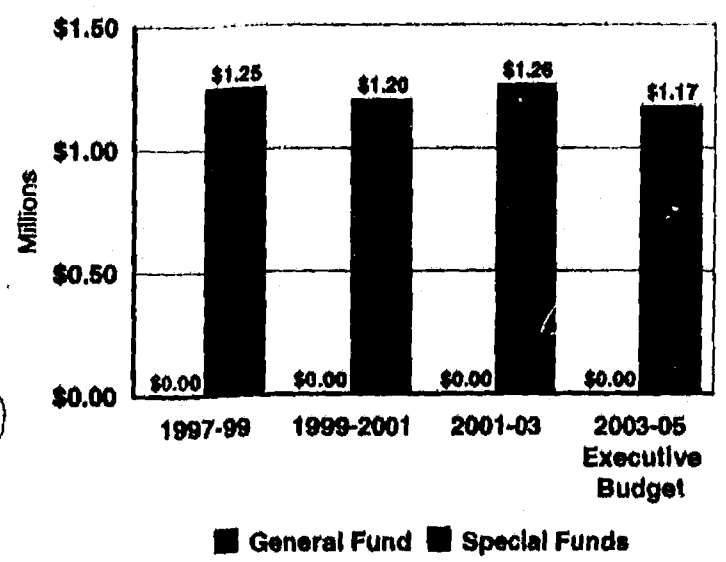
Prepared by the North Dakota Legislative Council
staff for House Appropriations
January 21, 2003

Department 649 - Agronomy Seed Farm
House Bill No. 1021

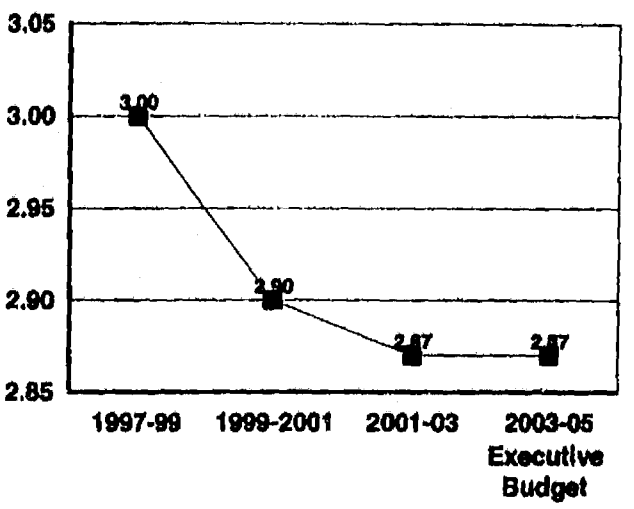
	FTE Positions	General Fund	Other Funds	Total
2003-05 Executive Budget	2.87	$0	$1,170,385	$1,170,385
2001-03 Legislative Appropriations	2.87[1]	0	1,259,140	1,259,140
Increase (Decrease)	0.00	$0	($88,755)	($88,755)

[1] The 2001-03 appropriation is based on 2.90 FTE positions. Section 4 of 2001 House Bill No. 2021 authorizes the State Board of Higher Education to adjust FTE positions as needed. The 2.87 FTE positions shown above represent the employee positions reported to the Office of Management and Budget.

Agency Funding



FTE Positions



Executive Budget Highlights

	General Fund	Other Funds	Total
1. Increases funding for equipment purchases to $270,000 to purchase a combine ($75,000), sprayer ($30,000), two tractors ($135,000), and a disk ($30,000)		$96,000	$96,000
2. Removes funding for operating costs to offset increase for equipment purchases		($96,000)	($96,000)

Major Related Legislation

Section 4 of House Bill No. 1021 authorizes the State Board of Higher Education to adjust or increase full-time equivalent positions for the Agronomy Seed Farm and report any adjustments to the Office of Management and Budget.

Section 5 of House Bill No. 1021 authorizes the carryover of any unexpended general fund appropriation and excess income received by the Agronomy Seed Farm.

NORTH DAKOTA STATE SOIL CONSERVATION COMMITTEE
4023 North State Street, Suite 30, Bismarck, ND 58503-0620
Phone 701-328-5125 —— FAX 701-328-5123

Chairman Martinson and members of the House Appropriations Education and Environmental Division. My name is Tom Christensen and I am currently the chairman of the North Dakota State Soil Conservation Committee (NDSSCC). I am here in support of those portions of HB1021, which address the operational needs of the Committee and also the Soil Conservation District Assistance Program (SCDAP).

The NDSSCC is charged by the North Dakota Century Code with the conservation of soil and soil resources of the State

*for the control and prevention of soil erosion, and
*to preserve the States natural resources, control floods, prevent impairment of dams and reservoirs, assist in maintaining the navigability of rivers, preserve wildlife, protect the tax base, protect pubic lands, protect and promote the health, safety and general welfare of the people of North Dakota.

With the important responsibility given to the NDSSCC it is important for continued financial support within the Extension budget.

The SCDAP has been a popular program for the Soil Conservation Districts of North Dakota. Requests by Districts have historically exceeded appropriations. There has been an increase use by participating districts to use this program to generate additional federal funds. In a recent survey, nine districts have indicated they were able to generate $1,763,000 of federal funding for water quality projects. With the increase of the conservation provisions of the new farm bill, districts will have more opportunities to use this program in this manner.

Chairman Martinson and Members, I urge your continued support for the NDSSCC and the SCDAP. I would be happy to answer any questions you may have.

Soil Conservation District Assistance Program

The North Dakota State Soil Conservation Committee (Committee) is charged by North Dakota Century Codo with the conservation of soil and soil resources of the state

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- to preserve the states natural resources, control floods, prevent impairment of dams and reservoirs, assist in maintaining the navigability of rivers, preserve wildlife, protect the tax base, protect public lands, and protect and promote the health, safety and general welfare of the people on North Dakota.

The purpose of the Soil Conservation District Assistance Program (SCDAP) is to help reduce wind and water erosion on North Dakota agricultural land, primarily cropland and rangeland, by providing funds to Soil Conservation Districts (district) to hire technicians. The Committee requests that all districts participating in the SCDAP report accomplishments each quarter to the Committee.

The Committee distributed $580,000 in grant monies allocated by the North Dakota Legislature. The Committee awarded 24 grants affecting 26 districts for the 2001-2003 biennium. The SCDAP funds are used only for salaries and fringe benefits. All other related expenses such, as travel, training, office space and supplies are the responsibility of the district. Districts invest an equivalent or greater amount of local district funds as match to the program. The district supervisors are also responsible for matters related to the employment of a district technician. This allows maximum local decision-making and leadership in the reduction and prevention of soil erosion. All funds appropriated are allocated to districts; no funding is required for administrative expenses.

This handout is a compilation of recent district reports. We hope this snapshot of how SCDAP funds are being used by local soil conservation districts enhances your understanding of these entities, this program, and its impacts. If you have any questions about these accomplishments or any of our conservation programs, please contact us. Thank you for your support of and interest in soil and water conservation.

Accomplishments (July 1, 2001 - December 31, 2002)

iennium	Funds Authorized	Funds Spent	Districts Participating	Acres Benefited	Tons of Soil Saved
001-2003*	$580,000	$481,341*	26	139,856	337,028

*July 1, 2001 through December 31, 2002

Best Management Practice	Cooperators Contacted	Amount Planned	Acres Benefited	Tons of Soil Saved
Conservation Cropping	420	61,802 ac.	19,381	148,321
Conservation Tillage	316	44,705 ac.	4,940	16,080
Conservation Cover	338	10,619 ac.	8,988	48,381
Crop Residue Use	313	42,026 ac.	10,381	62;768
Deferred Grazing	83	29,522 ac.	6,299	293
Farmstead & Feedlot Windbreaks	1,387	110,216 ac.	2,592	4,252
Field Windbreaks	352	1,194,486 ft.	13,334	7,859
Living Snow Fences	137	485,462 ft.	264	639
Windbreak Renovation	115	222,485 ft.	5,747	96
Filter Strips	32	163 ac.	293	5,809
Grassed Waterways	14	12 ac.	34	300
Grazing Systems	295	165,655 ac.	60,246	19,756
Pasture & Hayland Planting	72	4,856 ac.	1,093	2,497
Water Development:				
Ponds	73	60 no.	4,120	
Pipelines	100	328,639 ft.	20,780	
Wells	76	79 no.	960	
Wildlife Habitat:				
Trees	574	1,789 ac.	5,271	4,128
Herbaceous	124	3,657 ac.	3,529	11,344
Wetlands Created	34	151 ac.	75	

Exhibit # 11

Testimony
North Dakota State Soil Conservation Committee
House Bill 1021
Senate Appropriations Committee
Chairman Ray Holmberg
March 4, 2003

Chairman Holmberg and Members of the Senate Appropriations Committee, my name is Tom Christensen. I am the Chairman of the North Dakota State Soil Conservation Committee (NDSSCC). I am here in support of HB 1021, which addresses the operational needs of the NDSSCC and Soil Conservation District Assistance Program (SCDAP).

The NDSSCC is charged by the North Dakota Century Code with the conservation of soil and soil resources of the State

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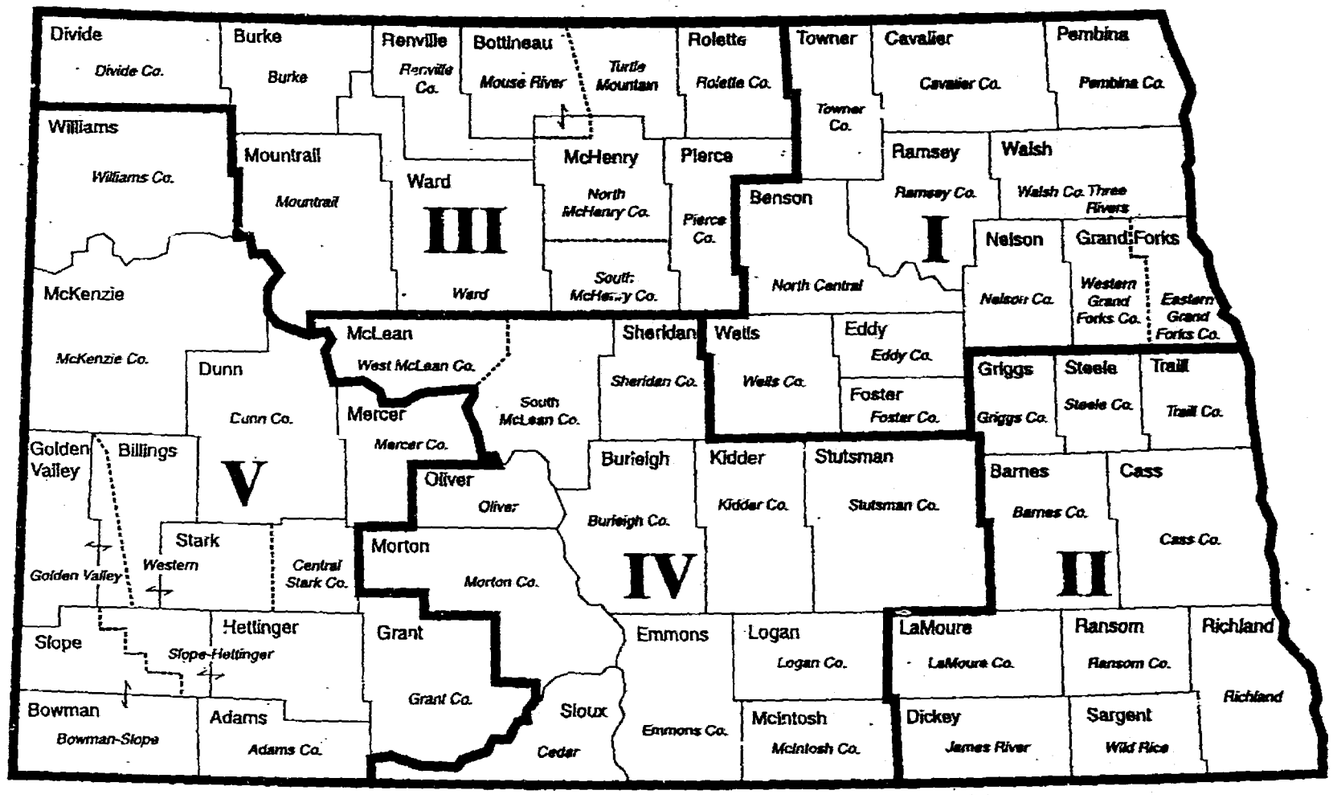
With the important responsibility given to the NDSSCC it is important for the continued financial support within the NDSU Extension budget.

The SCDAP has been a popular program for the Soil Conservation Districts of North Dakota. Requests by Districts have historically exceeded appropriations. The NDSSCC has received 46 applications from Districts requesting $985,500 for the 2003-2005 biennium. There has been an increase use by participating Districts to use this program to generate additional federal funds. In a recent survey, nine Districts have indicated they were able to generate $1,763,000 of federal funding for water quality projects. With the increase of the conservation provisions of the new farm bill, Districts will have more opportunities to use this program in this manner.

Chairman Holmberg and Members, I urge your continued support. I would be happy to answer any questions you may have.

North Dakota
Soil Conservation Districts



IV ..... Area Number
▬ ..... Area Boundary
McIntosh ..... County Name
North McHenry Co. ..... Soil Conservation District
------ ..... Soil Conservation District Boundary

North Dakota State Soil Conservation Committee

Soil Conservation District Assistance Program
2001-2003 Fund Allocation

Soil Conservation Districts	Application Amount	Score	Funds Allocated
1. Divide Co.	$25,000	295.90	$24,500
2. Dunn Co.	$25,000	295.60	$24,500
3. Towner Co.	$25,000	294.80	$24,500
4. Sheridan Co.	$25,000	293.60	$24,500
5. Rolette Co.	$25,000	290.50	$24,500
6. Eddy Co.	$25,000	290.50	$24,500
7. North Central	$25,000	290.40	$24,500
8. Grant Co.	$25,000	289.90	$24,500
9. Kidder Co.	$25,000	289.40	$24,500
10. Western Grand Forks Co.	$23,000	289.05	$22,500
11. Logan Co.	$25,000	287.70	$24,500
12. Renville Co.	$25,000	287.60	$24,500
13. Turtle Mountain & Mouse River *	$35,000	286.55	$34,500
14. Cedar	$25,000	285.20	$24,500
15. Burke	$25,000	284.30	$24,500
16. West McLean Co.	$15,000	282.60	$14,500
17. Griggs Co.	$25,000	281.80	$24,500
18. McIntosh Co.	$25,000	281.80	$24,500
19. Steele Co.	$25,000	278.90	$24,500
20. Central Stark Co. & Western *	$35,000	276.15	$34,500
21. Cavalier Co.	$15,000	274.70	$14,500
22. Adams Co.	$19,343	272.60	$18,843
23. Slope-Hettinger	$25,000	271.70	$24,500
24. Oliver Co.	$25,000	269.30	$24,157
Total	**$592,343**		**$580,000**
25. Nelson Co.	$10,000	267.90	
26. LaMoure Co.	$25,000	266.30	
27. Wells Co.	$25,000	262.30	
28. Foster Co.	$25,000	260.60	
29. Pierce Co. & North McHenry Co. *	$30,000	260.35	
30. South McLean Co.	$25,000	256.60	
31. Mercer Co.	$25,000	254.10	
32. Bowman-Slope	$25,000	252.40	
33. Mountrail	$8,000	247.50	
34. Walsh Co. Three Rivers	$25,000	246.20	
35. James River	$25,000	245.90	
36. Barnes Co.	$25,000	236.00	
37. Pembina Co.	$20,000	229.50	
38. Burleigh Co.	$25,000	221.60	
39. Ward	$25,000	220.50	
40. Area IV & V	$25,000		
Total	**$960,343**		

*Joint Applications

Soil Conservation District Assistance Program

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- to preserve the states natural resources, control floods, prevent impairment of dams and reservoirs, assist in maintaining the navigability of rivers, preserve wildlife, protect the tax base, protect public lands, and protect and promote the health, safety and general welfare of the people on North Dakota.

The purpose of the Soil Conservation District Assistance Program (SCDAP) is to help reduce wind and water erosion on North Dakota agricultural land, primarily cropland and rangeland, by providing funds to Soil Conservation Districts (district) to hire technicians. The Committee requests that all districts participating in the SCDAP report accomplishments each quarter to the Committee.

The Committee distributed $580,000 in grant monies allocated by the North Dakota Legislature. The Committee awarded 24 grants affecting 26 districts for the 2001-2003 biennium. The SCDAP funds are used only for salaries and fringe benefits. All other related expenses such, as travel, training, office space and supplies are the responsibility of the district. Districts invest an equivalent or greater amount of local district funds as match to the program. The district supervisors are also responsible for matters related to the employment of a district technician. This allows maximum local decision-making and leadership in the reduction and prevention of soil erosion. All funds appropriated are allocated to districts; no funding is required for administrative expenses.

This handout is a compilation of recent district reports. We hope this snapshot of how SCDAP funds are being used by local soil conservation districts enhances your understanding of these entities, this program, and its impacts. If you have any questions about these accomplishments or any of our conservation programs, please contact us. Thank you for your support of and interest in soil and water conservation.

Accomplishments (July 1, 2001 - December 31, 2002)

Biennium	Funds Authorized	Funds Spent	Districts Participating	Acres Benefited	Tons of Soil Saved
2001-2003*	$580,000	$481,341*	26	236,628	365,147

*July 1, 2001 through December 31, 2002

Best Management Practice	Cooperators Contacted	Amount Planned	Acres Benefited	Tons of Soil Saved
Conservation Cropping	579	78,904 ac.	33,267	166,885
Conservation Tillage	451	52,260 ac.	17,117	17,114
Conservation Cover	497	19,176 ac.	20,645	50,269
Crop Residue Use	458	47545 ac.	22,731	65,996
Deferred Grazing	141	39,301 ac.	6,299	293
Farmstead & Feedlot Windbreaks	1,584	110,463 ac.	2,742	4,252
Field Windbreaks	425	1,414,283 ft.	13,984	9,159
Living Snow Fences	168	646,832 ft.	264	639
Windbreak Renovation	140	307,385 ft.	5,752	96
Filter Strips	37	386 ac.	415	6,176
Grassed Waterways	16	17 ac.	34	300
Grazing Systems	365	172,017 ac.	69,187	19,756
Pasture & Hayland Planting	105	5,253 ac.	1,945	6,764
Water Development:				
Ponds	97	87 no.	7,580	
Pipelines	135	435,485 ft.	22,473	
Wells	105	98 no.	2,560	
Wildlife Habitat:				
Trees	661	2,020 ac.	5,311	4,178
Herbaceous	156	3,887 ac.	4,203	13,270
Wetlands Created	45	167 ac.	119	

Participating districts reporting large amounts of acres benefited place emphasis on conservation practices, which maintain adequate vegetative cover or residue to protect land from wind and water erosion. Practices, which have most effectively reduced the damages of wind and water erosion, include the following:

-Conservation Tillage
  Reduced Tillage
  Minimum Tillage
  No-Till
-Cover Crops
-Farmstead and Field Windbreaks
-Living Snow Fences
-Filter Strips
-Grazing Systems
-Pasture & Hayland Plantings
-Water Developments
-Wildlife Habitat

SCDAP Highlights:

- The Divide County SCD worked with the North Dakota Public Service Commission on a wildlife/tree planting project in the Noonan Mines Reclamation area.
- The Turtle Mountain and Mouse River SCD's tree program resulted in 384.1 acres of shrub plantings.
- The Logan County SCD provides data and information on no-till program to assist local producers.
- The McIntosh County SCD organized producer meetings to expand tree planting program and work with Wishek High School Vo-Ag instructor to plan an arboretum.
- The SCDAP allows participating districts to maintain staff, assist producers and promote conservation services.
- The Western Grand Forks County SCD maintains individual producer contact to promote tree-planting program.
- The Renville County SCD accomplishes the first multi district Envirothon program.
- The Burke SCD partnered with the US Fish & Wildlife Service and ND Game & Fish Department to develop wildlife habitat on 280 acres.
- The Adams County SCD in the last three years have planted 412 miles of trees and is planning 51 miles of living snow fences for 2003.
- The North Central SCD has expanded its tree-planting program by 70 percent.
- The Towner County SCD sponsored a conservation education and entertainment event at the Nursing Home and St. Francis Residence in Cando.
- The Slope-Hettinger SCD provides assistance to landowner to re-establish riparian habitat along Coal Bank Creek.
- The Eddy County SCD works with partners to provide 5 one-day grazing workshops.
- The Cedar SCD partnered with NRCS, Army Corps of Engineers, and the Standing Rock Sioux Tribe Game and Fish Department to complete tree plantings along the Missouri River near Fort Yates.

Centers of Excellence

North Dakota ***Centers of Excellence*** have strong competence regionally, nationally or internationally in a specialized area with strong outreach to a user community and is linked to a strong economic environment through university research & development, commercialization and entrepreneurship.

North Dakota *Centers of Excellence* are charged with several or all of the following responsibilities:

1.) Develop and engage strategies for science and technology research & development, commercialization, entrepreneurship, infrastructure and activities within North Dakota to develop innovative approaches that expand North Dakota's gross state product.
2.) Assist efforts to attract private and federal assistance for research & development and commercialization in growth clusters most likely to increase North Dakota's gross state product.
3.) Increase collaboration among federal, state, and private research & development and technology commercialization organizations in the state.
4.) Strengthen the leadership and support of the North Dakota EPSCoR program and encourage partnerships with other state instituitions for expanded efforts to stimulate economic growth in North Dakota's identified industry clusters.
   Industry Clusters:
   - *Advanced Manufacturing
   - *Energy
   - *Information Technology
   - *Aerospace
   - *Tourism
   - *Value-added Agriculture
5.) Provide leadership in science & technology policy, regionally, nationally and internationally.
6.) Demonstrated efforts with creating employment opportunities for North Dakota University System graduates.

Eligibility for State Grant Funds:

1.) Funds must be used to enhance capacity, infrastructure and leverage federal, state & private sources of funding.
2.) State funds may not be used for operations or academic instruction
3.) State funds may be granted to research universities, university related foundations and public institutions located within the state that demonstrate the potential to deliver expertise and service to high technology growth clusters which will contribute to North Dakota's gross state product.
4.) Any public higher education institition or non-profit university related foundation receiving state funding must demonstrate within four years the following:
   - *Two to one match on state funds
   - *Annual reports describing expenditures and partnerships with industry
   - *State funds are not eligible for indirect cost recovery
5.) The North Dakota Department of Commerce foundation board shall seek input from the North Dakota Board for Higher Education and establish eligibility criteria for any new ***Center of Excellence*** by December 31, 2003.
6.) Any ***Center of Excellence*** interested in seeking grant funding requests for the 2005/2007 biennium must be approved by the North Dakota Deprtment of Commerce foundation board by June 30, 2004.

North Dakota Centers of Excellence as defined by the 58th Legislative Assembly:

Department of Commerce

1.) Center for Beef Systems-North Dakota State University
2.) Center for Nanoscale Science & Engineering-North Dakota State University
3.) Centers for Entrepreneurship and Innovation
   - *Center for Innovation-UND
   - *Center for Technology Enterprise-NDSU Research & Technology Park
4.) John D. Odegard Center for Aerospace Sciences-UND
5.) Center for High Performance Computing-NDSU

Jerry Dean
HB 1021

State Board of Agricultural Research and Education Highlights: 2001-2003

Planning and vision for the future has changed for the N.D. Agricultural Experiment Station and the NDSU Extension Service. The State Board of Agricultural Research and Education is moving the Experiment Station and Extension Service to do more long-range planning.

SBARE has three "program area" subcommittees. Each committee is assigned to evaluate the needs of the producers and develop strategies to resolve the issues through research and extension programs.

The following are areas or ideas that SBARE has implemented to help North Dakota producers.

Crops Subcommittee

- molecular marker lab (allows for the screening of hundreds of genetic lines in varietal development and disease resistance)
- developed GMO protocol for research
- market analysis for GMO products
- new varietal releases:

1998	**Not distributed to CCIA**
Belzer Durum	
Jud Oat	
Jim Soybean	Argent HWSW
Daksoy Soybean	Norpro Soybean (Tofu type)
Ransom HRWW	
Frontier Pinto Bean	

Spring 1999
Maier Durum
Mountrail Durum
Parshall HRSW
Reeder HRSW
Cathay Flax
Pembina Flax

Spring 2000
Alsen HRSW
Lebsock Durum
Plaza Durum
Ebeltoft Oat
Youngs Oat
Barnes Soybean

Spring 2001
Drummond Barley
Killdeer Oat
Sargent Soybean
Walsh Soybean

Fall 2001
Jerry HRWW

Spring 2002	**Not distributed to CCIA**
Pierce Durum	
Dilse Durum	
HiFi Oat	Nornatto Soybean (natto type)
Morton Oat	Nannonatto Soybean (natto type)
York Flax	RG200RR Soybean (RR type)

- Capital enhancements at research extension centers including land, building, equipment and technology
- increased core operating dollars for researchers (from $2200/sy to $6600/sy)
- development of western North Dakota malting and feed barley
- cereal disease forecasting
- surveyed North Dakota producers regarding needs
- support of emerging and alternative crops
- cropping systems and rotational studies
- integrated pest management systems
- irrigated high-value crop production

Livestock Subcommittee
- Beefline (long-term vision and goals for beef research and extension)
- Animal Nutrition and Physiology Center
- establishment of North American Bison Center
- Southwest Feeders project at Hettinger
- Carrington feedmill and feedlot project
- co-product feed research
- agricultural waste management
- ending the bison research program
- Nutrition and Pregnancy Center
- livestock production systems
- Dairy Diagnostic Team Program

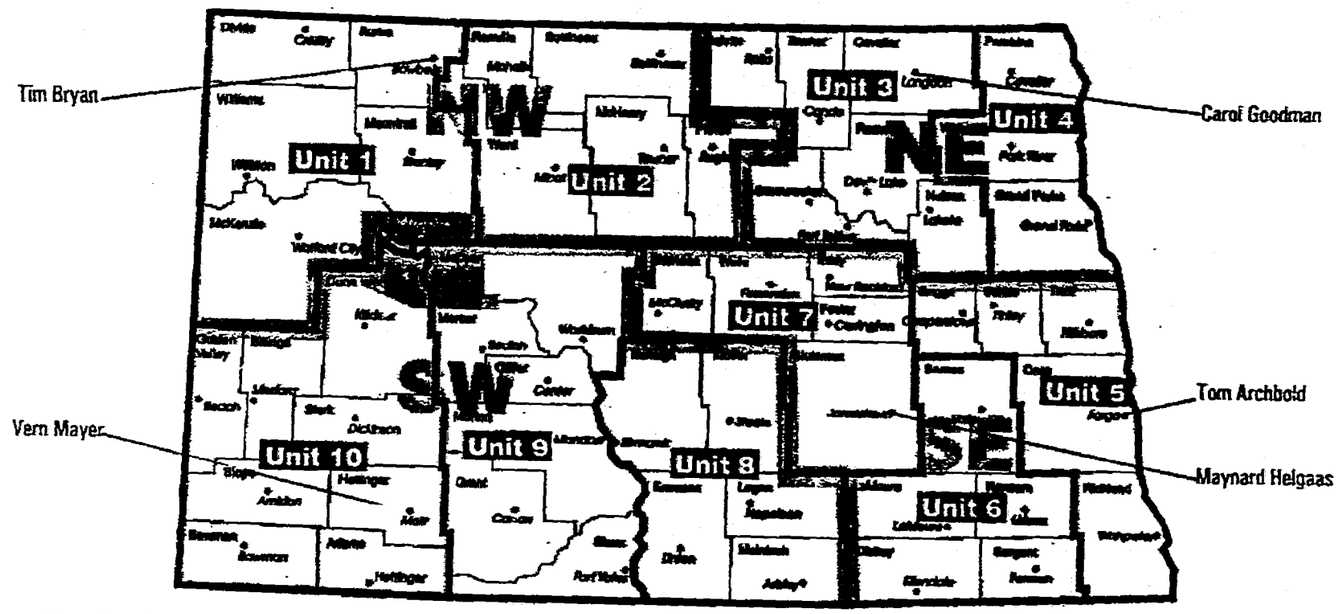
Engagement Subcommittee
- Extension rural leadership development program
- support for programs and technology for Extension Service to get research to producers
- State Soil Conservation Committee and SSCC Leadership and Environmental Law education and district grants

Other areas SBARE has addressed include

- Langdon Learning Center
- Dickinson Research Extension Center
- recommendation for ending the fish farm program at Carrington Research Extension Center
- flexibility within the ag budget to respond to current issues
- improved communication between ag producers, NDSU faculty and administrators, and legislators

SBARE oversees the Agricultural Gas Tax Research Fund. This program has resulted in funding for approximately 225 research projects exploring new or niche ideas in agriculture since the first awards were made. Over 100 producers participate on committees in the ARF granting process.

State Board of Agricultural Research and Education - Representation

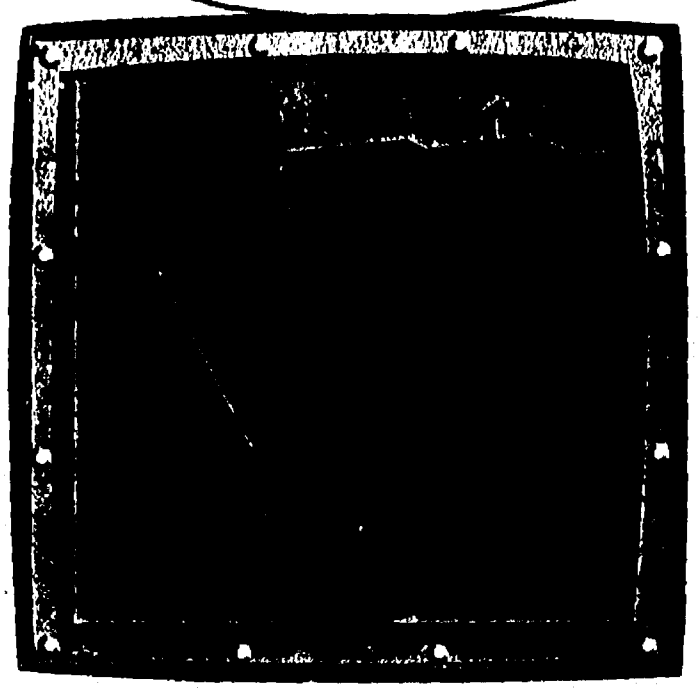


Appointed by Ag Coalition
Jerry Doan, McKenzie
Neal Fisher, Bismarck
Edmund Goerger, Wyndmere
Jody Hauge, Leith
Burdell Johnson, Tuttle

Appointed by Multicounty Program Unit
Tom Archbold, Fargo
Tim Bryan, Bowbells
Carol Goodman, Langdon
Maynard Helgaas, Jamestown
Vernon Mayer, Regent

Other Members
Sharon Anderson, Extension Service
Joseph Chapman, NDSU President
Ken Grafton, Experiment Station
Patricia Jensen, NDSU VP for Agriculture
Roger Johnson, Ag Commissioner
Two legislators appointed by Legislative Council

Exhibit # 3
(HB 1021)



State Board of Agricultural Research and Education

Agricultural Research Fund
Report to the 58th Legislative Assembly
January 2003

2002 Annual Report for the SBARE Western Malting Barley Program

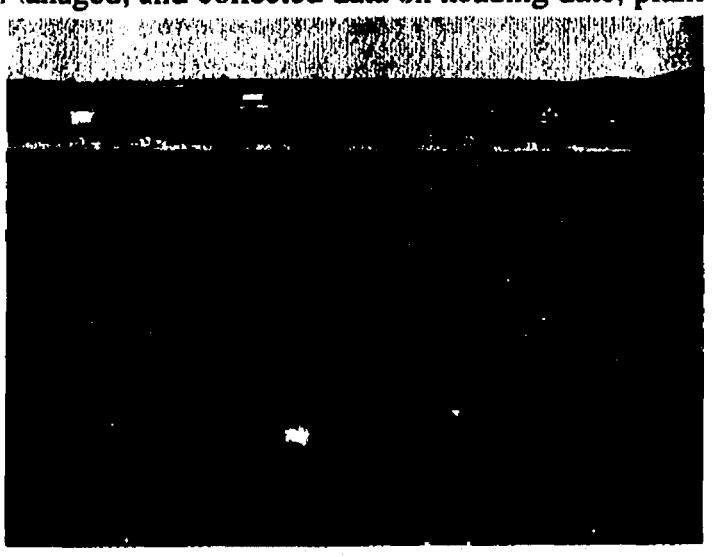
The 2001 North Dakota Legislature recommended that the North Dakota Agricultural Experiment Station spend up to $288,000 on research of malting barley for western North Dakota. Representatives Frank Wald of Dickinson and Bob Skarphol of Tioga championed this recommendation. In winter 2001, SBARE appointed the SBARE Barley Research Committee to review proposals related to this project. A proposal was submitted to the committee and funding of $288,000 was approved. This funding was divided between the Dickinson Research Extension Center ($62,845), Hettinger Research Extension Center ($8,000), Williston Research Extension Center ($118,105), and the main station of the North Dakota Agricultural Experiment Station ($99,050)

The objectives of this project are to:

1. Develop six-rowed and two-rowed malting barley varieties for dryland production in western North Dakota,
2. Develop six-rowed and two-rowed malting barley varieties for irrigated production in western North Dakota,
3. Develop management strategies for producing malting barley under dryland and irrigated production conditions in western North Dakota, and
4. Identify barley diseases present in Western North Dakota annually that could threaten the barley crop.

Breeding Trials

Breeding trials were conducted at four locations in 2002 (Table 1). Staffs at the Williston Research Extension Center (WREC) and the Montana State University Eastern Agricultural Research Center (MSU-EARC) seeded, managed, and collected data on heading date, plant height, lodging, and stem breakage on the research plots at their locations. Personnel from the NDSU six-rowed barley breeding project seeded the breeding yield trials at the Dickinson Research Extension Center's (DREC) off-station sites near Halliday and Mott, and DREC staff managed, and collected data on heading date, plant height, lodging, and stem breakage on the research plots. Staff at all sites harvested plots at their respective sites. Seed was sent to Fargo where yield was determined and all statistical analyses were performed.



Precipitation during grain fill was below average at all dryland sites; thus, yield and kernel plumpness were reduced. Average yields were lowest at Halliday (28 bu/ac), followed by Mott (50 bu/ac), Williston-Recrop (59 bu/ac), and Williston-Fallow (61 bu/ac). Lines were identified that had yield similar to currently grown varieties. Kernel

plumpness and grain protein were determined on grain from six-rowed and two-rowed entries grown in the Low-Protein Yield Trial at Halliday, Mott, and Williston. Average kernel plumpness in this trial was 42% at Halliday, 81% at Mott, 62% at Williston-Fallow, and 88% at Williston-Recrop. Grain protein of entries with the low-protein genes was about two percentage units lower than the named malting barley varieties used as checks. Six-rowed lines were identified with acceptable grain protein; yet, they had unacceptable kernel plumpness in stressed environments (Table 2). Two-rowed lines were identified with acceptable kernel plumpness, but grain protein was slightly higher than desired in the stressed environments. One two-rowed line was observed that had greater kernel weight than the two-rowed check Conlon (46 vs. 40 g/1000 kernels). An increased effort is needed to increase kernel plumpness of six-rowed lines and reduce grain protein of two-rowed lines grown under dryland conditions with limited rainfall. Grain from the trials at Mott and Williston-Recrop were submitted to the USDA-ARS-Cereal Crops Unit in Madison, WI for malting.

Yields in the irrigated trials at Sidney, Montana averaged 103 bu/ac in the flood irrigated Advanced Yield Trial and 123 bu/ac in the sprinkler irrigated Advanced Yield Trial. Factors limiting yield in both trials were lodging and straw breakage. Yields of selected varieties used as checks in the two yield trials are presented in Table 3. In order for malting barley to be competitive with other cereals grown under irrigation in the MonDak region, varieties capable of yielding 150 bu/ac are needed. One strategy we will employ to reach this goal is to develop low-protein semi-dwarf varieties that will remain standing when grown under intensive management with increased N fertilizer. Grain from both trials at Sidney will be submitted to the USDA-ARS-Cereal Crops Unit in Madison, WI for malting.

Dependent on continued funding for this project, the six-rowed barley breeding project would like to add its Varietal Yield Trial at the WREC; the Low-protein, Intermediate and Varietal Yield Trials at the MSU-EARC; and the Varietal and Advanced Yield Trials at the DREC. The two-rowed barley breeding project is currently evaluating the possibility of increasing the number of trials it grows at the various western sites.

SOIL FERTILITY TRIALS

Three experiments were established, near Halliday, and at the Hettinger Research Extension Center, and the WREC. Each experiment takes two years to complete. Oat was sown in large plots with 0, 50, 100 and 150 lb N/A, to give varying levels of post-harvest nitrate in the soil. Intensive soil sampling was performed in October of 2002. These plots will be split in 2003, and grown to Drummond and Conlon barley, with different rates of pre-plant N. The objective of these treatments is to create calibrations between fall soil test nitrate levels, and the need of barley for pre-plant N, consistent with the low

protein demands of the malting industry. With continued funding from the 2003 Legislative Session, new research plots will be established in 2003 and 2004, for barley harvest in 2004 and 2005, respectively. With favorable weather, adequate data should be available to re-calibrate the nitrate soil test for the lower yield levels of barley in western North Dakota. We will also take spectral measurements, for possible in-season anticipation of subsequent protein levels. Available soil water levels will be measured before sowing barley, in hopes of developing relationships between the odds of growing malting-quality barley versus the amount of available water at sowing.

In addition to the dryland trials described above, staff at the MSU-EARC established a nitrogen study under sprinkler irrigation using a sugar beet/malt barley rotation. In 2001, six rates of N were applied for each of two sugar beet harvest dates, and each treatment was replicated six times. This fall the site was soil tested extensively. In 2003, one malting barley variety will be sown into the plots and the N rate response of barley produced under irrigation will be determined by measuring yield and traits related to malting quality.

Stored Soil Water Calibration Studies

The purpose of this research is to develop models based on spring stored soil moisture to predict the odds of success or failure of: obtaining or not obtaining certain yield levels, and acceptable grain protein, and kernel plumpness. Dr. Jay Goos (NDSU) is overseeing this research. The nitrogen studies described above, as well as variety trials conducted both on-station and off-station will be used. Pre-plant soil samples to four feet were taken, and the total water content, and 15-bar (wilting point) moisture content were determined. Also, the depth of moist soil was determined using a 'Brown probe'. In-season precipitation was determined at all sites. All data will be provided to Dr. Goos for analysis.

Expanded Barley Disease Survey

Disease survey staff were employed between June and August to systematically sample barley fields in western North Dakota for seedling and mature plant diseases as well as insects. A total of 254 fields were sampled. Scouts examined 10 plants in five locations per field, sampling in a W pattern. Information collected at each site included district, county, field location, GPS location, growth stage, previous crop, and incidence and severity of major diseases and insects. Data were recorded on hand held iPAQ computers equipped with an Excel spreadsheet, and the information was downloaded weekly to the Research Extension Centers, and NDSU at Fargo. Data were mapped using ARC-INFO GIS software and weekly reports were made available to extension staff and to the public via the IPM Crop Survey for North Dakota on the web at http://www.ag.ndsu.nodak.edu/aginfo/ndipm/. The major diseases detected were Spot Blotch, Net Blotch, Septoria Leaf Blotch and Fusarium Head Blight. The disease data are being used by the NDSU barley pathologist together with the two-rowed and six-rowed barley breeders to set priorities for research in disease resistance for the development of Western region barley varieties. Tissue samples from all diseased fields were returned to NDSU at Fargo, isolations of the causal organisms were made, and isolates were stored for future work on pathogen race distribution and evolution. .

Project Outreach

Goals and objectives of the project were shared with growers and individuals from the malting and brewing industry this past summer. Growers were updated on the project during field days at the DREC, HREC, and WREC. In addition, staff at the DREC arranged special tours for area growers at the

project's research sites near Halliday and Mott so growers could meet with researchers working on the project and provide input on what research they think is needed. Based on input from all meetings with growers, we learned that the research on development of fertilizer recommendations specific for the region and development of improved malting varieties that will more consistently meet the specifications set by the malting and brewing industry were of most interest.

In July, the North Dakota Barley Council (NDBC) held their annual summer meeting of County Representatives at the WREC. Representative Bob Skarphol also attended the meeting and was recognized by the NDBC for his support of the project. During their meeting, the NDBC County Representatives were updated by researchers from the WREC, MSUEARC, and Fargo working on the SBARE Western Malting Barley Project. They also toured the research being conducted for the project at the WREC and MSU-EARC.

In August, the American Malting Barley Association, Inc. (AMBA) held their annual tour of barley fields in North Dakota. The AMBA is a non-profit trade organization with due paying members from all major malt producing companies in the U.S. and the brewers Anheuser-Busch, Miller Brewing, Latrobe Brewing, and Sierra Nevada Brewing. Before the beginning of their tour, an optional half-day tour visited barley production fields between Minot and Tioga, ND. During this tour, AMBA members were briefed on the SBARE Western Malting Barley Project and met with Representative Bob Skarphol to express their thanks for his support.

NEEDS FOR THE FUTURE

Language by the North Dakota legislature in 2001 establishing the SBARE Western Malting Barley Project only pertained to the current biennium (2001-2003). Therefore, for the project to continue, support from SBARE, the North Dakota Barley Council, the North Dakota Agricultural Experiment Station, and the 2003 North Dakota Legislature are needed.

Also needed for the project to function adequately are, the following items:

- Matching funds to complete the modifications to the new plot seeder for barley and purchase a trailer and tractor for the plot seeder at the Williston Research Extension.
- Matching funds to build a plot seeder for the Dickinson Research Extension Center.
- Permanent technicians specifically assigned to the Western Malting Barley Project at Dickinson and Williston.
- Funds to establish a linear irrigation system for 40-acres of irrigated crop research on land recently purchased by the Williston Research Extension Center in the Nesson Valley, 23 miles east of Williston.

CONTACT PERSON

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TABLE 1. LOCATION OF YIELD TRIALS GROWN IN THE 2002 SBARE WESTERN MALTING BARLEY PROJECT

Location	Trial
Dickinson (Halliday)	Low-protein malting barley trial (2- and 6-rowed barley). Intermediate 2-rowed malting barley trial.
Dickinson (Mott)	Low-protein malting barley trial (2- and 6-rowed barley). Intermediate 2-rowed malting barley trial. Australian low-protein malting barley trial. (doubled-haploid)
Williston - Fallow	Advanced 6-rowed malting barley trial. Intermediate 6-rowed malting barley trial. Low-protein malting barley trial (2- and 6-rowed barley). Intermediate 2-rowed malting barley trial. Australian low-protein malting barley trial. (doubled-haploid)
Williston - Recrop	Advanced 6-rowed malting barley trial. Intermediate 6-rowed malting barley trial. Low-protein malting barley trial (2- and 6-rowed barley). Intermediate 2-rowed malting barley trial.
Sidney	Advanced 2- and 6-rowed barley malting barley trial (overhead irrigation). Advanced 2- and 6-rowed barley malting barley trial (flood irrigation). Six-rowed barley headrow nursery. Six-rowed barley F_2 nursery. Two-rowed barley headrow nursery.

TABLE 2. GRAIN PROTEIN AND KERNEL PLUMPNESS OF SELECTED ENTRIES GROWN IN THE LOW-PROTEIN YIELD TRIAL AT FOUR SITES IN WESTERN NORTH DAKOTA, 2002.

	Halliday		Mott		Williston-Fallow		Williston-Recrop	
Entry	Grain protein	Kernel plumpness	Grain protein	Kernel plumpness	Grain protein	Kernel plumpness	Grain protein	Kernel plumpness
	%	%	%	%	%	%	%	%
Stander	16.0	55.1	13.0	80.2	15.2	64.0	15.4	90.6
Lacey	16.9	32.2	12.9	74.8	15.6	56.7	14.8	84.2
Drummond	15.9	21.5	12.8	75.8	15.3	57.0	15.1	86.8
6-rowed Expt. #1	13.6	39.1	11.0	84.5	12.8	57.2	12.3	84.6
6-rowed Expt. #2	13.1	48.2	--	--	12.8	66.3	11.3	88.5
Conlon	16.3	65.6	12.7	92.1	15.0	75.7	14.4	94.6
2-rowed Expt. #1	13.9	74.6	11.9	87.4	15.0	75.7	14.4	94.6
2-rowed Expt. #2	13.9	78.6	11.9	92.2	14.0	76.5	13.7	93.7

Table 3. Agronomic performance of barley varieties grown under sprinkler and flood irrigation in Sidney, Montana in 2002.

Variety	Yield		Lodging		Stem breakage	
	Sprinkler	Flood	Sprinkler	Flood	Sprinkler	Flood
	----------bu/ac----------		----------0-9[†]----------		----------1-5[‡]----------	
Morex	103	94	4.7	5.7	4.7	4.9
Robust	114	104	3.0	4.7	4.0	4.7
Stander	121	103	2.0	2.3	2.8	3.3
Lacey	127	104	1.9	3.3	2.6	3.3
Drummond	123	89	1.9	1.3	2.1	3.2
Conlon	111	99	4.0	5.7	4.7	4.6

[†]1=No lodging and 9=severe lodging.
[‡]1=No stem breakage and 5=severe stem breakage.

Table 4. Participants on the SBARE Western Malting Barley Project.

Individual	Affiliation	Responsibility
Dr. Rich Horsley	NDSU – Plant Sciences	Project coordinator and six-rowed barley breeder
Dr. Jerry Bergman	WREC[1] and MSU-EARC[2]	Director WREC and Superintendent MSU-EARC
Mr. Neil Riveland	WREC	Agronomist and Assistant Superintendent WREC
Mr. Gordy Bradbury	WREC	Research specialist
Dr. Joyce Eckhoff	MSU-EARC	Agronomist
Dr. Kris Ringwall	DREC[3]	Director
Mr. Jim Nelson	DREC	Research specialist
Mr. Roger Ashley	DREC	Area extension specialist
Mr. Tim Faller	HREC[4]	Director
Mr. Eric Eriksmoen	HREC	Agronomist
Dr. R. Jay Goos	NDSU-Soil Science	Soil scientist
Dr. Jerry Franckowiak	NDSU- Plant Sciences	Two-rowed barley breeder
Dr. Stephen Neate	NDSU-Plant Pathology	Barley pathologist
Dr. Paul Schwarz	NDSU – CSFT[5]	Barley cereal chemist

[1]WREC = Williston Research Extension Center.
[2]MSU-EARC = Montana State University Eastern Agricultural Research Center.
[3]DREC = Dickinson Research Extension Center.
[4]HREC = Hettinger Research Extension Center.
[5]CSFT = Department of Cereal and Food Sciences.

Busch Agricultural Resources
Sidney, Montana

On October 30, 2002, Anheuser-Busch announced their plans to build a state-of-the-art barley handling and storage facility near Sidney, Montana with 1.5 million bushel storage capacity and a daily receiving capacity of 100,000 bushels, the equivalent to a 25 unit car train. Dick Emerson, Director of Barley Operations with Busch Agricultural Resources, Inc. (BARI), expects the MonDak growers and the area to benefit from the new facility. BARI barley acreage in the MonDak region has expanded 300% since 1998 with further barley acreage expansion scheduled for 2003.

The announcement that BARI made a commitment to the region has also resulted in expanded economic development in Fairview, Montana. The Fairview Bean and Seed business is expanding by installing 20 new 4,100 bushel capacity hopper bottom bins for cleaning and storage of BARI certified malting barley varieties and will provide a substantial increase in business with seed accepted from central North Dakota to eastern Montana.

Chairman and Committee Members

As a small grain and specialty crops farmer in Southwest North Dakota, I would like to voice my support of HB 1021, specifically the Barley Initiative portion.

Over the past 3 years my son & I have expanded into the malting barley market. We have produced approximately 30,000 bushels/year. Continued funding of barley research in southwest North Dakota would prove to be a definite advantage to our operation as well as others in the area who have started to grow barley for malt or milling usage.

The economic impact that malting barley has had on our operations is substantial. Conservatively estimating, our gain has been about 50 cents above feed barley, which has been the primary use of barley grown in our area. This gain figures out to be a $15,000 gain for our operations. Malting barley prices have been comparable to wheat prices as of late and malting barley typically will out-produce wheat by about 15 bushels to the acre. It is easy to see that malting barley could be a great source of economic gain for the agricultural producers in southwest North Dakota.

Our family operation recently took part in a barley research plot. This plot will garner useful information for area growers and those who purchase our products. The research focused on how different varieties fared in our area. Research is scheduled to continue and will incorporate fertilization rates and variety research. Research is an important part of the continuation of agriculture in North Dakota.

I urge you to vote in favor of continued support of the barley initiative to provide funding for research.

Respectfully submitted,

William Flaget
Owner/Operator
Flaget Family Seed Farm
Halliday, North Dakota

Kris Ringwall
HB 1021

The North Dakota BEEF LINE INITIATIVE

A Comprehensive Report to the 2003 ND Legislative Assemblies

An NDSU Research and Extension Initiative for the Beef Industry

PROJECTS HELPING THE BEEF INDUSTRY

A Comprehensive Report

The BeefLine Initiative Projects

The BeefLine Initiative was proposed in 2000. Research and extension leaders, along with private producers and agri-business leaders in the state, created a network of communciation regarding the state of affairs of beef production. This discussion provided insights into the short term and long range needs and goals of everyone connected with beef production.

The net result was the identification of an initiative that would provide options for producers from conception through harvest. The concept included research and extension education and assistance to provide beef producers with management strategies which would optimize resources available and maximize economic returns.

The beef industry directly impacts the economic well being of rural areas and the state. The total impacts of the 26 projects listed in this report will only be known over time but these projects show how an alliance between the North Dakota University System, private producers, government agencies and agri-business can work positively for all involved.

In addition, this report details much about the dedication and service of agriculture professionals involved in research, extension and education within North Dakota.

1. 12-Month Pasture-Forage Management Systems ..... Lee Manske
2. Adopting Performance Records through CHAPS ..... Karl Hoppe
3. Bedding and the Environment ..... Vern Anderson
4. Beef Quality Assurance ..... Lisa Lee
5. Calves to Carcass Project ..... John Dhuyvetter
6. Capturing Value of Flax and Barley Diets in Animal Performance and Health Aspects of Beef ..... Marty Marchello
7. Conservation Reserve Hay Laboratory Analysis Project ..... Greg Lardy
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The Original Plan

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1. 12-Month Pasture-Forage Management Systems

Net income per cow using 12-month forage program = $251.53/cow.

Net income per acre using 12-month forage program = $21.54/acre.

Efficient 12-month pasture-forage management systems can increase beef production and significantly enhance the economy of North Dakota because they are more biologically effective than traditional practices such as 6.0-month and 4.5-month seasonlong treatments. This project is showing the effectiveness of 12-month pasture-forage management systems in improving efficiency of calf weight production and increasing profit margins.

On the twice-over management treatment, an efficient 12-month strategy, forage production required 11.7 acres, forage-feed cost $171.00 per year, production of calf weaning weight cost $0.28 per pound, and net returns after pasture-forage costs were $251.53 per cow-calf pair and $21.54 per acre.

On the 6.0-month season long treatment, forage production required 27.3 acres, forage-feed cost $329.51 per year, production of calf weaning weight cost $0.61 per pound, and net returns after pasture-forage costs were $47.37 per cow-calf pair and $1.74 per acre.

On the 4.5-month season long treatment, forage production required 23.9 acres, forage-feed cost $246.15 per year, production of calf weaning weight cost $0.46 per pound, and net returns after pasture-forage costs were $130.88 per cow-calf pair and $5.47 per acre.

Additionally, efficient 12-month pasture-forage management systems enhance the quality of natural resources by strengthening grassland ecosystem health, increasing grass plant growth, stimulating activity of beneficial soil organisms, facilitating nutrient cycling, and improving wildlife habitat.

Impact: Northern Plains beef producers who replace their traditional grazing and haying practices with efficient 12-month management strategies have the ability to double the cow herd size, reduce annual pasture-forage costs per cow by 30 to 50 percent, and increase net income 3 to 10 times on their current land resources. Imagine 1.9 million cows producing 650 pound calves at 88¢ per pound with 30-50 per cent lower costs. The net economical effect could reach $500 million for producers.

Project Coordinator: Lee Manske

2. Adopting Performance Records through CHAPS

Better cow herd genetic management decisions can be made by using benchmark data as the basis. The Cow Herd Appraisal Performance

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Software (CHAPS 2000), promoted by the North Dakota Beef Cattle Improvement Association, is a data collection program that analyzes herd performance. The collection of data is stymied by the lack of weighing equipment and time. Seven Griggs County producers weighed calves at weaning and are incorporating performance records into their herd management.

Increase weaning weight 20 pound per calf = $20,000,000.

Impact: Through genetic tracking, producers can select superior bulls which can increase weaning weights without additional costs, plus creating opportunities for increased feedlot and carcass returns. Imagine increasing weaning weights 20 pounds per calf produced in North Dakota. The net impact would be over $20 million to cow-calf producers.

Project Coordinator: Karl Hoppe; assisted by Extension Agent John Swenson

3. Bedding and the Environment

Ammonia volatilized from animal manure is a major pollutant in the earth's atmosphere. Adding carbon from straw has the potential to sequester more nitrogen from manure and urine through microbial action, reducing ammonia pollution. The raw manure/straw pack from bedded calves contained up to 54% more nitrogen than manure without bedding. Composted manure with straw contained 300% more nitrogen than manure from non-bedded pens indicating tremendous losses if a carbon source (straw) is not added to pens.

Nitrogen sequestering in straw lowers inputs by $3,400,000.

Impact: Nitrogen released as ammonia from animal waste can be significantly reduced if bedding is provided. Substantial sequestering occurs if manure is composted. This added nitrogen is useful as fertilizer, lowering off farm input costs significantly. Net total value of nitrogen sequestered from feedlot and beef cow manure is estimated at $3.4 million.

Project Coordinator: Vern Anderson

4. Beef Quality Assurance Programming

Because of consumer dissatisfaction with consistency and quality, beef demand has consistently declined over the past two decades. North Dakota ranks tenth in the nation in the production of feeder cattle and sales of feeder and backgrounded calves account for about 10 percent of annual agricultural cash receipts. The North Dakota Beef Quality Assurance Program is part of a national educational program to improve the consistency and quality of beef, focusing on production at the cow-calf

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level and continuing to the consumer. Developed in 1999, the BQA program is an alliance between the North Dakota Stockmen's Association, North Dakota Beef Commission, the North Dakota Department of Agriculture, the North Dakota Veterinary Medical Association, the North Dakota Livestock Marketing Association and industry representatives. Certification requirements were developed and producer-friendly educational material was produced. North Dakota's Beef Quality Assurance program is considered by many national beef leaders to be one of the premier quality assurance programs for cow-calf producers.

Nickel premium on
900,000 calves at 500 lbs
= $22,500,000.

Impact: Over 1,500 beef cattle operations have been certified, affecting .25 million cattle annually. This is about 25 percent of the annual production. Re-certification is available via the internet. The economic impact is profound because some certified producers report getting their calves sold for a premium, and/or into certain alliance or branded beef programs. Image just a 5¢ premium on 900,000 calves sold at an average weight of 500 pounds. The outcome would mean an additional $22.5 million for producers. Additionally, the BQA program could provide additional incentives for quality, consistency and source verification in the final finished product which consumers today demand.

Project Coordinator: Lisa Lee

5. Calves to Carcass Project

Change in the marketing of beef can impact cow calf producers and create income opportunities by adding value. Value based buying of finished cattle through formula and grid pricing to incentive and source specification cattle for branded products rewards sellers of higher value animals and discounts non conformance. The Northwest Beef Task Force conducted an educational project to demonstrate cattle value differences, and further producer understanding of contributing genetic, feeding and management factors, and marketing alternatives to help them realize greater returns from their cattle. The project included feeding producer consigned steers to finish and following them through slaughter and grading at a concluding workshop.

Impact: The 40 participating producers may continue to track and document the feeding and carcass characteristics of their cattle, using this information as the benchmark for continued improvement in feeder calves. A shift to more retained ownership through finishing and marketing may allow producers to capture value from high feedlot performance and premium carcass characteristics. Image producers retaining ownership on

5¢ premium on 10% of ND
calves on rail as part of
retained ownership
= $3,6000,000.

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10% of the 900,000 calves produced annually and earning a 5¢ premium on the rail. That would translate to $3.6 million.

Project Coordinator: John Dhuyvetter; assisted by Extension Agent Warren Froelich

6. Capturing Value of Flax and Barley Diets in Animal Performance and Health Aspects of Beef

There is increasing interest in enhancing omega 3 polyunsaturated fatty acids in the human diet for heart health and potential chemo-protective characteristics. Flax and fish meal are excellent sources of omega 3 with linolenic acid the major source in flax. Flax has been reported to escape bio-hydrogenation in the rumen making it a more reliable source of omega 3 than fish meal. Barley diets supplemented with flax should enhance animal performance over corn or barley rations and may modify the fatty acid profile of the meat.

A feeding trial with yearling steers conducted at the Carrington Research Extension Center compared feed intake, average daily gain, feed efficiency, and carcass traits on fivebarley diets containing 0% to 10% flax fed for 28 or 56 days. A corn control diet was also used. Samples from each carcass were obtained from the loin, brisket and round. These samples are pending fatty acid profile evaluations. A trained taste panel has evaluated the steaks and the data is currently being analyzed.

Impact: The addition of flax (omega 3) to the diet can potentially enhance the amount of healthy fatty acids in beef and give beef a better image in the eyes of the American consumer.

Project Coordinator: Marty Marchello

7. Conservation Reserve Hay Laboratory Analysis Project

The drought of 2002 caused many North Dakota cow calf producers to rely on Conservation Reserve Program (CRP) hay for winter feed supplies. Over 150 samples of CRP hay were analyzed for crude protein, neutral detergent fiber, and acid detergent fiber. The crude protein ranged from 3.99 to 16.30% with an average of 8.39%. Similar variation was noted for other nutrients. Two major factors influenced the quality: the date cut and the amount of alfalfa in the stand.

Impact: This project assisted producers establish a supplementation regimen based on the hay analysis. Without this laboratory analysis, a cost effective supplementation program would not have been implemented.

Project Coordinator: Greg Lardy

8. Co-products as an Alternative Creep Feed

Providing supplemental feeds to grazing calves remains is a management choice producers use to increase calf weaning weights, which may lead to heavier sale weights and/or earlier sale dates. This study compared wheat midds to a commercial creep feed for increasing weights before weaning. Data showed actual average calf weights, not adjusted for age of cow, age of calf and pasture location, were 41 pounds less for the co-product feed. The co-product cost was 28.5% less with a total creep feed cost saving of $11.16 per head.

Impact: Using co-products as creep feeds can reduce supplemental feed costs, however, reduced weaning weights, and reduced profit, may

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result from not feeding nutritionally balanced, higher cost creep feeds.

Project Coordinator: Karl Hoppe; assisted by Extension Agent Randy Grueneich

9. Feedlot Usage of Straw Bedding

Providing straw for bedding during the winter is one method of mitigating effects of severe weather. Bedding is commonly done by farmers and ranchers but not by larger feedyards where logistics are more challenging. Data suggests steer calves beded during the winter gained .46 lbs more per day, were cleaner, and produced 32% more choice carcasses yielding a financial advantage of $50.91 per head after bedding costs.

Impact: If all calves currently being fed to finish in the state were bedded, an additional $5 million dollars would be generated. Growing calves backgrounded in ND can also benefit potentially yielding additional returns.

Project Coordinator: Vern Anderson

Net return from usage of straw bedding in feedlots = $5,000,000.

10. Field Peas in Receiving Diets for Beef Calves

Field peas are a nutrient dense annual legume grain with high palatability for beef cattle. Calves consumed more feed if peas, protein rich, high energy, yet safe feed, were included in the 60% concentrate receiving diets. Improved gains were observed and all health was equal for all treatments.

Field peas in calf weaning diets could increase pea value by $4,000,000.

Impact: Field peas in receiving diets increase feed intake, gain, and profit potential. Additionally, this home grown feed grain will reduce off farm purchases of protein and increase value capture of ranch raised feed and calves. If feeding adds $1 per bushel to the value of peas, increased revenues of $4 million will be realized for producers who grow their own protein.

Project Coordinator: Vern Anderson

11. Fly Ash for Stabilizing Feedlot Surfaces

Mud and spring break-up cause serious environmental challenges to profitable cattle feeding in North Dakota. Concrete and asphalt are

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expensive alternatives to dirt lots. Fly ash integrated into the surface of feeding pens may stabilize soils and prevent muddy conditions. Growing ruminants fed the same diets were contained in fly ash impregnated pens and control pens. The fly ash pens dried faster during spring thaw and rainfall than the control pens. Animals gained .25 lbs more per day during a six month feeding period that included late winter through early summer.

Fly ash in feedlots could improve economic returns by $10,500,000.

Impact: If all calves fed in North Dakota were fed in pens impregnated with fly ash, the net improvement in value of marketable gain is estimated at $10.5 million.

Project Coordinator: Vern Anderson

12. Forage Quality and Supplementation

Cow calf production efficiency is greatest when the cows nutritional needs are met resulting in high reproduction. Opportunities to save feed cost exist by matching cow type and schedule to the forage resource of the ranch and limiting purchased supplements. A ranch monitoring project was established to clip and analyze pasture forage through the grazing season and harvested hay for wintering for nutrient content. Results were compared to estimated cow requirements for determination of nutrient deficiencies and appropriate supplementation.

Impact: For this late calving herd of moderate size cows rotationally grazed on native pasture and wintered on native meadow hay a fairly good match of needs to production was found. However, a fairly continual deficiency for several trace minerals was identified along with some seasonal needs for phosphorous and protein.

Project Coordinator: John Dhuyvetter

13. Hay Feeding Methods and Wintering Costs

North Dakota beef cattle producers feed over 2 million ton of hay to cows annually. These wintering costs make up a large portion of the production costs. Since the majority of hay within the state is put into round bales, a hay feeding methods study was established to document animal performance, waste, and economics. This study investigated three ways to feed round bales: rolled out, shredded and in a bale feeder. Weight gain, fat depth change, body condition score changes, hay intake and hay efficiency were measured.

Eliminating hay waste with proper feeding could save $10,000,000.

Impact: Previous research indicated losses

can range from three to 45 percent, depending on how hay is delivered to beef cattle. In this study, there was no significant difference in animal performance, so economic considerations were limited to differences associated with hay consumption and ownership and operating costs of machinery and equipment. Use of a round bale feeder offered substantial cost savings because of lower feed consumption by cows and less equipment operating time for feeding hay. Imagine a decrease in hay waste by 10 percent, or about 225,000 ton of hay annually. At $40 per ton, that means a savings of $10 million for producers.

Project Coordinator: Doug Landblom

14. High Quality Forage

Cow-calf producers can increase returns by feeding calves or cull cows past traditional weaning/shipping dates. This project evaluates the economics of producing high quality annual forage harvested as hay and self fed as big round bales in waste conserving feeding rings. Cull cows are being used in this trial, however, feeding performance and conversion data will provide insight on the alternative of growing feeder calves or replacement heifers on a low input simple system.

High quality forage could net producers an extra $12,000,000.

Impact: If high quality annual forage produces moderate gains and conversions with little labor and equipment cost, producers will likely have an option to grow and recondition feeders and culls at an economical cost of gain. Returns can be enhanced by marketing heavier animals at periods of higher seasonal prices. Imagine if the cull cows sold annually (15% of 950,000 cows with an average weight of 1,100 pounds) could net an additional 7.5¢ per pound, producers could earn nearly $12 million dollars.

Project Coordinator: John Dhuyvetter

15. Implant Effectiveness in Beef Calves

Research data supports the use of implants in beef calves due to their ability to increase weight gain. It has been suggested that a potential of 500 to 1000 percent return on investment is available when implants are used. However, producers are beginning to question the effectiveness of implants compared to leaving male animals intact until weaning. In this study, weight gain was not affected by either castration or implantation.

Impact: Results from this study do not support the practice of delaying castration in beef calves to take advantage of "natural" growth promotants. The lack of a response from implantation of early castrated calves suggest more work is needed in this area.

Project Coordinator: Chip Poland; assisted by Extension Agent Bridget Johnson

16. Livestock Marketing Clubs

Startup funds were provided to establish six clubs dedicated to livestock producers. Funds of $750 per club were given out after requirements were met. Clubs needed to have a facilitator, leader and instructor, and

conduct 24 hours of educational programming per year.

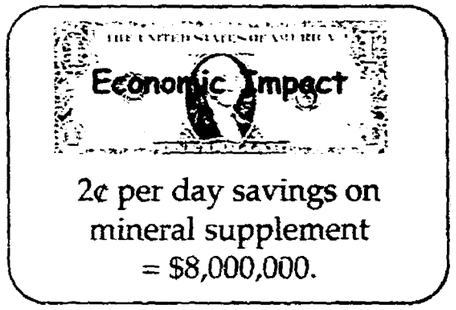
Livestock clubs were established in the counties of Stark, Kidder, Logan, Dunn, Ward and McHenry. They are facilitated by Extension Agents and Farm Business Management Instructors. Club leaders are members and members secured instructors who provide the required education.

Impact: The following comment from a facilitator sums it up well. "The group knows that owning the cattle with no protection is speculating. One producer wanted to retain ownership of his calves with very limited risk. After we looked at his break-even and looked at protecting the price, it wasn't in the market, so he decided to just sell the calves. This is the kind of decision that this group of producers is able to make."

Project Coordinator: George Flaskerud

17. Mineral supplementation

Beef cow feed inputs become cost effective when needed for better production or health. Within North Dakota, the soil types and mineral content of grasses vary immensely. Cows selectively graze to consume a nutrient dense diet. This study used a new clipping technique to monthly sample grasses for protein, fiber, and mineral availability to assist beef producers develop trace mineral supplementation.



Impact: Cost effectiveness of the current mineral program can be determined after trace mineral analysis of grazed forages. Imagine if mineral supplementation costs can be reduced by 2 cents per cow per day by matching supplementation needs, that is a potential impact of 58 million per year to North Dakota beef producers.

Project Coordinator: Karl Hoppe; assisted by Extension Agent Andy Gross

18. Nutritional Value of Locally Grown Forage Oats and Barley

Acreage seeded to annual forages constitute a significant portion of the total acres planted in North Dakota. Small grains are the typical choice for annual forage to be fed to beef cattle. Determining factors that influence economic output (e.g. quality, total yield) is essential if the economics of annual forage production are to be optimized.

Data is being used to demonstrate to producers differences among oat and barley and forage and grain type genotypes for forage production.

Impact: This information will be available to crop and livestock producers alike to aid in their attempts to optimize the balance between yield and quality in annual forages.

Project Coordinator: Chip Poland; assisted by Extension Agent Harvey Peterson and Area Extension Agronomist Roger Ashley

19. Ration Formation Helped by Feed Testing

Variable forage quality was more pronounced in 2003 due to drought

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and having CRP fields. A wide range of hays, including CRP, grass, alfalfa and annuals, were harvested and tested for protein, fiber, calcium and phosphorous. Nineteen producers representing 5,500 cows were shown forage sampling and ration balancing methods. Forages ranged from 4.8 - 20.6% crude protein and 37.6-49.5% acid detergent fiber.

2% increase in conception and 20 lbs of WW could assist producers earn an extra $22,500,000.

Impact: Balancing rations and matching feed resources to cow nutritional needs can improve overall cow body condition. Although feed costs may not have been reduced, improved nutritional status will lead to better cow reproduction, and improved calf weight and health status. Imagine a 2% increase in conception and an additional 20 pounds of weaning weight on the state's cow herd. It could mean over $20 million to producers.

Project Coordinator: Karl Hoppe; assisted by Extension Agent Tom Olson

20. Resource-based Cow/Calf Production Systems

This program seeks to develop a range land computer model. Rangeland managers face pressure from many groups that may frequently take segments of data to come to conclusions about the impact of management practice on an ecosystem. Livestock grazing, in recent years, has been such a management practice.

Data from our 14 year study is beginning to show the negative impact of excluding all livestock grazing from the Coteau range lands. Our goal is to have a model that can assist beef producers and range planners develop programs and establish policies on public lands that will be productive for land use for livestock, wildlife and society. Developing a model of this type takes time. Only a small portion of the resources of the CGREC budget go into these types of studies, but in time the payoff can be enormous.

Impact: This model may, in time, be able to assist livestock producers and others interested in determining the outcome of a particular management practice on the productivity and stability of the range land.

Project Coordinator: Paul Nyren

21. SmartCows™ Offers Systems Management Strategy

SmartCows™ was developed by the North Dakota Beef Cattle Improvement Association to provide a systems management strategy for cow-calf producers. The program provides assistance in the areas of forage resource management, animal data collection, equipment and labor needed from conception through weaning. Additionally, SmartCows™ offers a seamless link, if producers desire, to retained ownership to any and all stops along the beef protein harvest chain.

SmartCows™ realizes two problems with performance record keeping for calves is labor and facilities. The SmartCows™ team takes the equip-

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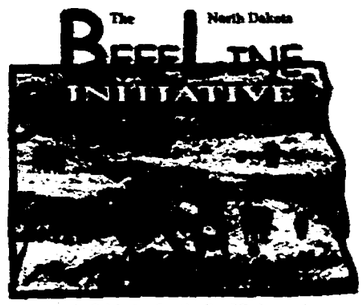

An Initiative for the Beef Industry

ment and labor force directly to the pastures to weigh, vaccinate, and record data on their preweaned calves. This portable equipment and team makes it possible to efficiently and safely handle calves and prepare them for weaning.

Impact: SmartCows™ offers producers full herd and individual animal data reports and assists in establishing 12-month forage resource programs which can optimize land use. The data is the power that helps producers make information management decisions. Researchers have already identified that proper forage management can double stocking rates on most land bases and increase weaning weights. Imagine if the North Dakota Cow herd could be doubled, which would double the number of calves produced--with more weight. An extra calf means $500 per calf to the producer. This extra sales can boost the economy of North Dakota.

Project Coordinator: Kris Ringwall

Proper forage management will increase the cow herd and weaning weights.

22. Southwest Feeders

BeefLine funds assisted with completion of a twenty-four pen backgrounding lot and hiring a Researcher/Educator/Coordinator to lead this new value added beef initiative. This is a rural economic development project using the quality beef/lamb and feed commodities that are in abundance to add value to all. The focus of this project is the "On Farm Feeder" with the intent to more fully utilize the resources of their units helping to optimize their bottom line profit. First year trials are in place and data will be available early in 2003.

Impact: A successful Southwest Feeders project will stimulate economic growth across the entire spectrum of rural communities within the region. The project involves livestock producers, feed producers, feed lot operators, financing organizations, veterinarians, service professionals, economic development specialists and NDSU personnel within the agriculture infrastructure. Additionally, producers will receive education about feeding, marketing, risk management and value added economic opportunities.

Project Coordinator: Leif Anderson

23. Soyhulls vs. Corn: Energy Source in Lactating Beef Cows

This study compared soyhulls instead of corn as an energy source in lactating beef cow diets, with or without sunflower meal as a protein source. The project investigated whether soyhulls could help lower the overall cost of the ration if performance is unaffected. Results showed no effect on body condition score, body weight or milk production of cows. Calf body weight and weaning weight were not affected by supplement type or protein addition.

Impact: Soyhulls or corn are suitable as a supplement for the quality of forage (75% grass hay--11.5% crude protein; and 25% wheat straw--7.4%

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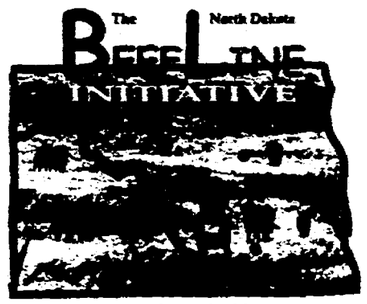

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crude protein) utilized in this trial and widely found in North Dakota. Soyhulls are priced competitively to corn and may be used to lower the cost of the ration without affecting cattle performance.

Project Coordinator: Greg Lardy

24. Sunflower Screenings, Barley Malt, or Wheat Midds in Lactating Beef Cow Diets

Feed cost is a major issue, but consistency of nutrients is critical to a productive cow herd. Several co-product feeds are available for beef producers to feed cows between calving and breeding turn-out but are variable in nutrient content. Cows fed sunflower screenings after calving lost more weight and condition compared to cows fed barley malt or wheat midds. Conception rate was only 23% for cows fed sunflower screenings.

Impact: Alternative feeds need to be carefully scrutinized for nutrients when used in critical periods such as before and during breeding season. Lack of proper nutrition could cause serious reproductive problems amounting to millions of dollars, depending on the extent of use and diet formulations.

Project Coordinator: Vern Anderson

25. Water Quality for Cattle

Quality water is needed for better cow performance. Water containing less than 1000 PPM TDS, total dissolved solids, is generally recognized as good. As drought tends to concentrate dissolved solids in drinking water, fecal bacteria, another indicator of poor quality, may increase. Water samples were collected during summer drinking sources for five herds in Eddy County, North Dakota. Dugout ponds, springs, rivers and lake sources provided an average of 689 PPM TDS and 615 fecal coliforms per 100 ml of water

Impact: Water quality in eastern North Dakota pastures tends not to be limiting cattle growth. Developing alternative watering systems will provide cattle access to water with lower fecal counts. Managing water resources will improve the environment.

Project Coordinator: Karl Hoppe; assisted by Extension Agent Tim Becker

26. Water Quality/Waste Management

Water quality and waste management are two issues beef cattle producers are forced to deal with. Animal waste is a non-point source pollutant. Assessing potential pollutants is simple and accomplished through various means. Control of pollutants with sound land management practices is important. The Southwest Feeders Project worked closely with the North Dakota Health Department to construct pens that are practical in nature and will serve as an excellent demonstration site for the area. Future work will monitor the movement of nitrates and phosphates in the soil profile and will be followed up with plot scale plant research looking at which plants best utilize them.

Impact: Proper management of animal waste is important for the future of air, soil and water quality. The addition of waste management engineers and the coalition with the North Dakota Health Department gives credence to the need to provide research and educational opportunities for producers and non-producers alike. The net impact of proper livestock waste on soil as a fertilizer aid could be huge.

Project Coordinator: Tim Faller

Exhibit # 5
Sharon anderson
HB 1021

Extension Report 78

Marketing Club Performance

George Flaskerud
Extension Crops Economist and Professor
Department of Agribusiness and Applied Economics

Marketing clubs are reaching a broad spectrum of crop and livestock producers

Forty-three marketing clubs were started during 1999-2002 with start-up funds from the state legislature. The educational focus has been for North Dakota producers to learn how to manage price risk to complement their proficiency in managing production risk through crop insurance and diversification. Members are leaders, facilitators are extension agents and farm business management instructors, and the clubs secure instructors for the educational program.

The funds were secured primarily by Steve Zimmerman of the North Dakota Farm Business Management Education Program and also by the North Dakota State University Extension Service. The program is coordinated by Zimmerman and George Flaskerud, extension crops economist.

Each club conducts 24 or more hours of educational programming per year. How well are the many different instructors teaching and how well are members learning the concepts? To answer these questions, club members were asked to complete inventories. In addition, evidence of change in practices and outcomes was requested from facilitators.

NDSU EXTENSION SERVICE
North Dakota State University
Fargo, North Dakota 58105

SEPTEMBER 2002

Inventories

Marketing club members completed four inventories. A survey of personal and farm characteristics and a test were completed before starting the educational program. A test and evaluation were completed at the end.

The inventories were completed Sept.1, 2001 to Aug. 31, 2002. Copies of the inventories can be found in Extension Report 69, "Marketing Club Information for the North Dakota Program," and at *www.ag.ndsu.nodak.edu/aginfo/cropmkt/clubs/clubs.htm*.

Seventeen of the clubs in the North Dakota marketing club program participated in the inventories. Clubs are listed in Extension Report 70, "Marketing Club Directory," and can also be found at the Web site above.

Results

The majority (68 percent) of members were 35-54 years old (Table 1). They were well educated, 70 percent had post-high school education, and were interested in learning more about marketing, 74 percent had attended a previous marketing workshop. Most (78 percent) had access to the Web. They generally preferred (61 percent) meeting twice a month with their marketing club.

They operated medium-sized farms (1,444 acres of cropland on average) and 78 percent worked off-farm, although many worked just a few days off-farm. The members were primarily crop producers (44 percent), the balance came from livestock.

Members had enough storage (42,310 bushels on average) to facilitate using marketing tools. A marketing plan was used by 29 percent, futures by 45 percent, options by 46 percent and preharvest elevator contracts by 64 percent.

Few chose to avoid risks all together (9 percent). Most (60 percent) carefully evaluated risks before making a decision. Many (30 percent) were willing to accept a reasonable amount of risk. Very few (1 percent) considered themselves plungers. Although wheat was produced by the majority, many other crops were included in rotations to manage production risk.

Table 1. Characteristics of members (n=172).

Item	Amount
Age	11% 25-34 35% 35-44 33% 45-54 12% 55-64
Post high school education	70%
Attended previous marketing sorkshop	74%
Access to Web	78%
Off-farm employment	78% worked off-farm
Club meeting frequency preferred	61% twice a month
Acres operated	1,444 cropland 1,132 pasture
Storage	42,310 bushels
Majority of farm sales	44% crops 24% livestock 21% both substantial
Marketing tools used preworkshop	29% marketing plan 45% futures 46% options 64% preharvest elevator contracts
Risk attitude	9% avoider (most cautious) 60% calculator (analyze before decision) 30% adventurer (enjoy reasonable amount) 1% daredevil (plunger)
Crops produced	59% spring wheat 26% durum 41% barley 31% sunflowers 37% corn 27% soybeans 19% canola 13% flax 31% oats

Members completed inventories to determine their marketing knowledge at the beginning and end of the workshops. Results of the inventories are shown in Table 2.

Members improved their marketing knowledge. Their test scores improved from an average of 65 percent at the beginning to 73 percent at the end. Their self-evaluation ratings also improved for every marketing tool. The curriculum was obviously followed and successfully taught by the many different instructors used by the marketing clubs.

Table 2. Comprehension of marketing topics by members.

	Pretest (n=219)	Post test (n=107)
Test scores (29 questions)	65%	73%
	Self-Evaluation Rating (High=5)	
Historical basis	2.5	3.3
Storage return	2.0	2.9
Futures	2.6	3.1
Put and call options	2.7	3.3
Synthetic options	1.4	1.8
Fence (window)	1.7	2.0
Cash forward contracts	2.9	3.8
Delayed price contracts	2.7	3.5
Basis fixed contract	2.5	3.5
Minimum price contract	2.2	3.1
Hedged-to-arrive contract	1.9	3.0

Table 3. Evaluation by members (n=110).

	Rating (High=7)
Objectives of the presentations were clearly evident	5.7
Stated objectives were met	5.5
Structure/format/level	5.6
Meeting facilities	6.3
Work of the presenter	6.1
Educational materials	5.9
Ideas and activities presented	5.9
Benefit of attending workshop	5.7
Overall learning experience	6.0

Example of something learned which may help in the farm operation.

- A much better understanding of basis and how it works.
- Better understanding of futures and options.
- Elevator contract possibilities.
- Ways to minimize risk.
- The importance of having and using a marketing plan.
- Seasonal patterns in price and basis.
- Explained chart formations and how to use them.
- Re-enforced season tendency.
- No matter what, have a marketing plan for price and date and execute it.
- Watch markets more.
- The confidence to use futures.
- Spotting trends.
- How to gather information to make more informed decisions.
- Risk management.
- Vertical option spreads and window protection.
- Able to now do a better job of marketing.
- Inverted markets and market trends.
- Marketing plan for locking in prices before planting for price protection.
- Different marketing strategies
- Elevator contracts and the time of year to contract.
- Being comfortable in marketing some of the crop further out.
- Meeting with a group motivates learning
- Learned how to hedge feeder cattle.

The fairly high beginning test scores were consistent with the high level of marketing proficiency indicated in Table 1. A number of test questions addressed topics to be covered in subsequent meetings which limited the upside post-test score. Similarly, two tools (synthetic option and fence) received low self-evaluation ratings since they were likely discussed only briefly and need to be covered in more detail later as planned.

The overall learning experience (Table 3) was a high 6.0 (maximum of 7). Written comments were very favorable for the instruction, material, and facilities.

Practices and outcomes have also been changed. The following comments were offered by facilitators.

The group has really changed its mentality toward futures trading. Now when I ask them, "Is selling a live cattle futures contract speculating when you own cattle? Or is just owning the cattle speculating?" the group knows that owning the cattle with no protection is speculating. One producer wanted to retain ownership of his calves with very limited risk. After we looked at his breakeven and looked at protecting the price, it wasn't in the market. So he decided to just sell the calves. This is the kind of decision that this group of producers is able to make. Also, one member considered buying 800 lb. weight heifers to finish because he can lock in a profit in the futures market. In addition, the group is looking at pooling their light calves to make uniform loads to capture that value. I will say that the group has really progressed and this summer if the market is right I am positive most will make moves in the market for price protection.

Club members sold approximately 25-30 future contracts on feeder cattle for the November 2001 and January 2002 time frame in the neighborhood of $88 to $91. The result of these short positions was a gain of approximately $5,000 per contract for a total gain of $125,000 to $150,000.

A member purchased lightweight heifer calves last November to put on grass this summer. He waited until the calves had bottomed out, and recovered $1 per hundredweight (cwt) before purchasing. He then purchased an 82-cent feeder cattle put option at a cost of $1.25/cwt and eventually spent 60 cents to roll it ahead to an August 82-cent put. He has done a good job of protecting himself, and the option has worked well to keep anxiety and stress to a minimum. This producer will probably expand to doing something with wheat as well.

Conclusion

The marketing clubs are reaching a broad spectrum of crop and livestock producers. Members also represent a wide range of age, education and farm size. They are strongly motivated to learn about marketing and other areas of risk management.

Members learned marketing concepts and were satisfied with the many different instructors. This was clearly demonstrated in testing and evaluations.

Facilitator comments indicated that members are evaluating their marketing practices and making changes where appropriate. Livestock producers shared some very positive outcomes. The lack of comments on preharvest crop sales would be consistent with the strong expectation that higher prices would be forthcoming.

A follow-up educational program should be held as planned to make producers comfortable with some of the marketing techniques. In addition, a survey of members should be conducted to determine changes in practices and outcomes. The established profile and test scores will be useful for designing the second-year program and survey.

For more information on this and other topics, see: www.ag.ndsu.nodak.edu

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Annual Report

July 1, 2001 – June 30, 2002

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Executive Summary

The NDSU Research Foundation (NDSU/RF) had an active year in FY02. The total income, excluding investment market value changes, to the NDSU/RF increased by 14% from the previous fiscal year to $1,349,448. Research fees and royalties accounted for 60.7% of this income. The NDSU/RF endowment declined by 0.5%, ending the year with total assets of $2,189,503. The Board of Directors has diversified the portfolio of the endowment as a long-term investment strategy to grow the endowment.

A total of $323,050 of the research fees and royalties was distributed to NDSU colleges, departments, and inventors/breeders; and $5,409 was distributed to non-NDSU entities. An additional $491,586 plus interest earned was added to the managed funds (research fees distributable) and the Spring Wheat and Durum Wheat endowments and is available upon request and NDSU/RF approval to NDSU Department(s). The NDSU/RF added $68,606 from research fee, license, royalty, and gift income to the NDSU/RF endowment, $152,264 to the Durum Wheat endowment, $220,115 to the Wheat Endowment, $20,000 to a Math Endowment, $1,500 to a Sociology Endowment, $1,000 to an Anthropology Endowment and $104 to a University Studies Endowment, for a total of $463,589. Investment income on the NDSU/RF and Spring Wheat and Durum Wheat endowment assets was $90.72 for the year. Legal and other operating expenses totaled $328,339. The NDSU/RF had an increase in net assets of $251,228. The income portfolio of technologies is becoming more diversified because the income from NDSU/RF wheat varieties declined by 64%.

The total assets of the NDSU/RF were $4,453,922 as of June 30, 2002. Assets grew by 6.0% from the previous fiscal year. A full 49% of the assets of the NDSU/RF was placed in the NDSU/RF endowment as of June 30, 2002. The NDSU/RF endowment decreased by 0.5%.

The NDSU/RF has formalized an independent contractor relationship with North Dakota State University (NDSU) and North Dakota Agricultural Experiment Station (NDAES) for the management of seed stock of the NDSU/RF wheat varieties. The agreement also includes public varieties assigned to NDSU/RF by NDSU on behalf of NDAES. The NDSU/RF has also formalized an arrangement with the North Dakota State Seed Department to collect research fees on soybean varieties in North Dakota.

Patenting activities during the fiscal year included the filing of eight new patents and eight new provisional applications. The patent applications filed were on "Antineoplastic Polyalkoxyalkylsiloxanes and Methods of Use Thereof", "System and Method for Imagery Organization, Compression, and Data Mining (PCM Model)," "A Distributed Audio System for the Capture, Conditioning, and Delivery of Sound" (CIP), "Concurrency Control in High Performance Database Systems", "Homogenous Adjuvant Blend Formulation for Enhancing Efficacy of Pesticides", "Power Distribution Control System and Method for Limiting Transient Current Conditions in Computer Architectures", "High pH Oil based Adjuvant Compositions for Enhancing Efficacy of Pesticides", and "Surfactant-ammonium Sulfate Adjuvant Composition for Enhancing Efficacy of Herbicides", mainly Glyphosate. Three were converted from three previously filed provisional applications. Although no new patents issued, several are pending.

Licensing efforts are continuing. A long-term perspective is needed to evaluate the success of the licenses entered into in FY02 as well as prior years, because of further development required for commercialization. The 'Dakota Rose' potato variety and 'Danatto' soybean variety were licensed in Canada. The 'Conlon' barley variety was re-licensed in Canada. A license agreement was entered into to test and potentially commercialize corn inbreds in France and durum varieties in Australia. A license was also entered into with an Australian company to commercialize the 'Dakota Pearl' potato variety.

A commercialization agreement was signed with Monsanto to commercialize NDSU developed soybean varieties containing the Roundup Ready® gene. NDSU/RF launched a controlled licensing program with 23 licensed growers, using a new brand name of Roughrider Genetics™. A reciprocal agreement was also reached with the South Dakota Foundation Seedstocks whereby these

Roughrider Genetics™ licensed growers and the South Dakota Sodak Genetics growers can market varieties from either state. NDSU released its first Roundup Ready® Soybean variety RG200RR and 20 licensed growers are producing certified seed in 2002.

NDSU/RF has entered into an equity/license agreement with a startup company with locations in Fargo and Minneapolis to further develop and commercialize a software technology. NDSU/RF also licensed the "Homogenous Adjuvant Blend Formulation for Enhancing Efficacy of Pesticides" technology and entered into an option agreement for the "High-pH Oil Based Adjuvant Compositions for Enhancing Efficacy of Pesticides" to Agsco, Inc., a North Dakota company. Under a previous license with Agsco, Inc., the Quad 7 product continues to be successful and resulted in royalties of over $101,000 this fiscal year.

NDSU/RF has also previously licensed the melt mixer technology to Standard Industries and the RAST technology to Dakota Technologies, Inc. Both are North Dakota companies.

Several horticultural cultivars have been licensed non-exclusively to nursery companies. Companies are being approached on the other technologies that have patents pending and/or trademark protection. Some companies are currently evaluating some of the technologies.

No new Plant Variety Protection (PVP) applications were filed in FY02. PVP Certificates on the 'Ransom' winter wheat, 'Alsen' spring wheat, 'Lebsock' and 'Plaza' durum, 'Drummond' barley, 'Sargent' soybean and the 'ND280', 'ND281', 'ND282', 'ND285', and 'ND286' corn inbreds. Approval has also been granted for the 'Conlon' barley variety for PVP protection.

The endowment reached the pre-established level of $1 million during FY97 and reached the $2 million level in FY00. The NDSU/RF Board of Directors has established a policy in which a portion (determined by the investment committee) of the endowment investment income earned as of the end of the fiscal year will be made available to support future research at NDSU. A "Research Development Support Program" is in its fifth year. Proposals, for projects up to $10,000, were accepted for the following types of projects: Innovation Awards and Investment Awards. A total of $59,897 was distributed in FY02. A merit review process through NDSU Sponsored Programs Administration was used with final approval by the NDSU/RF Board of Directors. NDSU/RF has contributed nearly $230,000 to NDSU research over the past five years under this program.

What Is The NDSU Research Foundation?

The NDSU Research Foundation (NDSU/RF) is an independent, not-for-profit 501(c)(3) organization that supports North Dakota State University in its missions by enabling NDSU faculty to enhance their involvement in research, technology transfer, and business endeavors. The NDSU/RF was established in 1989. Through linkages with public and private businesses and industries, the Foundation facilitates the commercialization of research technologies developed by NDSU faculty and staff.

The Foundation facilitates NDSU's ability to work with private businesses on research supported by grants and contracts from public and private sources and manages the intellectual properties of the University. The Foundation facilitates intellectual property protection (patents, trademarks, and copyrights) and commercializes research technologies developed at NDSU by negotiating license agreements.

The NDSU/RF was established by its by-laws to serve the following specific purposes:

A. To support and assist North Dakota State University in its teaching, research, and public service missions.

B. To develop linkages between various college and administrative units of North Dakota State University and the private sector.

C. To facilitate involvement by North Dakota State University faculty and professional staff in corporate research and development activities.

D. To cooperate with, and to enter into partnerships and joint ventures with, university-related foundations, offices, agencies, programs, and projects.

E. To enhance the human and intellectual capital of North Dakota State University through activities supported by grants and contracts from both public and private sources.

F. To promote economic development and rural revitalization in the state of North Dakota and the North Central region.

G. To develop, negotiate, and monitor contracts, licensing agreements, royalties, and any other form of equity position resulting from commercialization for university-held research and development.

North Dakota State University follows patent policies established by the North Dakota State Board of Higher Education and provides that discoveries or inventions developed by faculty, staff, students, and associates through the use of University facilities, time, or materials shall be vested in NDSU and must be offered to NDSU through the Office of Sponsored Programs Administration or its designee. The NDSU/RF was established to own and manage intellectual property developed by and assigned to North Dakota State University. The NDSU/RF enlists confidential assistance from the college and/or departments as well as the NDSU Institute for Business and Industry Development to evaluate the commercial potential of the idea or invention.

How Is The Foundation Administered?

A Board of Directors consisting of 14 members is responsible for the management and general administration of the NDSU/RF. Board members serve for one-year terms. An annual meeting is held during the summer. Additional meetings are determined by the Board. The NDSU/RF is administered by the Executive Director who reports to the Board of Directors. Dale Zetocha became Executive Director on July 1, 1995. The Board of Directors for the 2001-2002 year included the following:

Joseph A. Chapman, President
Warren Diederich, Vice President
Gary Secor, Secretary
R. Craig Schnell, Treasurer

Sudhir Mehta	Robert Tucker
Patricia Berglund	Joel Dick
Gordon Bierwagen	Duane Berglund
Phil Boudjouk	Tom Sinner
John Jambois	Bill Perrizo

A special appreciation goes to outgoing board members: Patricia Berglund, Duane Berglund, Sudhir Mehta, and Bill Perrizo. Their dedicated service and commitment to the NDSU/RF were helpful in advancing the Foundation. We welcome as new board members for FY-03 Lisa Nolan, Ken Grafton, Jay Leitch, David Wells and Neal Fisher. Beginning in FY-03, the Board of Directors will consist of 15 members.

These former board members are recognized for their dedication of time and effort while serving as board members of NDSU/RF:

Duane Berglund	Russell Maring
Patricia Berglund	Sudhir Mehta
Ace Brandt	Tracy Myers
Katherine Burgum	J. L. Ozbun
Dina Butcher	Bill Perrizo
Scott Danielson	William Pietsch
Brendan Donnelly	Thomas Plough
Allan G. Fischer	Don Richard
Hans Goettler	Harry Rosenberg
William Grosz	Lowell Satterlee
Donald Holden	Russ Slotten
Jim Kertz	Joseph Stanislao
Bob Koob	Robert Todd
Bill Kuntz	Sharon Wallace
H. Roald Lund	Mike Warner

Research Fees and Royalties

Any research fees and royalties received from patents and other intellectual property or know-how is first used to cover expenses incurred in patenting, licensing, collection, and other expenses related to the technology. After these expenses have been paid, the net research fee (royalty) income will be divided so that at least 30% of the net proceeds will be paid to those responsible for the invention as required by state law, and 70% is distributed by negotiation between the department, college, and

NDSU/RF. A typical arrangement would allow for the distribution of royalties as follows:

- 30% to inventor(s)
- 45% - 50% to originating dept./college(s)
- 20% - 25% to NDSU/RF

Alternative arrangements such as an equity position in a business may be negotiated.

Administration of Endowment Earnings for Research

The NDSU/RF endowment surpassed $2.0 million during FY00. Based on the policy established by the Board of Directors, $59,897 of the endowment investment income earned as of the end of FY01 was distributed in FY02 to support future research efforts.

This is the fifth year for the "Research Development Support Program" further enabling it to fulfill the long-term objective of providing additional funding support from the endowment for research at NDSU. NDSU/RF has contributed nearly $230,000 to NDSU research over the past five years.

The program was announced in July 1997. Awards up to $10,000 were approved by the NDSU/RF Board of Directors this fiscal year and are made in January of each year. Awards are for a one-year time period with a final report due in February following this one-year time period.

A competitive merit review process, through the Sponsored Programs Administration office was used. The NDSU/RF Board of Directors, based on recommendations from Sponsored Programs Administration, made the final approval of awards.

Several new grant proposals to organizations were submitted by NDSU scientists as a result of this RDSP program.

Two types of projects are considered within this Research Development Support Program (RDSP) and are described as follows.

- Innovation Awards -- for research and development projects which anticipate future patent or copyright activity and have commercial potential;
- Investment Awards -- for preliminary research projects, which are likely to lead to larger grants from outside sources in the future.

The NDSU/RF Board of Directors approved the awarding of six RDSP grants totaling $59,897. Two Innovation award projects were funded:

- Identification of Corn Inbred Lines with Commercial Potential Part II - Marcelo Carena, Assistant Professor, Plant Sciences Department.
- Development of a Heart Catheter for Ultrasonic Determination of Ventricular Volume, Roger Green, Assistant Professor Electrical and Computer Engineering Department.

Four Investment award projects funded include:

- Mechanisms of Wound Healing: Role of Angiogenic Growth Factors and Gap functions, Anna T. Grazul-Bilska, Assistant Professor, Animal and Range Sciences Department.
- Supramolecular Self-assembling of Nanoparticles Through Complimentary Hydrogen Bonding Approach, Qun Huo, Assistant Professor, Polymers and Coatings Department.
- Radiation Hybrid Mapping and Cloning of Genes of Wheat, Shahryar Kianian, Assistant Professor, Plant Sciences Department.
- Synthesis and Investigation of Water-Soluble Pentaazadentate Porphyrin-like Rare-Earth Complexes for Photodynamic Therapy Application, Wenfang Sun, Assistant Professor, Chemistry Department.

Financial Report

The NDSU/RF in 2001-02 had another active year. Income, excluding investment market value changes, increased by 14% from the previous fiscal year. The NDSU/RF was able to increase income from the previous year despite a 64% decline in research fees from the NDSU/RF wheat varieties, which includes the '2375' variety. This was due in part to a substantial gift from the North Dakota Crop Improvement Association and two County Crop Improvement Associations. This also indicates that the income portfolio is becoming more diversified.

A total income, excluding investment market value changes, of $1,349,448 was received during the 2002 fiscal year (July 1, 2001 - June 30, 2002). This income included royalties and research fees of $819,090 (60.7%), gifts $231,700 (17.2%), endowment investment interest and dividends of $117,378 (8.7%), seed increase fees of $21,861 (1.6%), interest of $14,290 (1.0%), patent cost reimbursement of $23,767 (1.8%), license fees of $120,000 (8.9%), litigation settlements of $1,363 (0.1%), and change in book value of stock of $107 (0.0%). Approximately 6.9% of the research fees and royalties collected were from the '2370', '2375', and '2398' wheat varieties.

Fiscal year operating expenses totaled $780,943. The NDSU/RF distributed a total of $452,604 of research fees and royalties to NDSU colleges, departments, and breeders/inventors. Additional research fees of $491,586 plus interest earned of which NDSU/RF will receive 1/3 of the interest were added to the managed funds (research fees distributable and Plant Sciences Endowments from FY02) and are available upon request to NDSU department(s). NDSU/RF distributed $59,897 in grants to support research from the endowment investment earnings. Research fees distributed to non-NDSU entities totaled $5,409. A total of $68,606 has been added to the NDSU/RF endowment, $220,115 to the Spring Wheat Endowment, $152,264 to the Durum Endowment, $20,000 to a Math Endowment, $1,500 to a Sociology Endowment, $1,000 to an Anthropology Endowment, and $104 to a University Studies Endowment from net research fee/royalty income. A change in market value of investments was ($306,153) for the endowments.

The NDSU/RF incurred considerable legal and related expenses totaling $151,808. These expenses included patent and trademark application and related expenses, licensing agreement legal expenses, Plant Variety Protection, litigation expenses, plant variety application expenses, and research fee collection expenses.

Total Restricted Asset Transfers to Endowments		$463,589
Durum Endowment	$152,264	
Wheat Endowment	$220,115	
Math Endowment	$ 20,000	
Sociology Endowment	$ 1,500	
Anthropology Endowment	$ 1,000	
University Studies Endowment (net)	$ 104	
NDSU/RF Endowment	$ 68,606	

NDSU Research Foundation
Statement of Revenues and Expenses (Unaudited)
July 1, 2001 - June 30, 2002

INCOME		
Research Fees and Royalties		$819,090
Seed Increase Fees		21,861
License Fees		120,000
Patent Cost Reimbursement (License)		23,767
Litigation Settlements		1,363
Gifts		231,700
Interest		120,543
Investment Return		(306,153)
Total Income		$1,032,171
Expenses		
Total Legal and Related		$151,808
Patent	$122,739	
Licensing	15,090	
Plant Variety Protection and Related	10,534	
Research Fee Collection & Other	2,795	
Trademark	650	
Total Operating		$176,531
RDSP - Endowment Distr.	59,897	
Salaries	89,327	
Insurance	2,819	
Travel	3,874	
Tax Preparation and Audit	3,000	
Bookkeeping	4,804	
AUTM Membership	822	
Board Meetings	526	
Other Operating	11,462	
Total Research Fees and Royalties Disbursed		$452,604
NDSU Dept/College/NDAES	$323,050	
Breeder/Inventor	124,145	
Non-NDSU Royalty Disbursed	5,409	
Total Expenses		$780,943
Increase in Net Assets		$251,228
Net Assets at Beginning of Year		$4,202,694
Net Assets at End of Year		$4,453,922

The total assets of the NDSU/RF were $4,453,922 at market value as of June 30, 2002. A full 49% ($2,189,503) of the assets of the NDSU/RF are placed in the NDSU/RF endowment. Another 32% ($1,407,101) has been placed in dedicated endowments for the NDSU Plant Sciences Department. Assets grew by 6% from the previous fiscal year.

The NDSU/RF endowment assets increased by 0.5% during this fiscal year. The NDSU/RF Board of Directors has established a policy in which a portion of the endowment investment income earned as of the end of the fiscal year (June 30) will be made available for future research. Distribution amounts will be determined by the NDSU/RF board of directors based on recommendations from the board's investment committee.

NDSU Research Foundation
Statement of Assets and Net Assets (Unaudited)
June 30, 2002

Assets (Foundation)		Market Value
Current Assets (Foundation)		
Operating Checking and Savings	$14,587	
Litigation Account (Checking and Savings)	$53,770	
Fund 9350	$0	
RRG Savings	$100,390	
Restricted Managed Funds	$629,180	
Total Current Assets		$797,927
Other Assets		
Stock Equity Book Value	$34,862	
Total Other Assets		$34,862
Plant Sciences Endowment Assets:		
Spring Wheat Endowment		
Money Market		$235,360
Mutual Funds		$410,035
Durum Wheat Endowment		
Money Market		$206,520
Mutual Funds		$555,186
Total Plant Sciences Endowments		$1,407,101
English Endowment:		$1,881
Sociology Endowment		$1,520
Anthropology Endowment		$1,013
University Studies Endowment		$ 108
Math Endowment		$20,007
Assets (NDSU/RF Endowment)		
Cash Accounts (Endowment)		
Money Market NCT		$1,036
Money Market D-R		$119,684
Total Cash Accounts (Endowment)		$120,719
Investment at Dain-Rauscher		$1,493,409
Investment at NCT growth		$322,889
Investment at NCT- Fixed		$87,719
Investment at Vanguard - S&P 500		$164,766
Total NDSU/RF Endowment Investments		$2,189,503
Total Other Assets		$3,655,995
Total Assets		$4,453,922
Restricted Assets (Foundation)		
Restricted Assets – Anthropology		$1,013
Restricted Assets - English		$1,881
Restricted Assets - Math		$20,007
Restricted Assets - Plant Sciences		$2,006,582
Restricted Assets – Plant Pathology		$29,699
Restricted Assets – Sociology		$1,520
Restricted Assets – University Studies		$ 108
Restricted Assets - NDSU/RF Endowment		$2,189,503
		$203,609
NDSU/RF		
Total Restricted Assets and Net Assets		$4,453,922

The Board of Directors has diversified the portfolio of the endowment as a long-term investment strategy to grow the endowment. The market value of the NDSU/RF endowment decreased from $2,201,426 on June 30, 2001 to $2,189,503 on June 30, 2002.

Roughrider Genetics™

Roughrider Genetics™ is a trademarked brand name established solely for the marketing of licensed or proprietary varieties owned and managed by the NDSU Research Foundation. Initially, Roughrider Genetics™ will be used for the commercialization of soybean varieties containing Monsanto's proprietary Roundup Ready® technology. In the future, Roughrider Genetics™ may include wheat varieties containing BASF's proprietary Clearfield® technology as well as other varieties that may or may not include proprietary technologies.

North Dakota State University has had ongoing Research Agreements with Monsanto to incorporate the Roundup Ready® gene into soybean lines and with BASF (formerly American Cyanamid) to incorporate the Clearfield Gene® into wheat lines.

Consistent with NDSU's policy, ownership of any varieties released will be assigned by NDSU on behalf of the North Dakota Agricultural Experiment Station (NDAES) to the NDSU Research Foundation (NDSU/RF). NDSU/RF protects varieties with Plant Variety Protection (PVP), plant patents, and trademarks when appropriate.

Most NDSU publicly released varieties use the North Dakota County Crop Improvement Associations to expand the seed supply of newly released varieties. Many NDSU constituents are asking for varieties with these new technologies. However, public varieties with proprietary technologies have to be handled differently. NDSU/RF has to license in the proprietary technology(ies) before seed of a variety can be commercialized. The license to distribute or market these varieties is held by NDSU/RF. NDSU/RF, in order to comply with the contractual obligations of such licenses, such as reporting requirements and payment of fees due from the license agreement, must use a controlled licensing program to control seed production.

NDSU/RF identified a select group of certified seed growers and approved, certified conditioning facilities that were deemed capable of meeting the criteria specified by the companies for production, conditioning facilities, and marketing the Roughrider Genetics™ varieties containing the proprietary technology. This group of growers and conditioning facilities was approached and offered the opportunity to become a Licensed Grower for NDSU/RF. Initial criteria for selecting Licensed Growers included:

evidence of experience in producing high quality seed through continuous, successful production of certified seed;

ownership of, or close proximity to, an approved, certified seed conditioning facility;

capability of meeting the financial, record-keeping, and reporting requirements required by the proprietary technology owner;

willingness to provide a significant investment (up-front fee) to NDSU/RF for start-up costs associated with Roughrider Genetics™ ;

willingness to provide an on-going financial commitment to Roughrider Genetics™ through increased Foundation seed costs, administrative fees, and marketing costs; and

geographical location.

As the scope and number of crops and varieties increase in the future, additional seedsmen in North Dakota and the surrounding states of South Dakota, Minnesota, and Montana meeting the selection criteria may be extended an invitation to become Licensed Growers with Roughrider Genetics™.

NDSU RF Hard Wheat

A major income source for the NDSU/RF has been from the exceptional gift of wheat germplasm by Pioneer. In March 1990, Pioneer made a special gift to the NDSU/RF of its Hard Red Spring Wheat Foundation seed stock '2370', '2371', and '2375'. The NDSU/RF owns this wheat and other germplasm. The NDSU Department of Plant Sciences in the College of Agriculture has been serving as NDSU/RF's independent contractor to manage the seed stock, including distribution of the seed, collection of revenues, and submission of research fees to the NDSU/RF, as well as research on undeveloped germplasm also given as part of the original gift.

The NDSU/RF has formalized the relationship with NDSU and NDAES for the management of seed stock of the NDSU/RF wheat varieties as well as for NDSU

Poor Original

developed varieties. The NDAES under this agreement and addendum agreements is serving as an independent contractor to NDSU/RF for these services.

The developed varieties of Hard Red Spring Wheat germplasm include the following varieties: '2370', '2371', and '2375'. Plant Variety Protection (PVP) on these varieties was obtained by Pioneer and transferred to the NDSU/RF.

- '2370' PVP Certificate #8900037 -- *Issued 5/28/93*
- '2371' PVP Certificate #8900036 -- *Issued 5/28/93*
- '2375' PVP Certificate #8800012 -- *Issued 3/29/91*

PVP was obtained in 1996 on the '2398' variety.

- '2398' PVP Certificate #9600102 -- *Issued 4/30/96*

A cooperative agreement exists between the NDSU/RF, South Dakota State University Agricultural Experiment Station (SDAES), and the University of Minnesota Agricultural Experiment Station (MAES).

Varieties developed by the NDAES, SDAES, and MAES from experimental lines of Pioneer germplasm will be released jointly unless an organization declines to participate. Seed is made available to SDAES and the MAES or their agents according to established practices that exist in the sharing of publicly developed varieties of Foundation class seed. A research fee of $.40 per bushel is collected on all Certified seed sold.

Foundation seed sales of these varieties have peaked in 1996 and have continued to decline. Current and previous years' sales are as follows:

NDSU/RF Wheat Foundation Seed

Year	Bushels
1990	20,105
1991	40,258
1992	56,877
1993	59,127
1994	96,000
1995	192,384
1996	230,928
1997	157,865
1998	83,150
1999	42,390
2000	18,890
2001	5950

The distribution of research fees (net of expenses) from the NDSU/RF wheat varieties is established as follows:

- 33.3% NDSU Department of Plant Sciences
- 16.7% NDSU/RF (operating)
- 50% NDSU/RF (endowment)

A summary of the following wheat seed ('2370', '2371', '2375', and '2398') activity for FY90 to FY02 is provided by the NDSU Department of Plant Sciences in the following table:

NDSU/RF Wheat Seed Activity

FY	Seed Sales	Expenses	Net Income
1990	$97,845.00	$4,760.74	$93,084.26
1991	126,964.79	253,013.34	(126,048.55)
1992	354,541.52	187,583.83	166,957.69
1993	576,615.35	620,111.87	(43,496.52)
1994	850,513.25	789,934.29	60,578.96
1995	1,736,190.58	1,690,222.48	45,968.10
1996	2,234,050.53	2,276,294.96	(42,244.43)*
1997	1,604,543.79	1,698,805.02	(94,261.23)*
1998	938,808.90	656,924.59	281,884.31*
1999	392,269.64	400,538.66	(8,329.02)*
2000	153,705.81	222,679.06	(68,973.25)*
2001	59,699.83	225,045.26	(165,345.43)*
2002	33,667.11	61,720.32	(28,053.21)
Total	$9,159,416.10	$9,087,634.42	$71,781.68

**This amount does not reflect accounts receivable collected in the next fiscal year. Seed carried over in inventory is also not reflected.*

This activity represents seed sales and production, cleaning, and other related expenses to the department. The Department of Plant Sciences has been allowed to retain the net income in the seedstocks program.

The North Dakota Agricultural Statistics Service has reported that the '2375' variety, the leading variety planted in North Dakota for six years, was the eighth most utilized variety. The '2375' variety accounted for 3.4% of the 2002 hard red spring wheat acres planted, down from 6.8% in 2001. The '2375' variety accounted for all of the research fee income of NDSU/RF wheat varieties in FY02.

A summary of the research fees collected since 1991 is also provided. The net research fees of NDSU/RF varieties in FY02 have been distributed according to established percentages to the NDSU Department of Plant Sciences and the NDSU/RF endowment and operating budget.

NDSU/RF Wheat Research Fees

	Total Research Fees	Endowment 50%	Operating 16.7%	Dept of Plant Sciences 33.3%
1992	$44,745.17	$22,372.59	$7,473.44	$14,900.14
1993	110,023.74	55,011.87	18,373.96	36,637.91
1994	237,799.96	118,899.98	39,711.59	79,187.39
1995	240,993.56	120,496.78	40,165.59	80,331.19
1996	556,663.00	281,099.17	89,867.61	184,896.22
1997	745,524.78	363,531.53	139,630.87	242,354.35
1998	719,727.24	352,294.65	117,431.55	234,863.10
1999	453,403.24	218,433.07	72,811.02	145,622.03
2000	286,864.00	143,032.03	47,677.30	95,354.67
2001	156,309.56	78,104.78	26,034.93	52,069.85
2002	56,090.05	28,445.13	11,273.72	16,171.20
Total	$3,600,124.37	$1,782,521.58	$611,499.50	$1,182,388.05

**Fiscal year research fees reflect a time lag due to the time required to collect research fee payments. For example, certified seeds produced during the 2000 growing season are sold beginning during the NDSU/RF 2001 fiscal year (July 1 - June 30) and reported in the 2002 fiscal year to allow for completion of seed sales and collection of research fee payments.*

A total of $1,782,521.58 has been placed in the NDSU/RF endowment since 1992 from these varieties.

The NDSU/RF endowment was established to enable the revenues to be used for future research. In 1993, the NDSU/RF contributed $10,000 as matching funds to be used for wheat blight research at NDSU. In 1998, the NDSU/RF contributed an additional $10,000 in matching funds to support research to explore fungicide application techniques to combat scab in wheat and barley. An additional $10,000 was contributed to this project in FY-99. This funding is in addition to any of the distributions by agreement for each variety.

NDSU Developed Varieties

The NDAES through the NDSU Department of Plant Sciences and in cooperation with other departments has a strong cultivar breeding and field and horticulture crops production research program. NDSU and NDAES wish to maintain nationally (and in some cases, internationally) renowned research programs as a public benefit to North Dakota, even though public support for university research, particularly agricultural research, has declined and may not be sustained even at the current levels.

The NDSU/RF is organized to own and manage the intellectual property of NDSU. Cultivars are part of that intellectual property. The current policy is that NDSU, on behalf of NDAES, assigns ownership of the cultivars to NDSU/RF. Research fee distribution agreements are signed for each cultivar.

A policy has been established by NDSU whereby all NDSU and NDAES publicly released varieties or cultivars will be protected under Plant Variety Protection (PVP). NDSU/RF through an addendum agreement to the existing independent contractor agreement contracts with NDAES for the management of the seedstocks of these public varieties.

Cultivars have a limited lifetime and will be replaced by new cultivars. Likewise, the income from cultivars often has a short life and research fee income may fluctuate substantially. The NDSU/RF has the capacity to administer, distribute net revenues by agreement, and manage these funds for the benefit of NDSU research programs. The NDSU/RF initiated a service of managing distributable funds for NDSU departments or colleges for the primary purpose of assuring continued short and long term support for research in developing and improving crops. The principal and investment income on these dedicated funds may be used to maintain and enhance research in the respective research (cultivar) program. The current policy is that two-thirds (2/3) of the investment (interest) income will be distributed to the department or program and NDSU/RF will retain one-third (1/3) of the investment income for administering the funds.

Two new dedicated endowments were established in FY00 to benefit the spring wheat and durum breeding programs. These endowments were established primarily from the managed funds of the NDSU/RF wheat varieties and the 'Lloyd' durum variety. It is anticipated that investment income will be used to support the respective breeding programs. A similar policy whereby NDSU/RF retains one-third (1/3) of the investment income has been established. The market value of the Spring Wheat endowment was $645,395 and the Durum Wheat endowment was $761,706. Both are set up whereby additional investments can be made. An advisory committee has been established to make recommendations on investment and potential distributions.

Research Fees are not collected in North Dakota from publicly released varieties unless approved by NDSU Agriculture Administration and NDAES. Research fees, ($.50 per bushel) at the request of the North Dakota Soybean Council, are collected on all NDSU released soybean varieties. The North Dakota State Seed Department (NDSSD) will collect research fees on all soybean varieties in North Dakota. The NDSSD will retain 7% of the amount

NDSU/RF Wheat Research Fees

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collected. The NDSU/RF has entered into an agreement with the Minnesota, Wisconsin, and South Dakota Crop Improvement Associations to assist with all soybean research fees collected in those states. Research fees of 3% of gross seed sales are also collected on all potato varieties. Royalties are also being collected on some horticultural varieties. Other public varieties may not have research fees for sales in the U.S. Any varieties licensed outside the U.S. will have potential research fees collected.

NDSU/RF and NDAES have entered into research and development agreements on the twelve corn inbreds with several corn companies. These agreements allow the companies to test and possibly develop hybrids from these inbreds. The companies will then be required to enter into a licensing agreement to commercialize the promising hybrids. Research fees will be negotiated at that time.

Research fees (royalties) are considered as a supplemental source of income to support the respective research and breeding programs. The research fees distributed from NDSU/RF varieties as well as NDSU developed varieties have allowed plant breeders and scientists in related plant sciences to increase the number of evaluations of experimental lines and the more rapid and increased incorporation of diverse genetic germplasm having desirable characteristics into NDSU varieties.

NDSU/RF wheat variety research fees have been used over the years to support fusarium head blight (scab) research in the Departments of Plant Sciences and Plant Pathology. In the past, NDSU/RF wheat variety research fees have supported wheat research projects that include: Identifying Wheat Scab Genes (Plant Sciences), Management of Orange Blossom Wheat Midge (Entomology), Identity Preserved Wheat (Ag. Economics), Wheat Genetics and Cytogenetics (Plant Sciences), Tanspot Toxin Identification (Biochemistry), and the purchase of spore trap equipment (Langdon Res./Ext. Center). Additional funds have been used to fund the additional costs of a winter nursery in New Zealand, fund part of the cost of the establishment and maintenance of a permanent wheat scab research plot including some equipment purchases, scab research related supplies, equipment and operating costs, and contributions to the purchase of a combine for the spring wheat breeding project and greenhouse lighting and the support of a post doc in Plant Pathology. The evaluation and testing of all the wheat germplasm (lines) gifted by Pioneer to NDSU/RF is complete. Desirable characteristics of these lines are being incorporated into the NDSU wheat breeding program. Research fees from NDSU/RF wheat varieties were used as research and equipment support for a second spring wheat breeder hired in FY-98.

In addition to the NDSU/RF wheat varieties, research fees from NDSU durum varieties in France and 'FOSTER' barley in Canada have been used to pay for increased costs associated with the necessity of moving the winter nursery for these breeding programs from Arizona (because of karnal bunt) to New Zealand. Durum research fees have also been used to support the durum breeding program. Funds have also been granted to the Plant Pathology and Cereal and Food Science Departments for durum related research.

Potato research fees in the Department of Plant Sciences have been used the past few years to purchase and install a walk-in cooler and purchase laboratory equipment. This has resulted in increased incorporation of diverse germplasm into future varieties. Additional cooler space was needed for storage of an increasing number of tubers of experimental selections. Plant Sciences purchased a roto-beater for easier harvesting of plots. Research fees in the department are also being used to defray the costs associated with the production of certified seed of promising advanced selections and for the purchase of a greenhouse irrigation system in 1998. The installation of the irrigation system increased the efficiency of the program by reducing the labor required for the watering of over 100,000 seedlings. The improved application of water and nutrients through the irrigation system has also improved the growth and tuberization of the seedlings. Funds are being used for general project operations including increased costs associated with the new Dawson research site. Funds were also used to improve potato/sugar beet storage facilities.

The NDSU Department of Plant Pathology has used research fees from cereal grains to support five ongoing research projects that will lead to improved disease resistance in new varieties, improved management practices or to develop disease control. A NDSU cereal pathologist has done the evaluations for the scab resistant cultivar Alsen, the first Fusarium Head Blight resistant wheat. They have developed fungicide application methods for FHB which have significantly reduced losses to growers. They developed the wheat disease forecasting system which tells growers the risk for foliar disease and FHB and provides a decision tool for fungicide spraying. The NDSU Department of Plant Pathology has allocated potato research fees

received to the research projects involved in variety development. Research fees in FY02 have been used to expand the level of testing for pathogens and diseases and to identify selections resistant to late blight. NDSU potato pathologists developed the late blight hotline used to reduce losses caused by the new mating type. The Hotline tells growers the risk of late blight and early blight and when to use fungicide sprays.

BARLEY

'CONLON' Barley

The 'CONLON' barley variety was released in the United States in 1996. NDSU/RF relicensed the 'CONLON' barley variety in Canada. License fees collected in FY02 were $5500.00. Net revenue was distributable by agreement as follows:

NDSU Dept Plant Sciences (Breeders) (30%)	$1,635.29
NDSU Dept of Plant Sciences(32.5%)	$1,771.57
NDSU Dept of Cereal & Food Science(7.5%)	$ 408.82
NDSU Dept of Plant Pathology(7.5%)	$ 408.82
NDAES (R&E Centers) (2.5%)	$ 136.27
NDSU/RF (20%*)	$1,090.20

A total of 30% ($327.06) has been added to the NDSU/RF endowment.

'FOSTER' Barley

The 'FOSTER' barley variety was released in 1995 in the United States. The NDSU/RF has contracted with United Grain Growers, Ltd. (UGG) in Canada as an exclusive licensee to register the variety and apply for Plant Breeders Rights on NDSU/RF's behalf. Considerable effort was made to control the early proliferation of common seed in Canada. Only the Registered or Certified Class of seed is authorized to be sold to UGG. An initial up-front exclusive license research fee of $10,000 was paid by UGG upon finalizing the agreement in May 1996. PVP was applied for in March 1996. A $40,000 payment (license fee) upon registration was received in FY98.

Research fees collected in FY02 were $5,272.69 on a limited amount of seed handled by the licensee. The net revenue was distributable by agreement as follows:

NDSU Breeder (30%)**	$1,555.05
NDSU Dept. of Plant Sciences (32.5%)	1,685.90
NDSU Dept. of Cereal Science (7.5%)	388.88
NDSU Dept. of Plant Pathology (7.5%)	388.88
NDAES (R&E Centers) (2.5%)	129.63
NDSU/RF (20%*)	1,037.03

** A total of 30% ($311.11) has been added to the NDSU/RF endowment*

OTHER BARLEY CULTIVARS

NDSU entered into an agreement with Cympay, a company in Uruguay, for testing, multiplication, production, marketing, registration, and protection of experimental lines and varieties in Uruguay and Argentina. A minimum exclusive rights payment had been paid annually until commercialization of any varieties and until research revenues exceed that minimum exclusive payment. Total research fees paid to NDSU/RF in FY02 were $12,756.00 on two released 2-row varieties. The breeder has waived his 30% share on these varieties.

'N. CARUMBF' Barley

Research fees collected in FY02 were $3,948.60. The net revenue after recovery of expenses was distributed by agreement as follows:

NDSU Dept. of Plant Sciences (66-2/3%)	$2,632.40
NDSU/RF (33-1/3%*)	1,316.20
Total	$3,948.60

**A total of 30% ($394.86) has been added to the NDSU/RF endowment.*

'N. DAYMAN' Barley

Research fees collected in FY02 were $11,841.95. The net revenue after recovery of expenses was distributable by agreement as follows:

NDSU Dept. of Plant Sciences (66⅔%)	$7,894.63
NDSU/RF (33⅓%*)	3,947.32
Total	11,841.95

**A total of 30% ($1,184.20) has been added to the NDSU/RF endowment.*

DURUM

'ALROC' Durum

NDSU/RF, NDSU, and NDAES entered into an agreement with Hybritech Europe, SNC. in 1991 to test, register, and market successful durum varieties in Europe. Research fees received in FY02 were $12,697.39 and were distributable as follows:

Breeder (30%)	$3,809.21
NDSU Dept. of Plant Sciences (50%)	6,348.70
NDSU/RF (20%*)	2,539.48
Total	$12,697.39

** A total of 30% ($761.84 has been added to the NDSU/RF endowment.*

'LLOYD' Durum

NDSU entered into an agreement with the GAE to test durum lines and serve as its agent in Europe. This agreement is several years old. NDSU assigned ownership of this variety to NDSU/RF during FY99. Research fees of $213,277.35 were received and are now distributable by agreement as follows:

NDSU Dept. of Plant Sciences (98%)**	$209,011.80
NDSU/RF (2%*)	4,265.55
Total	$213,277.35

** A total of 30% ($1,279.66) has been added to the NDSU/RF endowment.*

*** Of this amount $15,000 was distributed to the NDSU Cereal Science Department and $6,500 was distributed to the NDSU Plant Pathology Department.*

'TEMPRODUR' Durum

NDSU/RF entered into an agreement with GAE on the 'Temprodur' durum variety in FY01. Research fees of $11,978.75 were received in FY02. The net research fees were distributable as follows:

NDSU Breeder (30%)	3,593.63
NDSU Dept. of Plant Sciences (50%)	5,689.37
NDSU/RF (20%*)	2,395.75
Total	$11,978.75

** A total of 30% ($718.73) has been added to the NDSU/RF endowment.*

EDIBLE BEANS
'ARTHUR' Navy Bean

The 'Arthur' navy bean variety was released in 2000 in the United States. PVP was applied for in 2000. Seed Increase Fees in FY02 of the variety were $3,335.83. A research fee of $3 per cwt. has been implemented under a non-exclusive licensing program beginning with seed produced from the 2001 crop year. Research fees were distributable as follows:

NDSU Plant Sciences (breeders 30%)	$ 895.89
NDSU Plant Sciences (35%)	1,045.21
NDSU Plant Pathology (10%)	299.09
NDSU Cereal and Food Science (5%)	149.55
NDSU/RF (20%*)	598.17

** A total of 30% ($179.45) has been added to the NDSU/RF endowment.*

OATS
'CLEANLEAF' Oats

The 'CLEANLEAF' oat was developed by NDAES. NDSU has granted Pacific Seeds PTY, Ltd. the exclusive license to produce and market this oat variety in Australia. Research fees of $4.77 were received in FY02 and distributed as follows:

NDSU Breeder (30%)	$1.43
NDSU Dept. of Plant Sciences (50%)	2.39
NDSU/RF (20%*)	.95
Total	$4.77

** A total of 30% ($0.29) has been added to the NDSU/RF endowment.*

'VALLEY' Oats

This variety of oats was developed by the North Dakota Agricultural Experiment Station. NDSU has granted Pioneer Hi-Bred International the exclusive License to produce and market the oat variety 'VALLEY' in Australia for a 10-year period. Pioneer will serve as an agent for NDSU in Australia. A 5% royalty has been established on the sales price (less taxes and discounts) of 'VALLEY' Oat seed marketed by Pioneer and its subsidiary.

Net research fees of $9,862.48 were received in FY02 and distributed as follows:

NDSU Breeder (30%)	$2,958.74
NDSU Dept. of Plant Sciences (40%)	3,944.99
Agricultural Administration (10%)	986.25
NDSU/RF (20%*)	1,972.50
Total	$9,862.47

** A total of 30% ($591.75) has been added to the NDSU/RF endowment.*

'WARREGO' Oats

The 'WARREGO'' oat variety was licensed to Pacific Seeds Pty, Ltd. in Australia in 1997. Research fees of $20,123.78 were received in FY02 and net revenue was distributable as follows:

NDSU Breeder (30%)	$ 6,037.13
NDSU Dept. of Plant Sciences (50%)	10,061.89
NDSU/RF (20%*)	4,024.76
Total	$20,137.78

** A total of 30% ($1,207.43) has been added to the NDSU/RF endowment.*

POTATOES

The NDSU/RF has been successful in obtaining patents on two russet potato varieties. The 'GOLDRUSH' and 'NORQUEEN' potato patents were issued on July 18, 1995. The 'NORQUEEN' patent has been abandoned.

The research fee on all NDSU potato varieties established for future years (in consultation with the North Dakota Seed Potato Growers Association) will be 3% of gross seed sales beginning with the 1996 crop.

'AC PEREGRINE RED' Potato

This variety was not released in the United States. This NDSU variety was developed under a material transfer agreement with Agriculture and Agri-Food Canada and released in Canada.

NDSU/RF licensed this variety to the Saskatchewan Seed Potato Growers Association (SSPGA.) NDSU/RF will receive 80% of all research fees/royalties charged by SSPGA and had received $2,000.00 in up-front license fees in FY01. Research fee revenue for FY02 was $131.30. This net license fee income, after appropriate cost recovery, was distributable as follows:

Heartland Trust R. Johansen (14.1%)	$18.51
NDSU Plant Pathology Breeder (7.95%)	10.44
Dept. of Plant Sciences (32.95%)	43.26
Dept. of Plant Pathology (25%)	32.83
NDSU/RF (20%*)	26.27

** A total of 30% ($7.88) has been added to the NDSU/RF endowment.*

'DAKOTA PEARL' Potato

The 'Dakota Pearl' potato variety was released in 1999 in the United States. PVP was applied for in 2000. Research fees are due on seed sales beginning with the 2001 crop in the United States.

NDSU/RF licensed this variety in Canada to CanAGRICO Potato Corp. in 2001. NDSU/RF will receive 75% of all research fees/royalties charged by CanAGRICO Potato Corp. Total research fees collected in FY02 were $8,269.93. The net revenue after cost recovery was distributable as follows:

Dept. of Plant Sciences (34.6%)	$2,226.89
Dept. of Plant Pathology (34.6%)	2,226.89
Heartland Trust R. Johansen (10.8%)	695.09
NDSU/RF(20%*)	1,287.23

** A total of 30% ($386.17) has been added to the NDSU/RF endowment.*

'DAKOTA ROSE' Potato

The 'Dakota Rose' potato variety was released in 2001 in the United States. PVP was applied for in 2001. Research fees are due on seed sales beginning with the 2001 crop in the United States.

NDSU/RF licensed this variety in Canada to Parkland Seeds in FY02. NDSU/RF will receive 75% of all research fees/royalties charged by Parkland Seeds. PBR reimbursement and license fees of $1,714.27 were received in FY02.

'GOLDRUSH' Potato

The North Dakota State Seed Department collects the research fees from North Dakota Seed Potato Growers. Licensing arrangements are being pursued with certified seed potato growers in other states. Total research fees collected from North Dakota and out-of-state were $26,660.78. After recovery of collection, legal, and related expenses the following distributions were made:

Heartland Trust R. Johansen (30%)	$7,901.68
Dept. of Plant Sciences (20%)	5,267.89
Dept. of Plant Pathology (20%)	5,267.89
Agricultural Administration (10%)	2,633.88
NDSU/RF (20%*)	5,267.89

** A total of 30% ($1,583.25) has been added to the NDSU/RF endowment.*

'NORDONNA' Potato

The 'NORDONNA' potato variety was released in 1995 in the United States. PVP was applied for in 1996. Research fees are due on seed sales beginning with the 1996 crop. Total research fees collected in FY02 were $8,572.49. The net research fee revenue distributable after appropriate cost recovery was as follows:

Heartland Trust R. Johansen (24%)	$2,030.25
Dept. of Plant Sciences (28%)	2,368.61
Dept. of Plant Pathology (28%)	2,368.61
NDSU/RF(20%*)	1,691.87

** A total of 30% ($507.56) has been added to the NDSU/RF endowment.*

'NORVALLEY' Potato

The 'NORVALLEY' potato variety was released in 1996 in the United States. PVP was applied for in 1996. Research fees are due on seed sales beginning with the 1997 crop.

NDSU/RF, in consultation with representatives of North Dakota Seed Potato Growers Association, licensed this variety in Canada. The variety was tested, registered, and protected on behalf of NDSU and NDSU/RF by Agriculture and Agri-Food Canada (AAFC) in Alberta. A minimum of 5% research fee (U.S. dollars) was negotiated with the licensee (Potato Growers of Alberta). AAFC will, by agreement, receive 25% of the research fee for its contribution. A $1,000 up-front license fee was received in FY-97 and $5,000 license fee upon registration was received in FY98. The total collected in FY02 for this variety was $64,343.57. The net research fee revenue distributable after appropriate cost recovery was:

Heartland Trust R. Johansen (22%)	$13,855.27
Dept. of Plant Sciences (29%)	18,263.76
Dept. of Plant Pathology (29%)	18,263.76
AgCanada	5,408.68
NDSU/RF(20%*)	12,595.70

** A total of 30% ($3,778.71)has been added to the NDSU/RF endowment.*

SOYBEANS

The North Dakota Soybean Council supports a $.50 per bushel research fee on NDSU developed soybean varieties. The research fee is on the Registered and Certified classes of seed.

The North Dakota State Seed Dept. (NDSSD) has been contracted to collect research fees on all soybean varieties beginning with the 1997 crop year. NDSSD will retain 7% of the fees for collection.

NDSU/RF has entered into agreements with the Minnesota, Wisconsin, and South Dakota Crop Improvement Associations for research fee collections in their respective states.

'BARNES' Soybean

The 'BARNES' soybean variety was released in February, 2000. PVP has been applied for and research fees will begin with the 2000 crop year. Seed Increase Fees in the first year from out-of-state seedsmen were $1,057.00 during FY01. Research fees collected in FY02 totaled $8,249.47. Net Research fees were distributable as follows:

NDSU Plant Sciences (Breeders 30%)	$1,882.29
NDSU Plant Sciences (34%)	2,133.26
NDSU Plant Pathology (10%)	627.42
NDSU Soil Science (3%)	188.23
NDAES (R&E Centers) (3%)	188.23
NDSU/RF (20%*)	1,254.86

** A total of 30% ($376.46) has been added to the NDSU/RF endowment.*

'BLUE HORIZON'

The 'BLUE HORIZON' soybean variety was crossed at the University of Minnesota and further developed at NDSU. The University of Minnesota has exclusively licensed this variety and NDSU by agreement receives 50% of the royalties. This agreement has been assigned to NDSU/RF. Royalties of $16,878.00 were received and distributable as follows:

NDSU Plant Sciences (80%)	$13,502.40
NDSU/RF (20%*)	3,375.60

** A total of 30% ($1,012.68) has been added to the NDSU/RF endowment.*

'COUNCIL' Soybean

The 'COUNCIL' soybean variety was released in December 1994. PVP was applied for in 1996.

Research fees collected during FY02 were $14,262.25. The cost of protecting the variety and related expenses totaled $2,813.68 for FY97 and FY98.

Net Research fees were distributed as follows:

NDSU Plant Sciences (80%)	$11,409.80
NDSU/RF (20%*)	2,852.45

** A total of 30% ($855.74) has been added to the NDSU/RF endowment.*

'DAKSOY' Soybean

The 'DAKSOY' soybean variety was released in February, 1998 and PVP was applied for in March, 1998. Research Fees collected in FY02 totaled $896.93. The cost of protecting the variety, testing, and lab fees and related expenses totaled $3,590.71. Net research fees were distributable as follows:

NDSU Plant Sciences (Breeders 30%)	$ 269.08
NDSU Plant Sciences (45%)	403.62
NDSU Plant Pathology (3%)	26.90
Langdon R & E Center (1%)	8.97
Carrington R & E Center (1%)	8.97
NDSU/RF (20%*)	179.39

** A total of 30% ($53.82) has been added to the NDSU/RF endowment.*

'DANATTO' Soybean

The 'DANATTO' soybean variety was released in January 1996 and PVP was applied for in April 1996. Research fees collected in FY02 totaled $1,333.87. The cost of protecting the variety and related expenses totaled $3,127.75 in FY97, FY98, and FY99. Net research fees were distributable as follows:

NDSU Plant Sciences (Breeders 30%)	$333.62
NDSU Plant Sciences (42%)	500.43
NDSU Plant Pathology (4%)	46.33
NDSU Food & Nutrition (4%)	46.33
NDSU/RF (20%)	222.41

** A total of 30% ($69.50) has been added to the NDSU/RF endowment.*

'JIM' Soybean

The 'JIM' soybean variety was released in February, 1998 and PVP was applied for in March, 1998. Research fees collected in FY02 totaled $34,919.99. The cost of protecting the variety, testing, and lab fees and related costs totaled $3,590.73. Legal fees on research agreements of $1,311.50 were deducted in FY01. In May of 2000, 'Jim' was also licensed to Cloutier Agra Seeds in Manitoba. Net research fees were distributable as follows:

NDSU Plant Sciences (Breeders 30%)	$9,985.68
NDSU Plant Sciences (45%)	14,978.52
NDSU Plant Pathology (3%)	998.57
Langdon R & E Center (1%)	332.85
Carrington R & E Center (1%)	332.85
NDSU/RF (20%*)	6,657.13

** A total of 30% ($1,997.14) has been added to the NDSU/RF endowment.*

'NORPRO' Soybean

The 'NORPRO' soybean variety was released in April, 1998 and PVP was applied for in June, 1998. Research fees collected in FY02 totaled $2,421.74. The cost of protecting the variety totaled $2,987.23. Net research fees were distributable as follows:

NDSU Plant Sciences (Breeders 30%)	$445.20
NDSU Plant Sciences (30%)	445.20
NDSU Cereal and Food Science (17%)	252.28
NDAES R&E Centers (3%)	44.52
NDSU/RF (20%*)	296.80

** A total of 30% ($89.04) has been added to the NDSU/RF endowment.*

'TRAILL' Soybean

The 'TRAILL' soybean variety was released in February, 1997 and PVP was applied for in May 1997. Research fees collected in FY02 were $51,351.36. The cost of protecting the variety and related expenses totaled $3,230.81. Net research fees were distributable as follows:

NDSU Plant Sciences (Breeders 30%)	$15,405.41
NDSU Plant Sciences (47%)	24,135.14
NDSU Plant Pathology (3%)	1,540.54
NDSU/RF (20%*)	10,270.27

** A total of 30% ($3,081.09) has been added to the NDSU/RF endowment.*

WHEAT
'ALSEN' Wheat

'Alsen', a hard red spring wheat variety with scab tolerance was released in February 2000 and PVP was applied for in January 2001. NDSU/RF collected out-of-state seed increase fees of $79,424.65 in FY01 and $18,075.02 in FY02. 'Alsen' was licensed to Canterra Seeds in Canada in 2001 and $3,500.00 in up-front license fees were received and a $60,000.00 interim registration fee was received in FY02. Net research fees and seed increase fees were distributable as follows:

NDSU Breeders (30%)	$45,802.10
NDSU Plant Sciences (29%)	45,802.10
NDSU Plant Pathology (10%)	15,793.83
NDSU Cereal and Food Science (8%)	12,635.06
NDAES R&E Centers (3%)	4,738.15
NDSU/RF (20%*)	9,476.29

** A total of 30% ($9,476.29) has been added to the NDSU/RF endowment.*

HORTICULTURAL/FORESTRY CULTIVARS

'MEADOWLARK' (Forsythia)

This cultivar is owned by the NDSU/RF (40%), SDSU (40%), and Arnold Arboretum (20%) and royalties are distributed accordingly. Additional horticultural/ forestry cultivars are trademarked and/or plant patented. NDSU/RF formally took over the licensing of these cultivars in FY-98. Net revenue after recovery of expenses is distributed 80% to the Plant Sciences Dept. and 20% to NDSU/RF.

Other Horticultural Cultivars

The following is a summary by cultivar of the royalties received in FY02 and the distribution, if any, to the Plant Sciences Dept.

Cultivar	Royalties	Distributable to Plant Sciences
Prairie Radiance®	0.00	0.00
Blueberry Delight®	1,076.71	$861.36
Dakota Centennial®	274.50	219.60
Dakota Goldcharm®	12,327.00	9,822.00
Dakota Goldrush®	828.60	655.20
Dakota Pinnacle®	1,337.00	310.41
Dakota Sunbu..st®	0.00	0.00
Dakota Sunspot®	5,852.70	4,673.28
Meadowlark™	2,142.75	1,714.20
Prairie Dome®	159.50	127.60
Prairie Elegance®	291.90	265.52
Prairie Gem®	1,122.00	896.40
Prairie Spire®	5,598.00	2,799.00
Snow Lace®	0.00	0.00
Snow Mantle®	94.05	75.24
Northern Acclaim™	0.00	0.00

Plant Variety Protection

NDSU/RF has spent over $153,000 in PVP application and issuance fees over the past few years to protect NDSU developed varieties.

In addition to the proprietary NDSU/RF wheat varieties, the following NDSU developed varieties have been issued PVP certificates:

Certificate Issue Date	Variety
March 7, 1996	'MUNICH' durum
March 12, 1996	'GLUPRO' wheat
March 12, 1996	'ERNEST' wheat
March 13, 1996	'JERRY' oat
March 13, 1996	'PAUL' oat
March 13, 1996	'WHITESTONE' oat
June 28, 1996	'LOGAN' barley
Sept. 13, 1996	'Kulm' wheat
June 13, 1997	'Norstar' navy bean
July 31, 1997	'Keene' wheat
August 29, 1997	ND277 corn inbred
August 29, 1997	ND278 corn inbred
August 29, 1997	ND279W corn inbred
August 29, 1997	'Ben' durum
July 31, 1998	'Foster' barley
July 30, 1999	'Trenton' wheat
January 31, 2000	'Hatton' pinto bean
January 31, 2000	'Belzer' durum
January 31, 2000	'Mountrail' durum
January 31, 2000	'Maier' durum
April 14, 2000	'NorDonna' potato
April 28, 2000	'Danatto' soybean
June 30, 2000	'NorValley' potato
October 22, 2000	'Maverick' pinto bean
February 5, 2001	'Norpro' soybean
February 5, 2001	'Council' soybean
March 23, 2001	'Argent' white wheat
March 23, 2001	ND284 corn (inbred)
April 24, 2001	'Reeder' wheat
April 24, 2001	'Parshall' wheat
April 24, 2001	ND288 corn (inbred)
April 24, 2001	ND287 corn (inbred)
May 8, 2001	ND289 corn (inbred)
September 12, 2001	ND280 corn (inbred)
September 12, 2001	ND281 corn (inbred)
September 12, 2001	ND282 corn (inbred)
September 12, 2001	'Ransom' winter wheat
September 12, 2001	'Lebsock' durum
September 12, 2001	'Plaza' durum
November 6, 2001	'Alsen' wheat
February 5, 2002	ND285 corn (inbred)
February 5, 2002	ND286 corn (inbred)
April 2, 2002	'Drummond' barley
April 9, 2002	'Sargent' soybean
	'Conlon' barley

The following released varieties and inbreds have pending PVP applications:

Variety	Application Date
'TRAILL' soybean	May, 1997
'ELKHORN' winter wheat	May, 1997
'Jim' soybean	March, 1998
'Daksoy' soybean	March, 1998
'Dakota Pearl' potato	April, 2000
'Barnes' soybean	October, 2000
'Arthur' navy bean	December, 2000
'Walsh' soybean	February, 2001

PATENTED AND OTHER TECHNOLOGIES

HURDEROS

NDSU/RF has entered into a technology transfer agreement for identity and services management software developed at NDSU with Hurderos, Inc., a start-up company, with offices in Minneapolis, MN and Fargo. This "Identification, Authentication, Authorization and Administration (IAAA)" software is a system used at NDSU to provide information technology services to the university, five other North Dakota institutions of higher education, and 225 K-12 schools across the state, managing nearly 10,000 users.

The software is designed to manage users' digital identities and provide services for those users on a network, the Internet, or wide area network. This is "core technology infrastructure" that identifies the user, authenticates that the person is who they say they are and then authorizes the user to receive approved services. This next generation technology will potentially allow the Internet to truly deliver ubiquitous, secure, information services. It will fundamentally determine who somebody is and what information services should be delivered to them.

Hurderos, Inc., is positioning this technology to capitalize on a number of significant events within the technology industry. The technology is a superset of initiatives being developed by a number of key industry players. The company is focusing on developing strategic partnering relationships and identifying vertical market opportunities. Hurderos, Inc., has been focusing on the completion of prototype implementation of the technology capable of demonstrating its utility to potential investors and partners. In the future, the company will be focusing on product refinement, market positioning, partnership development, and developing investor relationships.

NDSU/RF has negotiated an equity position with Hurderos, Inc.

DAKOTA TECHNOLOGIES, INC. 2001-02 ACTIVITY REPORT

Dakota Technologies, Inc. (DTI) develops technology that rapidly characterizes and analyzes biological samples, chemical mixtures, environmental media (soil, water and air), and industrial processes by using patented, highly sensitive, and reliable laser induced fluorescence technology. DTI employs the latest advances in lasers, optics, electronics, fluorescence technology, automation hardware, and control/analysis software.

Over the past eight years, DTI has been awarded numerous research contracts to develop instrumentation and techniques for both field and laboratory use. During this time DTI advanced the laser induced fluorescence technology (LIF) platform. DTI's objective was to create a LIF platform that could be used in various measuring applications or instruments that could collect more detailed data, make measurements faster, and provide results in more detailed, meaningful, and commercially usable form while minimizing human intervention. DTI's procedures are variously referred to as in situ, on-line, in vivo, or point-of-care, but the same advantages apply in every case: avoid the slow, costly, tedious, and unreliable chain of events in which numerous samples are collected, transferred to a traditional analytical laboratory, and analyzed hours, days, or even weeks later.

With the foundation DTI has built in the past several years, its strategy today is to begin converting technology and concepts into product revenue. DTI's corporate objectives are focused on leveraging the LIF platform in the following areas:

- **Chemical and biological defense ("Homeland Security")**
- **Biomedical research**
- **Field analytical technology for pollution and hazardous waste ("Environmental")**

Strategic Initiatives

- **Chemical and biological defense ("Homeland Security – Instruments to detect biological agents in the air or on the surface in real time have become mission critical applications.**

Obviously, detecting biological agents in real time is a key to defending against biological agent attacks for military and commercial purposes. In addition, detecting high levels of airborne organisms in hospitals can prevent post-operative infections and the spread of diseases. Monitoring airborne bacterial levels in food and meat processing plants can help to prevent contamination of food products. Also, monitoring the level of airborne organisms in bio-containment facilities can ensure that proper procedures are being followed.

The current technology deployed to Department of Defense (DOD), specifically the Biological Aerosol Warning System (BAWS), suffers from substantial laser reliability and false alarm problems. DTI is providing research to a larger DOD contractor to address both of these deficiencies with its patented, innovative multi-wavelength, time-resolved LIF detection scheme. DTI has added an extra dimension of data – the fluorescence lifetime – that dramatically reduces incidences of false alarms. In addition, this approach allows lasers to be operated at lower power, which will dramatically improve the reliability of the laser and increase its longevity. DTI's more than 70 man-years experience in applying advanced laser technologies to solve real-world problems has enabled us to make this breakthrough.

- Biomedical Research Tools/Instrumentation – Biomedical analytical instruments have revolutionized chemical analysis. Modern analytical instruments provide significantly higher sensitivity, higher levels of automation and user-friendliness, and can incorporate advanced computer capabilities, which interpret the data, tabulate the results, and track the samples.

  DTI activities in the biomedical field to develop analytical instrumentation are as follows:

  DTI received additional funding from the National Science Foundation to advance analytical instrumentation for fluorescence spectral measurements. The initial phase completed last year introduced the concept of a customized spectrofluorimeter equipped with a tunable laser source, fluorescence lifetime capability, and fiber optic probe for cryogenic measurements. The phase I technical objectives were accomplished. DTI's technology demonstrated enhanced sensitivity with improved measurement speed. In fact, recent breakthrough in microlasers and transient digitizers have further enhanced the field fluorimeter concept. Instead of developing a completely new instrument, DTI shall offer the capability of retrofitting the low temperature probe, fluorescence lifetime, and tunable laser capabilities onto laboratory spectrofluorimeters. By the end of Phase II DTI expects to have upgraded several models of popular commercial spectrofluorimeters and be ready to offer the upgrades as commercial service. DTI is currently working under a letter of understanding with a large scientific instrumentation company to upgrade its fluorimeter.

  In the fiscal year 2002, DTI also continued research and development on the Novel Multi-Wavelength Time-Resolved Laser Induced Fluorescence Detector project funded by the National Science Foundation. This project involves the research and development of biomedical applications of laser induced fluorescence technology, e.g., for sequencing and for chemical analysis related to the drug development process. The project involves the construction and optimization of a novel high performance liquid chromatography (HPLC) detector that can resolve the chemically complex analyte mixtures encountered in environmental and pharmaceutical laboratories. DTI has patented a novel detection scheme that concurrently records fluorescence decay curves at four or more emission wavelengths and is ideally suited to HPLC fluorescence detection. A combination of fluorescence lifetimes and emission wavelenth discrimination reduces elution times and gives a better understanding of complex mixture content such as fuels.

- Field analytical technology for pollution and hazardous waste ("Environmental") – DTI developed an environmental LIF system that can efficiently delineate petroleum, oil and lubricant contamination in the subsurface. In 1995, the environmental LIF system was commercialized and trademarked as the Rapid Optical Screening Tool (ROST). Between 1995 and 1998, DTI used Phase I and Phase II SBIR funding from DOD to adapt the LIF technology for percussion deployment and to enhance the quality of the data and ensure smooth field operation. Currently ROST is used around the world for detection of petroleum contamination in the subsurface.

Currently DTI is performing research and development on the following environmental projects:

EPA – Integrated Downhole Gas Chromatograph and Automated Sampler for Direct Push - In September 2002, DTI expects to complete the second phase of this contract. The project is focused on efforts to further miniaturize and refine several key components of the downhole gas chromatograph (GC). This unique instrument enables quantitative measurement of subsurface chemical contaminants in either the vadose or saturated soil zones without the need to transfer vapor or water to the ground surface.

National Science Foundation – Novel Ultrasensitive GC Detector with Highly Specific Response to Aromatic Hydrocarbons - During this fiscal year, DTI completed Phase I of this project. The project involved the commercialization of a powerful new GC detector, the Aromatic Specific Laser Ionization Detector (ArSLID). This detector is to be used for the identification of harmful aromatic hydrocarbons in the soil and has significant advantages over other commercially available detectors, including: extraordinarily low limit of detection, potentially the lowest of any GC detector; extremely fast response ideally suited for fast GC; miniscule background signal; far higher selectivity for aromatic hydrocarbons; stable response over long periods of time; and compatible with all carrier gases, including air. DTI has submitted a proposal for Phase II funding to the National Science Foundation.

Technology Demonstration for Direct Push Platforms, Monitoring and Operations - DTI is working on a project with the Air Force Center for Environmental Excellence (AFCEE) for demonstrating direct push technologies. Several fluorescence instruments that provide alternatives to the ROST LIF instruments for delineation of subsurface petroleum contamination will be field-tested. Direct push chemical sensors that can provide continuous logs of chemical contamination from volatile organic compounds in the subsurface will also be tested. At the end of the project DTI will deliver a tracked mounted Geoprobe vehicle equipped with a fluorescence instrument to AFCEE.

Direct Push Chemical Sensors for DNAPLs - DTI and SPAWAR System Center, San Diego are working on an Environmental Security Technology Certification Program (ESTCP) project to research, engineer, test and evaluate direct push sensor systems for in-situ delineation of dense non-aqueous phase liquids (DNAPLs) in subsurface soil environments. ESTCP is a corporate DoD program that promotes innovative, cost-effective environmental technologies through demonstration and validation at DoD sites.

Nation Institute of Health – Hollow Fiber Membrane - (Expected to have commenced in August of 2002.) In this project DTI intends to demonstrate that simple, permanently installed membrane samplers can be productively substituted for monitoring wells for purposes of sampling volatile organic compounds (VOCs) in groundwater.

Growth Strategies

DTI's vision is to become a leader in life science measurement solutions in the areas of environmental instrumentation, chemical and biological agent detection and monitoring, and biomedical research. DTI will leverage our core competencies in advanced laser technology by continuing our focus and investment in technology. DTI will differ from its competitors through the scope and relevance of innovations and in depth knowledge in advanced laser technologies. DTI will perform research, development, and marketing functions, while outsourcing manufacturing and distribution.

DTI's growth strategies include:

1) A continued focus on improving our patented LIF platform
2) Delivering improved technology to a Department of Defense Contractor for the biological agent detector
3) Assist a large scientific instrumentation company in expanding their product line with new advanced laser solutions to be distributed through their sales force
4) Develop a tool box of improved environmental instrumentation to be used by consultants and engineers in the identification and remediation of soil contamination
5) Continue to build on its global partnership network for the manufacturing and distribution of its products.

NDSU negotiated a 15% equity position in a license agreement with DTI. This agreement was renewed in FY98. Market value of stock as of December 31, 2001 was $34,862.00. Nominal royalties of $795.77 were received in FY02.

Melt Mixer

Hans J. Goettler and Victoria D. Kuntz invented a device for mixing small quantities (approximately 20 grams) of materials used in powder coatings and other plastic polymers. This laboratory research uses heat to melt the powder and viscous shear forces to do the mixing. The U.S. patent No. 5,125,752 was granted on June 30, 1992.

The NDSU Institute for Business and Industry Development (IBID) conducted preliminary market research and provided engineering design assistance as well as facilitated the Small Business Institute (SBI) program to aid in early student design work on the device.

Standard Industries, Inc., a North Dakota manufacturer specializing in making research equipment, has assisted with the early development and has agreed to manufacture and market the device.

The first unit was built in the fall of 1994. Redesign and modifications were being made to make it more user friendly and to function more efficiently. Additional redesign and testing on the device were completed in FY98 by Hans Goettler. Additional funding from TTI was received to do further design and to make a new mixing chamber. A marketing company, Melt Mixer, LLC, has been set up and a licensing agreement has been signed.

Rheo-Photoacoustic FT-IR Spectroscopic Methods and Apparatus

A rheo-photoacoustic, fourier-transform infrared spectroscopic method and apparatus for examining rheological properties of materials of a molecular level is used for detecting interfacial failure of composite polymeric material (coatings) which includes detecting of work of adhesion--particularly adhesion to plastic. Potential uses include coating applications such as paints, etc. that involve adhesion, static and dynamic stresses of materials. The patent (#5,036,708) was granted on August 6, 1991. Inventors are Marek Urban and Hans Goettler. This technology was licensed in an optical fiber field of use as a background patent for on-going research. This technology is available for commercialization exclusively for some fields of use or non-exclusively.

Polymeric Vehicle for Coating, Patent No. 5,043,192

This invention relates to a polymeric vehicle comprising a modified polymer containing covalently bonded mesogenic groups. The modified polymer may be used as the sole component of the polymeric vehicle for a coating to which may be added solvents and known additives to provide a formulated coating. The polymeric vehicle may further include other modified or unmodified polymers and cross-linking resins. The polymeric vehicle provides a coating binder and coating film of high hardness, flexibility, and impact resistance. A U.S. patent (#5,043,192) was granted on August 27, 1991. This technology is available for commercialization exclusively.

Polymeric Vehicle for Coatings Patent No. 5,244,699

This invention relates to a polymeric vehicle comprising a modified polymer containing covalently bonded mesogenic groups. The modified polymer may be used as the sole component of the polymeric vehicle for a coating to which may be added solvents and known additives to provide a formulated coating. The polymeric vehicle may further include other modified or unmodified polymers and cross-linking resins. The polymeric vehicle provides a coating binder and coating film of high hardness, flexibility, and impact resistance. A U.S. patent (#5,244,699) was granted on September 14, 1993. This technology is available for commercialization exclusively.

Mesogens and Polymers with Mesogens, Patent No. 5,235,006

Novel mesogens, epoxy resins and the synthesis thereof as well as coating binders for coating compositions based upon the mesogens and epoxy resins are described. A U.S. patent (#5,235,006) was granted on August 19, 1993. This technology is available for commercialization exclusively.

Coating Binders Comprising Liquid Crystalline Enhanced Polymers Patent No. 5,218,045

Coating compositions comprising liquid crystalline binders are provided by a combination of mesogenic groups and amorphous resins. The mesogenic groups are either covalently bonded or cross-linked to the amorphous resins to provide coatings of exceptional hardness and toughness. Also provided is an economical process suitable for commercial manufacture of mesogenic compounds and more

particularly for the production of liquid crystalline oligoester polyols. A U.S. patent (#5,218,045) was granted on June 8, 1993. This technology is available for commercialization exclusively.

WATER DISPERSIBLE POLYMERS FOR COATINGS BASED ON POLYMERS CONTAINING MESOGENIC GROUPS

This application describes a water dispersible polymeric vehicle comprising epoxy polymers having about 5 to 50 weight percent mesogens or a cross-linkable blend of an amine salt of a mesogenic carboxylic acid, cross-linker resin and an epoxy polymer, the mesogenic acid providing about 5 to 50 weight percent mesogenic groups to the blend. A U.S. patent (#5,171,765) was granted on December 15, 1992. This technology is available for commercialization exclusively.

COMPOUNDS WITH LIQUID CRYSTALLINE PROPERTIES AND COATING BINDERS BASED THEREON - PATENT NO. 5,543,476

Polymeric vehicles with liquid crystalline-like properties solvent dispersable polymeric vehicles, formulated coating compositions with liquid crystalline-like properties and a method for imparting liquid crystalline properties to a coating binder are described. The materials with liquid crystalline-like properties lack structural segments previously regarded as mesogenic. A U.S. patent (#5,543,476) was granted on August 6, 1996. This technology is available for commercialization exclusively.

COMPOUNDS WITH LIQUID CRYSTALLINE PROPERTIES AND COATING BINDERS BASED THEREON, PATENT NO. 5,677,395

Polymeric vehicles with liquid crystalline-like properties solvent dispersable polymeric vehicles, formulated coating compositions with liquid crystalline-like properties and a method for imparting liquid crystalline properties to a coating binder are described. The materials with liquid crystalline-like properties lack structural segments previously regarded as mesogenic. A U.S. patent (#5,677,395) was granted on October 14, 1997. This technology is available for commercialization exclusively.

POLYMERIC VEHICLE FOR COATINGS PATENT NO. 5,510,447

This invention relates to a polymeric vehicle comprising a modified polymer containing covalently bonded mesogenic groups. The modified polymer may be used as the sole component of the polymeric vehicle for a coating to which may be added solvents and known additives to provide a formulated coating. The polymeric vehicle may further include other modified or unmodified polymers and cross linking resins. The polymeric vehicle provides a coating binder and coating film of high hardness, flexibility, and impact resistance. A U.S. patent (#5,510,447) was granted on April 23, 1996. This technology is available for commercialization exclusively.

COMPOUNDS WITH LIQUID CRYSTALLINE PROPERTIES AND COATING BINDERS BASED THEREON, PATENT NO. 5,543,475

Polymeric vehicles with liquid crystalline-like properties solvent dispersable polymeric vehicles, formulated coating compositions with liquid crystalline-like properties and a method for imparting liquid crystalline properties to a coating binder are described. The materials with liquid crystalline-like properties lack structural segments previously regarded as mesogenic. A U.S. patent (#5,543,475) was granted on August 6, 1996. This technology is available for commercialization exclusively.

COMPOUNDS WITH LIQUID CRYSTALLINE PROPERTIES AND COATING BINDERS BASED THEREON PATENT NO. 5,700,882

Polymeric vehicles with liquid crystalline-like properties solvent dispersable polymeric vehicles, formulated coating compositions with liquid crystalline-like properties and a method for imparting liquid crystalline properties to a coating binder are described. The materials with liquid crystalline-like properties lack structural segments previously regarded as mesogenic. A U.S. patent (#5,700,882) was granted on December 31, 1997. This technology is available for commercialization exclusively.

Immunological Analogs for Captan

James R. Fleeker of the NDSU Biochemistry Department is the co-inventor of a technology that provides a standard for use in testing for Captan (a potential carcinogen) in immunoassays.

A patent #5,411,869 was issued on May 2, 1995, and is jointly owned with Strategic Diagonistics, Inc. (SDI). SDI has developed a product and commercialized it beginning in 1992. A 5 % royalty on all gross sales has been negotiated as part of a licensing agreement completed in May 1996.

Fleeker has waived his right to royalties. Under this agreement 75% of the net royalties will be distributed to the NDSU Biochemistry Department. The NDSU/RF retains 25% of the net royalties of which 30% will be endowed.

New Routes to Unnatural Amino Acids Synthesis of Diphenylalanine

This is a new method for preparation of optically active diarylalanines. Diphenylalanine has the potential to dramatically enhance the therapeutic activity of peptide analogs. This technology also involves intermediate compounds and a divisional application is pending. A U.S. patent (#5,623,087) entitled "Method of Preparation of Optically Active Diarylalanines" was issued on April 22, 1997 and a second patent (#5,939,554) was issued on August 17, 1999. This technology has been licensed non-exclusively to Aldrich Chemical and is available for commercialization nonnexclusively. Aldrich has began introducing products utilizing this technology in FY-00. A nominal royalty of $588.88 was received in FY02.

Adjuvants for Herbicidal Compositions

This invention is for high pH as a component of an adjuvant mixture of surfactant, ammonium salt, and a compound to increase pH to control weeds more consistently with postemergence herbicides at a lower cost compared to the most effective adjuvants presently on the market.

A patent (#5,658,855) issued on August 19, 1997. A second patent is pending. This technology is licensed exclusively to Agsco, Inc., a North Dakota company. A product (Quad 7®) has been introduced in the spring of 1998. Royalties of $101,021.21 were received in FY-02.

Catalysis of Olefins to Carboxylic Acids

This technology has the ability to "crack" unsaturated fatty acids into components that are potentially useful as industrial feedstocks. For example, oleic acid from sunflower oil and erucic acid from crambe oil can be "chemically cracked or split" to give azelaic and brassylic acids, respectively. Brassylic acid is used in the manufacture of nylon 13 as well as musk scents and high performance lubricants. Azelaic acid is used for production of diesters, lubricants, perfumes, coatings, and PVC plasticizers. A new inexpensive and recyclable catalyst system with the potential to replace the current ozonolysis technology has been developed.

The patent (#5,596,111) entitled "Method for Preparation of Carboxylic Acids" was issued on January 21, 1997 and a second patent (#5,939,572) was issued on August 17, 1999. This technology is available for commercialization.

New Redistribution Reaction

This technology allows for the preparation, in particular, of a very stable complex of dichlorosilane, a feedstock material for the silicone industry. The stable complex has many of the properties of the free material, but is safer to handle. Potential applications are for polymerization into silicones, unique monomers, such as rare alkoxysilanes and possible feedstock for sol-gel applications.

A patent (#5,550,269) was issued on August 27, 1996, and the research sponsor is covering all patent costs. This technology is available exclusively for commercialization.

Process for Affinity Purifying Antibodies

This technology is a new method for the affinity purification of monoclonal antibodies such as Mouse IgG1. This method uses a naturally occurring product, which can be fixed to sepharose (as are proteins A & G), and which binds well to mouse IgG1, but also from which the bound antibody can be readily eluted. These operations are carried out at physiological pH under non-denaturing conditions and, hence, the eluted antibodies retain their binding characteristics. Monoclonal antibodies are an invaluable tool used in disease diagnosis in medical, veterinary, and agricultural fields, as well as being increasingly utilized in actual disease treatment.

The patent (#5,808,009) issued on September 15, 1998. This technology is available for commercialization.

Novel Chiral Organozinc Species for Use in Asymmetric Reactions

Enantioselective monomeric and polymeric catalysts have been developed for different asymmetric reactions including the alkylation of aldehydes, the epoxidation of olefins, and the reduction of ketones. The resulting chiral products from these processes are important in general organic synthesis as well as in drug synthesis. The polymeric version of these catalysts also have the potential advantage for application in flow reactors for large-scale (continuous flow) drug production. Chiral secondary alcohols can be produced in high optical purity by using this technology. The optically active alcohols generated from this technology can also serve as precursors to other chiral organic compounds. This technology is, therefore, potentially very useful for the production of fine chemicals including chiral drug molecules.

The patent (#5,889,134) was issued on March 30, 1999. This technology is available for commercialization.

Modulation of Sugar Content in Plants

The present invention provides novel transgenic plants with altered sugar levels and methods for producing them. The methods comprise introducing into the plants an expression cassette comprising a promoter sequence operably linked to a polynucleotide sequence substantially identical to a sequence from a gene encoding a protein associated with sucrose biosynthesis.

The patent (#5,646,023) was issued on July 8, 1997. This technology is proprietary and jointly owned with a company.

Potato UDP-Glucose Pyrophosphorylase Gene Promoters and Their Uses

The invention provides tissue specific promoters from potato UDP-glucose pyrophosphorylase (UGPase) genes. The promoters are useful in production of transgenic plants.

The patent (#5,932,783) was issued on August 3, 1999. This technology is proprietary and jointly owned with a company.

Method for In Vitro Culturing of Potato Clones Resistant to Blackspot Bruising and the Potatoes Produced Therefrom

A first method is provided for in vitro selection of Lemhi and Russet Burbank potatoes for blackspot resistance using plant tissue culturing techniques. A second method is provided using at least one melanin precursor added to the tissue culturing media. The blackspot resistant potatoes produced from such methods are also provided.

The patent (#6,060,312) was issued on May 9, 2000. This technology is under agreement and is proprietary. Potatoes with this technology have been sold and income totaled $2.494.70.

'Fargo' Birch Dakota Pinnacle®

This Asian white birch's most striking feature is the columnar to narrowly pyramidal growth habit. The bark color goes through a transitional phase from grayish-orange in 3-year old stems, orange-white in 6-year old stems to yellow-white in mature trunk. The bark is slightly exfoliating when mature. The dark green quality foliage is retained until late autumn. 'Fargo' has been shown to be well adapted in Fargo, ND (USDA hardiness zone 4a), Mandan, ND (zone 3b), St. Paul, MN (zone 4a) and Central Saskatchewan, Canada (zone 3a). 'Fargo' is very tolerant to drought and heat, strong winds, as well as to heavy clay soil with high pH. Evaluations indicate 'Fargo' has more than average tolerance to the bronze birch borer.

The plant patent No. PP10,963 issued on June 22, 1999. This cultivar is available for non-exclusive licensing.

Chiral Biphenyl Compounds for Use in Asymmetric Reactions

Highly enantioselective monomeric and polymeric catalysts have been developed for the asymmetric addition of alkyl groups to aldehydes. These catalysts allow the synthesis of various chiral secondary alcohols in excellent optical yields. The chiral alcohols prepared from these processes are important in general organic synthesis as well as in drug synthesis. The polymeric version of these catalysts is particularly useful since it allows easy recycle and reuse of these optically pure catalysts. These polymer catalysts also have the potential advantage for application in flow reactors for large-scale (continuous flow) drug production.

Chiral secondary alcohols can be produced in high optical purity by using this technology. The

optically active alcohols generated from this technology can also serve as precursors to other chiral organic compounds. This technology is, therefore, potentially very useful for the production of fine chemicals including chiral drug molecules.

The patent (#6,020,452) was issued on February 1, 2000. This technology is available for commercialization.

Method of Preparation of B Amino Acids

This is a new method for preparation of either the (R)- or (S) - enantiomers of β-amino acids in good chemical yield and high purity and has potential application for the preparation of other classes of organic compounds. Potential uses include the chiral drug market and laboratory research. A U.S. patent (#6,080,857) issued on June 27, 2000. U.S. Patent No. 6,191,281 B1 entitled Pyrazole Intermediates in a Method of Preparation of B-Amino Acids issued on February 20, 2001. This technology is available exclusively.

Ceramer Coating Compositions

This vegetable (seed) oil-based (drying oil) ceramer coating utilizes mixed metal-oxo clusters to improve the properties of the ceramer films. The use of two sol-gel precursors has resulted in superior film properties over the use of a single sol-gel precursor The coatings exhibited enhanced hardness without sacrificing toughness, impact resistance, or adhesion. In addition, the mixed metal concept has resulted in films which exhibit superior corrosion protection for metal subst ates.

This environmentally safe technology has potential uses or applications with roofing materials, corrosion resistant primers, heavy duty industrial coatings, new generation appliance (alkyd) coatings, and other alkyds or solvent based coatings. A U.S. patent (#6,096,437) issued on August 1, 2000. This technology is available for commercialization.

Composition of Epoxy Resin and Cyclic Alkoxy-Substituted Organosilane

This technology has functionalized the polyols with a siloxane group which participates in the film forming reaction via a photolytically initiated cross linking process. The reactive diluent increases the hydrolytic stability of the resultant cured films, and reduces the surface tension of the coatings.

This technology improves the coatings that can be used on wood, plastic, paper, or metal. Potential uses include coil coating metal for beer, soda, and other cans, fiber optic protective coatings and microchip coatings or sealants (capsulation) A U.S. Patent (#6,174,967) issued on January 16, 2001. This technology is available for commercialization.

DNA Encoding an Avian E. Coli Iss

An avian E. coli gene associated with disease causing E. coli in avian species has been cloned and sequenced. The gene, the polypeptide it encodes and antibodies thereto, may be useful, for example, in the diagnosis and detection of several avian (chickens, turkey, waterfowl, etc) diseases such as air-sacculitis, pneumonitis, septicemic colibacillosis, and colisepticemia. Other aspects potentially include immunogenic compositions and vaccines. These immugenic compositions and vaccines may provide a therapeutic or prophylactic benefit to an avian species diagnosed with a septicemic disease. A U.S. patent (#6,087,128) issued on July 11, 2000 and U.S. patent (#6,187,321B1) issued on February 13, 2001. A divisional application on the protein is pending and an additional application is anticipated. This technology is available exclusively.

Resonant-Boost Three-Phase Power Factor Corrector With a Low Current Stress on Switches

This three-phase ac-dc converter has a high efficiency operation under zero voltage switching (ZVS) and lower stress on power switches. The power conversion and the input current distortion are less. The output voltage to input voltage ratio is also lower. This ac-dc converter may be used in power supplies for telecommunications equipment and medium distributed dc power supplies. A U.S. patent (#6,239,995 B1) issued on May 29, 2001. This technology is available exclusively.

Organometallic Single Source Precursors for Inorganic Films, Coatings, and Powders

A new family of organometallic compounds was developed. These compounds contain a metal such as aluminum and a group 16 element such as oxygen in a stoichiometric ratio of 2:3 and can be decomposed to produce an inorganic compound such as A1203 (aluminum oxide), eliminating the organic portion of the original compound. Aluminum oxide is the only material developed to date under this program, although it may be expanded to other very useful compounds. The advantages of the invention include the relatively innocuous nature of the precursor compound and the effluent organic compounds generated during decomposition and it's the low temperature of decomposition (less than 100C). It should be noted, however, that a substantial amount of effort must

still be expended to establish a manufacturing facility for significant volumes of the precursor and to develop specific application techniques that are compatible with coating plants. Further research on the general family of organometallics should lead to additional organic compounds and direct coating applications. A U.S. patent (#6,124,427) issued on September 26, 2000.

PATENT PENDING TECHNOLOGIES

On-the-go sensor for determining sugar content during harvesting

This invention relates to instruments for measuring sugar content of sugar beets during harvesting. Additional applications may include measuring sugar content in fruits such as grapes, grapefruit, and similar fruits. This is a fast reliable and non-destructive means of reading or determining the sugar content of a beet root. The system uses optical technology in combination with intelligent information processing techniques. Combining the sugar data with on-the-go root yield information will provide unprecedented site-specific accuracy for regarding overall pounds of sugar. This will improve management using precision farming techniques. A U.S. provisional patent application was filed in January, 2000 and a regular patent application has been filed in January, 2001. This technology is available exclusively.

Novel somatostatins and methods

Somatostatins are ubiquitous polypeptide known to affect basic biological processes such as growth, development, metabolism and cell differentiation in vertebrates. There are a number of human diseases (e.g., growth disorder, diabetes, and several neurological disorders) that may be treated with somatostatin analogs. In addition, some conditions (e.g. tumors) result from an overproduction of somatostatin, and it is postulated that these conditions may respond to treatment with a somatostatin antagonist, although no known antagonists have yet been discovered. Somatostatins exhibit significant molecular heterogeneity, both across species and within a particular organism. The bioactivity of secreted somatostatins is mediated by cell-surface somatostatin receptors which likely differentiate among the various forms of somatostatin present in an organism. The discovery of novel somatostatins thus opens up new possibilities for development of therapeutic somatostatin agonists and antagonists. This technology provides novel somatostatin polypeptides and nucleic acids isolated from trout, methods of making and using these novel polypeptides and nucleic acids, and methods of modifying mammalian somatostatin polypeptides and nucleic acids, and methods of modifying mammalian somatostatin polypeptides and nucleic acids for clinical, diagnostic or therapeutic use. A U.S. provisional patent application filed in December, 1999 and a regular U.S. patent was filed in December 2000. This technology is available exclusively.

Optical analysis of grain stream

This technology relates to instruments for measuring protein content of grains during harvesting. This is an on-the-go (fast), reliable and non-destructive means of reading or determining protein content of grain. This system uses optical technology in combination with intelligent processing techniques. Combining the protein data with on-the-go yield information will provide unprecedented site-specific accuracy regarding overall protein. This will improve management using precision farming techniques. A U.S. provisional patent application was filed in November, 1999 and a regular U.S. patent application was filed in November, 2000. This technology is under an option agreement with a company. Fields of use that are not of commercial interest to the company may be available.

Multifrequency vector calibration system

Many communications systems require precise vector matching between signal paths to achieve a high degree of separation between desired and undesired signals. Conventional systems employ digital signal processing to determine and correct the mismatch. The precision is limited because mismatch often varies with frequency and is difficult to determine with enough precision.

This technology provides for more accuracy in determining vector mismatch and corrects it across a range of frequencies to improve demodulator performance or image rejection and improve array efficiency and sidelobe rejection. It uses straightforward efficient techniques and can be updated continuously or periodically, allowing nonstationary errors to be accommodated. It also permits improved implementations of conventional

mismatch determination systems even if determined at a single frequency. The technology also provides efficient generation of test signals and efficient digital signal processing during calibration. A U.S. provisional patent application was filed in March, 2000 and a regular U.S. patent was filed in March, 2001. This technology is jointly owned with the University of Wyoming. This technology is available exclusively.

Direct Electrodeposition of Conducting Polymers on Active Metals

A process has been developed for the direct electrodeposition of conducting polymers on active (i.e. corrodible) metals. The conducting polymers are organic polymers that conduct electricity by the flow of electrons through the material, similar to conduction by a metal (such polymers are often referred to as "synthetic metals".) The polymer is formed on the metal surface by an electrochemical polymerization process at positive potential. At the potential required for polymerization, active metals oxidize (corrode), leading to poorly adherent or incomplete films. By using an electron transfer mediator (catalyst), we are able to reduce the potential required for polymerization such that the polymer can be formed on the metal surface with near 100% current efficiency (i.e., without concomitant corrosion of the metal.)

This technology has potential uses or applications in conducting polymer films (coatings) on active (i.e. corrodible) metals including corrosion control and sensing. This includes, but is not limited to, aluminum and iron and their alloys. A provisional application has been filed jointly with the University of Wollongong in Australia. This technology is available exclusively.

Method of Preparing Aminofunctional Alkoxy Polysiloxanes

Linear and cyclic polysiloxanes with pendant amine moieties have been synthesized via catalyzed dehydrogenative alcoholysis of polymethylhydrosiloxane (PMHS) or cyclotetra (methylhydrosiloxane) (D4H) with hydroxyalkylamines.

The reaction exhibits 100% selectivity of the hydroxyl moiety over the amine moiety of aminoalcohols at the reactive Si-H site, leaving the pendent amine functionality (primary, secondary, tertiary) intact on the product. No side reactions involving rearrangement of the polysiloxane backbone occur. There is total conversion of starting materials based on NMR detection.

A single amino-silicone product is produced.

The reaction is a one pot process with minimal purification required of the end product (catalyst removal), as the only side product produced is hydrogen gas.

The process is cost effective, on a per/mole catalyst basis, relative to the comparable hydrosilation process.

The end-product amino-silicones possess a near indefinite (months) shelf life using minimal precautions (anaerobic, anhydrous environment.) The shelf life can be extended even further by storage of the amino-silicones in a solvent, i.e. tolune, until use.

A diverse and versatile array of amino-silicone products are possible due to the fact that many aminoalcohols are commercially available. Potential market applications include coatings, adhesives, sealants, rubbers, elastomers, catalyst supports, Sol-gel/ceramic precursers, components in molecular sieves, chromatography column material, polyelectrolytes and ionically conductive materials, and electrochemical sensing devices. A U.S. patent application was filed in January 2001. This technology is available exclusively.

Peano Count Model (PCM)

Spatial data involves very large datasets. Mining implicit relationships among different attributes or bands of spatial data can be prohibitively time consuming with traditional methods. Data mining includes association rule mining, classification and clustering. Association rule mining, originally proposed for market basket data, now is applied in many areas. Association rule mining is very promising for spatial data. Classification and clustering techniques abound but their application to huge datasets has been problematic. Huge amounts of spatial data have been collected in various ways, but the discovery of the knowledge contained therein has just begun.

The Peano Count Model (PCM) technology involves a data organization (bit Sequential or bSQ), a data structures and algebra (Peano Count Trees or PC-trees and the PC-tree algebra) and a conceptual structure (Peano County data-cube or PC-cube) which make spatial data data mining ready. The Peano technology centers around the new loss-less

PC-Tree spatial data structure and an efficient algebra for combining PC-trees. New spatial data-mining algorithms for association rule mining, classification, and clustering result directly from this new model. The efficiency of traditional data mining algorithms improves when using this model.

With this technology, the images are organized in bit-Sequential or bSQ format. For data mining of spatial data, a new data structure for bSQ files called Peano Count trees or PC-trees is introduced. Using the Peano ordering, each bSQ bit array is organized into a tree structure that efficiently captures all the information of the bit array plus the value-histograms of each and every quadrant in the space. These Peano Count trees are space efficient, lossless, data mining ready structures for the association rule mining of bSQ spatial datasets.

Algorithm pruning is almost always required in order to make data mining feasible. PC-trees facilitate new pruning techniques for association rule mining based on a high-order bit first approach and a single attribute first approach. Also, these data structures provide early algorithm exit advantages for fast high-confidence, low-support association rule identification.

Applications areas for the PCM data mining technology include, precision agriculture, hazard detection, monitoring, and analysis (floods, fires, flora infestations, etc.), natural resource location and management (including mineral exploration), land management and planning, genome (gene) mapping, virtual artifact archiving (virtual archeology) and a very large scale integration (VLSI) design.

A U.S. provisional application was filed in October 2000 and a regular U.S. patent application was filed in October, 2001. Three related provisional patent applications were filed in FY02. This technology is available exclusively.

READ-COMMIT ORDER CONCURRENCY CONTROL (ROCC)

The Internet has been growing so fast that the number of users accessing online databases doubles every year. This calls for systems which accommodate very high system throughput. Virtually all commercial database products use two phase locking (2PL) to maintain execution correctness. Unfortunately 2PL cannot meet the very high performance needs of the future, due to 2PL thrashing behavior caused by blocking. A Read-commit Order Concurrency Control (ROCC) method for high performance database systems has been developed. ROCC is a deadlock-free concurrency control method based on optimistic mechanisms. It maintains a Read-commit queue (RC-queue) that records the access order of transactions. Along with the RC-queue, and Aintervening" validation algorithm is developed for execution validation. In addition to traditional operation conflict, a new concept - element conflict has been introduced. Through intervening element conflict checks, transaction restarts and validation complexity are reduced significantly. Our simulation result shows that ROCC may produce much higher system throughput while maintaining a comparable restart ratio to 2PL in environments, such as the Internet, where long network delay is inevitable. The throughput increase could be as much as 150% if restarts are restricted at a comparable level to 2PL. Compared to Wait Depth Limit (WDL) and traditional Optimistic concurrency control (OCC), ROCC reduces restarts more than 60%.

Application areas for the ROCC may include commercial database products and high performance data base systems. A U.S. provisional patent application was filed in November 2000 and a regular patent application was filed in November, 2001. One related provisional application was filed in FY02. This technology is available exclusively.

"THE SOUNDER" A DISTRIBUTED AUDIO SYSTEM FOR THE CAPTURE, CONDITIONING, AND DELIVERY OF SOUND

This technology relates to hearing aids and other listening conditioning systems. The hearing aid and listening devices often utilize a filter profile established by an audiologist. People frequently experience changes in hearing capability or preferences caused by environment or physical conditions. Re-visits to the audiologist are then needed to re-establish the filter profile or often to fabricate new hearing aids to accommodate the changes in hearing or preferences. Furthermore, hearing aids and sound conditioning systems suffer from significant signal-to-noise ratio and quality problems.

This technology is composed of:

- A computer program on a personal computer, which obtains filter profiles corresponding to user audiograms and to user preferences.

- A portable audio conditioning device, a small hand held unit with filter profiles obtained under control of the personal computer program and up loaded. It continuously delivers conditioned sound.
- Sound capture units which wirelessly transmit source sound data to the audio conditioning unit. This enables sound to be picked up where it is created reducing signal/noise and improving fidelity.

Applications include hearing impaired with or without hearing aids. This technology is hearing aid channels (user) friendly. It supports traditional, new binary fast, and new profile confirmation audiogram styles. This technology provides for personal audio user characteristics and for user preferences. The PC, on demand, performs the set up of new conditioning profiles.

Other applications may include audio consumer products, PC's chips, software, automobiles, and telephones (tele-communications.)

A U.S. patent application was filed in April 2001, a CIP application was filed in August, 2001 and a PCT application was filed in April 2002. This technology is available exclusively.

Method for Drug Design Using Comparative Molecular Field Analysis Extended for Multiple Mode Ligand Binding and Disposition

CoMFA is the most used computational method for drug design when no receptor is known. The user must specify the conformation structure and/or orientation (mode) of each ligand before the analysis. This extension technology enables the user to input several modes of each ligand and the procedure will select the best mode(s). CoMFA is patented and commercialized by a company called Tripos Associates.

A provisional U.S. patent was filed in November, 2001 and Tripos Associates has been approached regarding this technology. The scientists are involved in further research on this technology.

Homogeneous Adjuvant Formulation for Enhancing Efficacy of Pesticides and High-pH Oil Based Adjuvant

Two new adjuvants were developed at NDSU. The first is a blend of nitrogen fertilizers, various oils, a pH adjuster, and nonionic surfactants. The second is a blend of various oils, a pH adjuster, and nonionic surfactants. The components of these blends provide a single stable formulation and act synergistically at low rates to increase spray retention, herbicide solubility, prevent antagonism by salts in the spray carrier water, and optimize spray deposit characteristics that enhance leaf penetration and efficacy of herbicides.

A U.S. patent application was filed in November, 2001 on the Homogeneous Adjuvant Formulation for Enhancing Efficacy of Pesticides and a U.S. CIP application was filed in December, 2001 on the High pH Oil Base Adjuvant.

A license agreement for the Homogeneous Adjuvant Formulation for Enhancing Efficacy of Pesticides and an option to license agreement for the High pH Oil Based adjuvant were entered into with Agsco, Inc., of Grand Forks, ND. Exclusive foreign licensing is still available.

A Power Distribution Control System to Address Transient Conditions in Computer Architectures

Power supply systems are becoming more difficult to manage and develop in computer systems as transient demands are exceeding capabilities. In high-end personal computer systems significant transients are created when reset or sleep modes are entered and exited. The traditional approach in management of the power supply is rapidly losing effectiveness due to larger current demands, reduced supply voltages, and high frequencies. This technology creates a control for the electronics to enter and exit transient conditions in a deterministic fashion, greatly reducing the demand on the power distribution system.

This novel approach solves performance problems of high end commercial personal computers. This approach will simplify the power distribution design, resulting in better performance and lower manufacturing costs.

A U.S. patent application was filed in March, 2002. This technology is available exclusively.

Surfactant-Ammonium Sulfate Adjuvant Composition for Enhancing Efficacy of Herbicides

This adjuvant technology is a blend of amphoteric surfactant from beta alanines chemistry and ammonium sulfate. This adjuvant greatly enhances Glyphosate efficacy, especially when hard water is used as a carrier. Glyphosate herbicides include the widely used Round-up® herbicide.

A U.S. patent application was filed on May 1, 2002. Additional field testing is in progress and one of the component manufacturers is also exploring patent activity. Upon completion of these activities and successful results, this technology will be offered for license some time during the next year.

TRADEMARKS

The NDSU/RF owns several trademarks. These have involved the following horticultural varieties:

- Dakota Goldrush ®- potentilla
  September 27, 1994
- Dakota Centennial ®- ash
  September 13, 1994
- Dakota Goldcharm® – spirea
  July 5, 1994
- Dakota Sunspot® - potentilla
  July 5, 1994
- Dakota Sunburst ®- chrysanthemum
  July 5, 1994
- Prairie Dome® – ash
  May 31, 1994
- Prairie Gem ®- flowering pear
  May 31, 1994
- Prairie Spire ®- ash
  May 24, 1994
- Dakota Pinnacle ® - birch
  January 19, 1999
- Blueberry Delight ® - juniper
  December 22, 1998
- Prairie Elegance ® - juniper
  March 2, 1999
- Snow Mantle ® - gray dogwood
  February 22, 2000
- Snow Lace ® - gray dogwood
  February 29, 2000
- Prairie Radiance ® - winterberry euonymus
  March 28, 2000

WHAT RESEARCH AND DEVELOPMENT RESOURCES ARE AVAILABLE TO INDUSTRY AT NDSU?

North Dakota State University celebrated its 100th year as a land grant institution in 1989. Its 450 faculty members provide a broad array of research and technical expertise through the Colleges of Agriculture; Science and Mathematics; Engineering and Architecture; Pharmacy; Human Development and Education; Business Administration; and Arts, Humanities, and Social Sciences. NDSU is recognized as a research leader in polymers and coatings, plant breeding, agricultural product development, and many other areas. Extensive research facilities include Loftsgard Hall, an $8 million plant science facility, a $10.5 million industrial agriculture/ communication center, four NDSU Biotechnology Institute service centers, and the Center for Nanoscale Science and Engineering.

The North Dakota Agricultural Experiment Station, NDSU Institute for Business and Industry Development, and a new NDSU Research and Technology Park with its first anchor tenant (Phoenix International Corp.). A $6.2 million second building, Research I (completed in FY02) contains 40,000 square feet and includes thirteen laboratories. Research in the building is largely concentrated on coatings and materials. Construction will begin on a new building (Research II) in the fall of 2002. This 75,000 square foot high technology research facility will house the Center for Nanoscale Science and Engineering among other research centers and will further enhance NDSU's research capabilities.

WEBPAGE

The NDSU/RF established a webpage in FY-98 to provide information about NDSU/RF and NDSU developed technologies. It is established, in part, to market these technologies to industry. The webpage is also linked to NDSU offices such as the Technology Transfer office, ND Foundation Seed Program and Sponsored Programs Administration. The address is: http://www.ndsu.nodak.edu/ndsu/research_foundation. Alternatively you can go to NDSU's home page and find it under Campus Links.

WHAT ARE THE BENEFITS TO BUSINESS AND INDUSTRY?

Through contracts with NDSU and the NDSU/RF, the University's extensive human and physical resources are available to help meet corporate research, technology, and development needs and to help industry sustain its technology base. By contracting for use of University resources, industry can save on costly long-term investments of capital and labor in research and development. Companies and university research investigators can also look to the NDSU/RF as a vehicle for transferring NDSU scientific discoveries, technologies, products, and processes to the marketplace. The Research Foundation can arrange for the patenting, licensing, and sale of intellectual properties and develop arrangements in which the Research Foundation takes an equity position in a commercial activity.

In May of 2000, NDSU broke ground on a new 40 acre Research and Technology Park. The first anchor tenant is Phoenix International which anticipates up to 300 engineers in its facility. The NDSU Technology Transfer office and NDSU/RF have moved into Research I, with the Vice President for Research, Creative Activities and Technology Transfer and the Sponsored Programs Administration.

Submitted by,

Dale Zetocha

Dale Zetocha
Executive Director
-- October, 2002 --

Prepared by the North Dakota Legislative Council
staff for House Appropriations
January 21, 2003

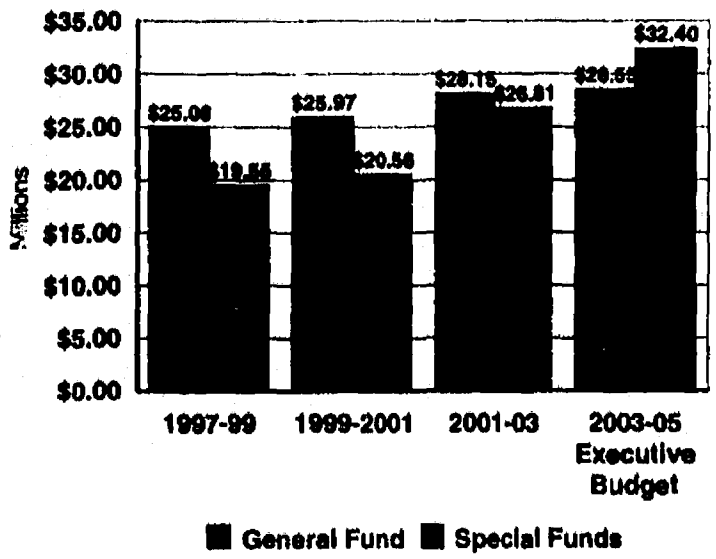
Department 640 - NDSU Main Research Center
House Bill No. 1021

	FTE Positions	General Fund	Other Funds	Total
2003-05 Executive Budget	358.55	$28,551,944	$32,404,239	$60,956,183
2001-03 Legislative Appropriations	370.17[1]	28,149,485[2]	26,812,612	54,962,097
Increase (Decrease)	(11.62)	$402,459	$5,591,627	$5,994,086

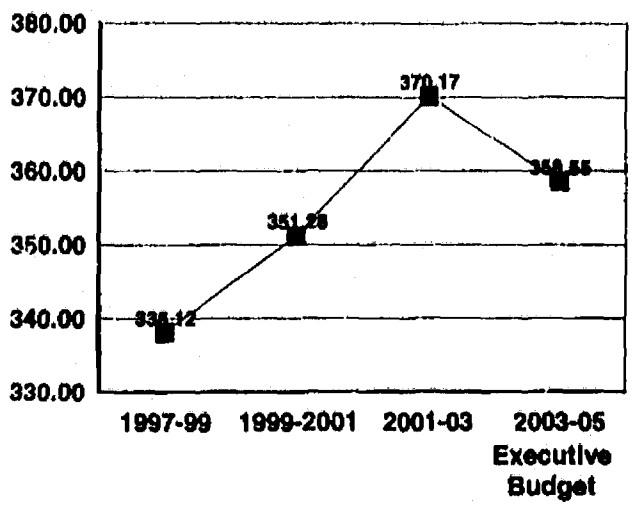
[1] The 2001-03 appropriation is based on 349.48 FTE positions. Section 4 of 2001 Senate Bill No. 2021 authorizes the State Board of Higher Education to adjust FTE positions as needed. The 370.17 FTE positions shown above represent the employee positions reported to the Office of Management and Budget.

[2] The 2001-03 general fund appropriation is the amount appropriated by the 2001 Legislative Assembly and does not include a reduction of $295,570 relating to the 1.05 percent budget allotment ordered by Governor Hoeven in July 2002.

Agency Funding



FTE Positions



Executive Budget Highlights

	General Fund	Other Funds	Total
1. Increases funding from gifts, grants, and contracts for a heated and insulated building to house a Buhler semi-industrial research mill which was donated to North Dakota State University		$1,000,000	$1,000,000
2. Provides funding from the environment and rangeland protection fund for chemical storage buildings at the Main Research Center in Fargo and the Hettinger Research Center		$120,000	$120,000
3. Deletes 8.14 FTE faculty support positions	($1,281,008)	($104,940)	($1,385,948)
4. Deletes 3.48 FTE support - Other professional positions	($295,538)	($8,891)	($304,429)
5. Provides funding for critical areas and new initiatives at the Main Research Center, branch research centers, North Dakota State University Extension Service, and Northern Crops Institute. The special funds are from the minor use pesticide fund for minor use pesticide research programs.	$995,408	$250,000	$1,245,408
6. Increases funding for temporary wages and operating costs to reflect an anticipated increase in gifts, grants, contracts, and sale of agricultural products		$2,614,070	$2,614,070

7.	Increases funding for salaries and wages and health insurance to reflect the 2003-05 biennium executive recommendation	$814,525	$413,524	$1,228,049

Major Related Legislation

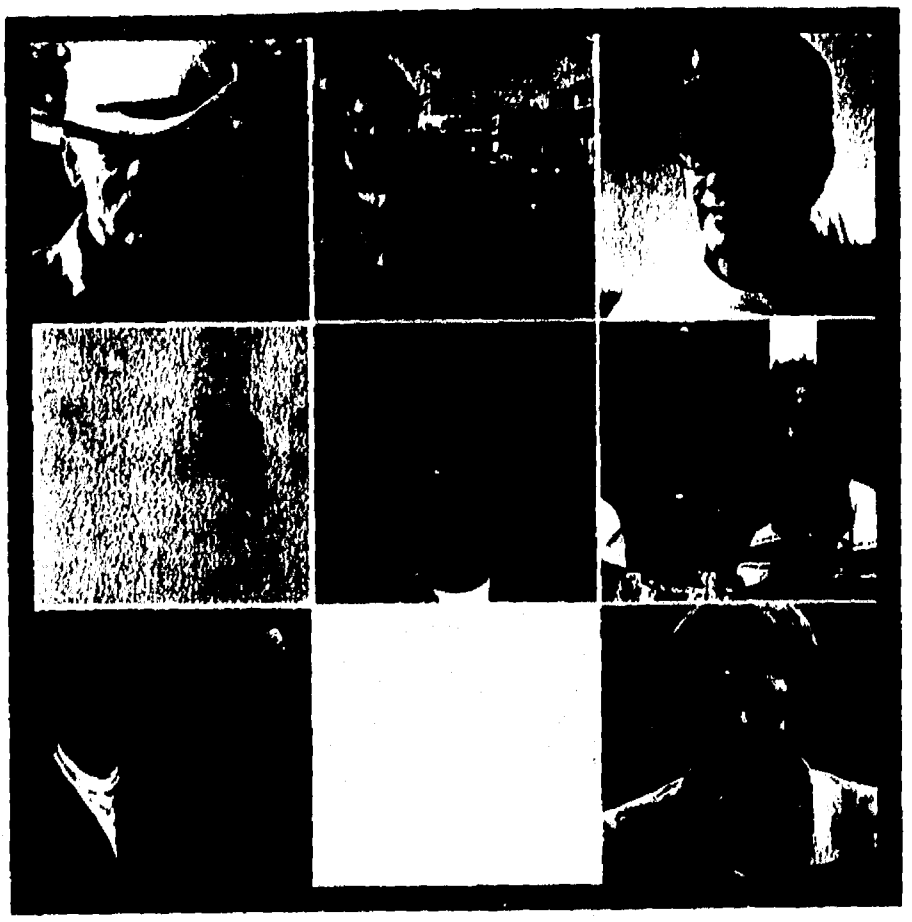
Section 3 of House Bill No. 1021 authorizes transfer appropriation authority between the Main Research Center, the branch research centers, NDSU Extension Service, and Northern Crops Institute.

Section 4 of House Bill No. 1021 authorizes the State Board of Higher Education to adjust or increase full-time equivalent positions for the Main Research Center and report any adjustments to the Office of Management and Budget.

Section 5 of House Bill No. 1021 authorizes the carryover of any unexpended general fund appropriation and excess income received by the Main Research Center.

Section 6 of House Bill No. 1021 authorizes $120,000 from the environment and rangeland protection fund for chemical storage buildings at select branch research centers.

Section 7 of House Bill No. 1021 authorizes $250,000 from the minor use pesticide fund for defraying expenses of minor use pesticide research programs.



House

2002 Annual Highlights

NDSU Extension Service ■ North Dakota Agricultural Experiment Station

NDSU
North Dakota State University

with exception of the following pages, same testimony given to House + Senate

NDSU Agriculture

NDSU Agriculture consists of three integrated components: teaching, research and extension. Its mission is to foster North Dakota communities as vital economic and social units. NDSU Agriculture does this by:

- creating partnerships that educate the public in agriculture, life and environmental disciplines.
- providing creative, cost-effective solutions to current problems.
- pursuing relevant fundamental research.

N.D. Agricultural Experiment Station

The N.D. Agricultural Experiment Station develops and disseminates technology important to the production and utilization of food, feed, fiber and fuel from crop and livestock enterprises. Its research enhances the quality of life, sustainability of production and protection of the environment.

Through academic departments in the College of Agriculture, Food Systems and Natural Resources; the seven research extension centers in strategic areas of the state; and the Agronomy Seed Farm, faculty and staff conduct applied research in the following program areas:

- Plant Sciences – plant breeding and genetics, weed science, biotechnology, crop production and physiology, horticulture.
- Plant Pathology – disease forecasting and management, biological control of plant diseases, molecular genetics.
- Soil Science – soil fertility, soil management, wetlands/ groundwater.
- Cereal and Food Science – cereal grain quality, processing, product development.
- Entomology – insect pest management ecology.
- Animal and Range Sciences – reproductive physiology, genetics, meat processing, animal nutrition, range science, natural resource management.
- Agribusiness and Applied Economics – grain and livestock marketing, risk management, global trade.
- Agricultural and Biosystems Engineering – bioprocessing, agricultural waste management, irrigation systems and water management.
- Veterinary and Microbiological Sciences – microbiology, food safety, veterinary diagnostics.

Faculty and staff of the Experiment Station work closely with Extension personnel to provide scientifically-based, unbiased information that is needed by North Dakota producers and agribusinesses to make sound management decisions.

NDSU Extension Service

The NDSU Extension Service creates learning partnerships that help adults and youth enhance their lives and their communities. This purpose is accomplished through the dissemination of information and by implementing educational programs geared to the changing needs of North Dakotans.

Faculty and staff on campus work within academic departments of the College of Agriculture, Food Systems, and Natural Resources and the College of Human Development and Education. Their appointments in these departments make them partners in NDSU's academic programs and research. County and area staff across the state complete the link between those NDSU programs and North Dakota citizens.

The NDSU Extension Service focuses its work around eight program areas:

- Cropping systems in the 21st century.
- Community, economic development and leadership.
- 4-H youth development.
- Competitiveness and profitability of animal systems.
- Farm and family economics.
- Human development.
- Nutrition, food safety a. . health.
- Natural resources and environmental management.

The NDSU Extension Service provides user-friendly information that reflects research efforts in North Dakota and across the country.

www.ag.ndsu.nodak.edu/legislators/

Cereal Production Constraints
($521,000)

Cereal Disease Forecasting ($233,000)
Crop diseases, such as Fusarium head blight (wheat and barley scab), have resulted in losses of $3-$5 billion to North Dakota grain producers in the last 10 years. Meteorological data and crop growth patterns can be used to develop predictive models for use by grain producers in their decision-making on whether and when to apply fungicides. A forecasting model developed at NDSU was used successfully by grain producers in 2001 and 2002 to help limit losses from this disease, improve grain quality and improve profitability. Restoring a faculty position in the Department of Plant Pathology ($180,000) to develop better predictive models for scab and other cereal diseases based on improved data collection is necessary. Information gathered by NDSU scientists at the Main Station, the North Central Research Extension Center ($20,000), the Hettinger Research Extension Center ($10,000) and the Langdon Research Extension Center ($13,000) will allow North Dakota grain producers to remain competitive in a global market.

The NDSU Extension Service ($10,000) will monitor key insect pests and diseases of wheat, sunflowers, soybeans and canola at strategic periods using GPS and GIS tools to create current, spatially precise distribution maps of outbreaks. All counties will be surveyed by this process, which will assist in further development, assessment and validation of existing disease forecasting and insect prediction models.

Western Malting Barley ($288,000)
Barley production in North Dakota has been seriously affected by epidemics of Fusarium head blight (scab). Toxins produced by this fungus minimize the use of infected barley by the malting and brewing industry, thereby reducing profitability to the North Dakota barley producer. Because of the continued demand for high quality six-rowed malting barley by the U.S. brewing industry, the North Dakota Legislature authorized NDSU to initiate a series of studies to determine optimum production methods for malting barley in western North Dakota and to develop cultivars specifically for this region.

In collaboration with Main Station scientists, studies to determine fertilizer recommendations began at the Hettinger Research Extension Center and the Dickinson Research Extension Center. Disease surveys were conducted in barley fields throughout the region, and breeding evaluation trials were conducted at the Williston Research Extension Center, the Dickinson Research Extension Center and the Hettinger Research Extension Center. Continuation of this effort is necessary to provide western North Dakota the cultivars and information for successful malting barley production.

The NDSU Extension Service will provide education to producers on the development and expansion of western malting barley and will lead the applied research efforts and education relating to disease issues. Distribution of funds will be made by the State Board of Agricultural Research and Education (SBARE) Barley Granting Committee.

North Dakota State Soil Conservation Committee
($35,000)
The North Dakota State Soil Conservation Committee, through its partnership with the NDSU Extension Service, will restore funds to the grants program that is offered each biennium to soil conservation districts on a competitive basis. These dollars are used by districts for technical help and educational assistance relating to soil conservation, tree planting and other environmental issues.

Additional Notes:
The Governor's proposed budget includes development of pesticide-handling facilities at the Hettinger Research Extension Center and the Main Station ($120,000 for both facilities), which will complete the process of constructing such facilities at all research stations. Also, the Governor's budget authorizes the Dickinson Research Extension Center to construct a new headquarters building ($1.4 million, no general fund monies). The N.D. Agricultural Experiment Station greatly appreciates the authorization to construction these facilities, which are sorely needed. The Governor's proposed budget also includes a salary and fringe benefits package.

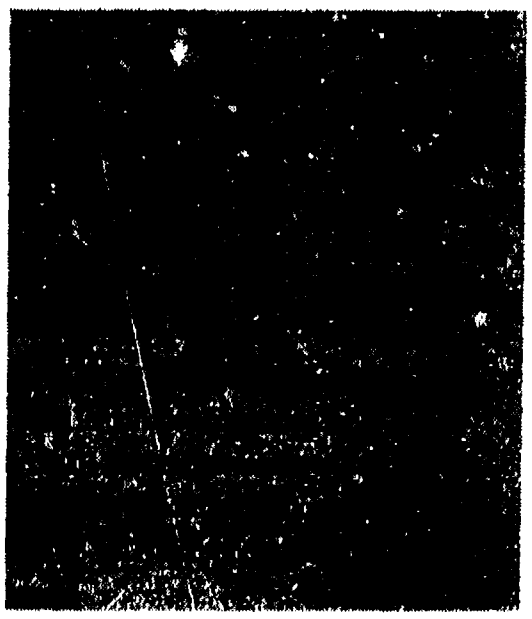
Senate

2002 Annual Highlights

NDSU Extension Service ■ North Dakota Agricultural Experiment Station

Biennial Budget 2003-2005

North Dakota State University Agriculture
NDSU Extension Service and North Dakota Agricultural Experiment Station



As an 1862 land-grant institution, North Dakota State University continues to address the issues of North Dakotans across the state through its seven research extension centers, the Agronomy Seed Farm, 52 county extension offices and Fort Berthold extension office, and the faculty and staff located at NDSU. Research and Extension efforts focus on the needs of agricultural producers, business leaders, consumers, community leaders, youth, parents, volunteers and families. A number of those efforts are profiled in this book.

Although issues such as low farm prices, lack of markets, weather conditions that favor crop disease and other pests, lack of better paying jobs and youth outmigration are being addressed, the seriousness of these problems is compounded by the manner in which they are interrelated. The concerns of agriculture cannot be separated from the problems of rural communities.

Through various multi-disciplinary research and extension efforts, the faculty and staff involved in NDSU agriculture share relevant data, offer positive alternatives, provide a variety of environments for learning and facilitate dialogue about public issues.

State general fund dollars are extremely valuable for these research and extension programs. They provide the ongoing support to maintain programs and projects; offer opportunities to pilot new efforts around emerging concerns; and serve as leverage for additional resources from county, federal and grant sources.

The 2003-2005 Governor's budget, although positive in light of the current economic situation, provides for a 95 percent budget from the current biennium.

NDSU
NDSU Extension Service
North Dakota Agricultural Experiment Station

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Reinvesting in Critical Areas:

Enhancing Economic Stability in North Dakota through Research and Extension ($1,245,408)

BeefLine ($474,408)

BeefLine Phase II ($274,408)
BeefLine provides a plan for cattle research from pre-breeding through finished products and calls for certain types of information needed by cattle producers in North Dakota. The growth in byproduct and feed grain availability in many regions of the state indicates that North Dakota's feedlot industry is poised to grow to 250,000 to 300,000 head on feed annually, representing a significant opportunity for job creation and new wealth in the state.

A coordinated project on fed cattle will be conducted by the Department of Animal and Range Sciences ($45,000), the Carrington Research Extension Center ($160,408) and the Central Grasslands Research Extension Center ($14,000). Research will be conducted on topics including, but not limited to, ruminant nutrition and digestion, use of agricultural by-products from industrial food processing in feeding rations, management procedures, genetic evaluations and environmental interactions. Data gathered from these studies will provide a baseline of information necessary for the North Dakota cattle industry to provide high-quality fed beef demanded by U.S. and international consumers.

The NDSU Extension Service ($55,000) will strengthen educational programs focused on enhancing animal agriculture in North Dakota. Efforts will be made to expand the capacity of existing producers and help secure opportunities for new producers in beef, swine, dairy and sheep enterprises. On-farm demonstration projects, individual support through efforts such as the Dairy Diagnostic program, livestock marketing clubs and expanded value-added concepts such as the Beef Quality Assurance program will be offered.

Through internal reallocation, the Beef Quality Assurance program position will be moved from the NDSU Extension Service to the Dickinson Research Extension Center.

Agricultural Waste Management ($200,000)
Research in agricultural waste management is critical to the economic viability of North Dakota's emerging feedlot industry. Environmentally sound methods for disposing of animal waste from large confinement feeding operations have been established, but improved technologies to transform waste liabilities into energy or nutrient assets are needed. Research areas including runoff, water pollution and effects on groundwater are environmental issues that need to be addressed. Restoring a position in the Department of Agricultural and Biosystems Engineering to study these issues and provide research in biofuels is needed.

Biofuels ($70,000)

Given our dependence on imported fossil fuels and recent terrorist attacks, the development of biofuels capabilities is a continuing theme at the national level. Creating sustainable, renewable fuels using plant products grown in North Dakota will help our nation be more self-sufficient in fuel needs. The NDSU Extension Service ($20,000) will provide educational programs about these opportunities, conduct applied research on the development of biofuels, and partner with other state and federal entities to promote the adoption of biofuels. The Experiment Station ($50,000) will identify, develop and evaluate new methods and technologies that convert plants and plant products into biobased fuels. Main Station scientists will work with colleagues nationally to identify ways to improve efficiencies of existing biobased energy systems.

Rural North Dakota Communities ($145,000)

Vibrant rural communities are critical to the future of North Dakota and to agriculture. The NDSU Extension Service ($135,000), through its two state specialists, extension agents with emphasis in community development and the Institute for Business and Industry Development will expand educational programming, develop collaborations and build partnerships. Programs will focus on agriculture and youth entrepreneurship, rural tourism, recreation opportunities and marketing, community asset-based planning, e-business for small business, community-led business retention and expansion, and rural leadership. Restoration of educational work in the Fort Berthold extension office, which provides support and guidance to Native American audiences, is necessary and important. Research and data collection relating to rural community impacts and data analysis for opportunities will be led by the Department of Agribusiness and Applied Economics ($10,000).

Cereal Production Constraints
($521,000)

Cereal Disease Forecasting ($233,000)
Crop diseases, such as Fusarium head blight (wheat and barley scab), have resulted in losses of $3-$5 billion to North Dakota grain producers in the last 10 years. Meteorological data and crop growth patterns can be used to develop predictive models for use by grain producers in their decision-making on whether and when to apply fungicides. A forecasting model developed at NDSU was used successfully by grain producers in 2001 and 2002 to help limit losses from this disease, improve grain quality and improve profitability. Restoring a faculty position in the Department of Plant Pathology ($180,000) to develop better predictive models for scab and other cereal diseases based on improved data collection is necessary. Information gathered by NDSU scientists at the Main Station, the North Central Research Extension Center ($20,000), the Hettinger Research Extension Center ($10,000) and the Langdon Research Extension Center ($13,000) will allow North Dakota grain producers to remain competitive in a global market.

The NDSU Extension Service ($10,000) will monitor key insect pests and diseases of wheat, sunflowers, soybeans and canola at strategic periods using GPS and GIS tools to create current, spatially precise distribution maps of outbreaks. All counties will be surveyed by this process, which will assist in further development, assessment and validation of existing disease forecasting and insect prediction models.

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In collaboration with Main Station scientists, studies to determine fertilizer recommendations began at the Hettinger Research Extension Center and the Dickinson Research Extension Center. Disease surveys were conducted in barley fields throughout the region, and breeding evaluation trials were conducted at the Williston Research Extension Center, the Dickinson Research Extension Center and the Hettinger Research Extension Center. Continuation of this effort is necessary to provide western North Dakota the cultivars an information for successful malting barley production.

The NDSU Extension Service will provide education to producers on the development and expansion of western malting barley and will lead the applied research efforts and education relating to disease issues. Distribution of funds will be made by the State Board of Agricultural Research and Education (SBARE) Barley Granting Committee.

North Dakota State Soil Conservation Committee
($35,000)
The North Dakota State Soil Conservation Committee, through its partnership with the NDSU Extension Service, will restore funds to the grants program that is offered each biennium to soil conservation districts on competitive basis. These dollars are used by districts for technical help and educational assistance relating to soil conservation, tree planting and other environmental issues.

Additional Notes:
The Governor's proposed budget includes development of pesticide-handling facilities at the Hettinger Research Extension Center and the Main Station ($120,000 for both facilities), which will complete the process of constructing such facilities at all research stations. Also, the Governor's budget authorizes the Dickinson Research Extension Center to construct a new headquarters building ($1.4 million, no general fund monies). The N.D. Agricultural Experiment Station greatly appreciates the authorization to construction these facilities, which are sorely needed. The Governor's proposed budget also includes a salary and fringe benefits package.

House Action:
The House removed the biennial salary package, and some vacant special-funded positions in research and extension. Those changes are reflected in the budget figures outlined on the following pages.

Biennial Budget 2003-2005: Impact of a 95 Percent Budget

NDSU Extension Service
($716,487)

The 95 percent budget would eliminate five full-time positions from the NDSU Extension Service. They include one faculty member in Animal and Range Sciences, a 4-H youth development specialist, an extension agent and office supervisor at Fort Berthold, and two specialists in Agriculture Communication. In addition, dollars for two grants awarded to soil conservation districts during the next biennium will be eliminated from the North Dakota State Soil Conservation Committee budget.

N.D. Agricultural Experiment Station ($1,407,474) and Research Extension Centers ($386,713)

Under the 95 percent budget, the Main Station would be forced to eliminate a number of faculty and staff positions. They include: two positions in Agricultural and Biosystems Engineering; 3.5 positions in Animal and Range Sciences; one in Biochemistry; two positions in Cereal and Food Sciences; one position in Plant Pathology; one position in Plant Sciences; two in Soil Science; and five support staff positions. The loss of these positions impacts critical programs that benefit the North Dakota economy.

The research extension centers will respond to the 5 percent reduction as follows:

- **Carrington Research Extension Center ($72,692) – Reduce support for one technical support staff position ($60,205) and associated operating funds ($12,487), thereby closing the bison research program.**
- **Central Grasslands Research Extension Center – Reduce operating funds and equipment by $47,348.**
- **Dickinson Research Extension Center ($82,563) – Reduce staff by one research technician ($65,007) and operating funds by $17,556.**
- **Hettinger Research Extension Center – Reduce funding for one full-time support position ($45,127).**
- **Langdon Research Extension Center – Reduce general fund salary and reduce (by 50 percent) operating funds ($47,303) in the Foundation Seedstocks program.**
- **North Central Research Extension Center – Reduce funding for one technical support staff position ($44,411).**
- **Williston Research Extension Center ($47,269) – Reduce general fund dollars for a technical support staff position ($42,189) and off-station testing programs ($5,080).**

General Fund Salary and Operating Costs to Continue, 2003-2005

Extension Service	$522,015
Main Station	428,681
Dickinson Research Extension Center	19,147
Central Grasslands Research Extension Center	13,815
Hettinger Research Extension Center	19,195
Langdon Research Extension Center	13,012
North Central Research Extension Center	11,578
Williston Research Extension Center	16,680
Carrington Research Extension Center	23,536
Total	$867,659

Proposed reductions in the revolving equipment pool and ITD connection were not approved by SBARE. The branch stations will have to internally reallocate funds to reinstate these reductions.

Biennial Budget 2003-2005

North Dakota State University Agriculture
NDSU Extension Service and North Dakota Agricultural Experiment Station

General Fund — Extension Service, Main and Branch Research Centers, Northern Crops Institute and Agronomy Seed Farm

Reconciliation of 2003-05 Budget Request to Executive Recommendation (HB 1021)

	General Fund					
	Extension Service	Main Research Center	Branch Research Centers	NCI	Agronomy Seed Farm	Total General Funds
95% Budget Request	$13,616,708	$31,812,011	$7,347,447	$688,205	$—	$53,464,371
Adjustments:						
Eliminate Greenhouse Project		(3,950,000)				(3,950,000)
Fund Pesticide Facilities with ERP (Environmental Research Protection fund)		(120,000)				(120,000)
Fund Nestle's Research Mill with other funds (Gifts, Grants, Contracts)		(1,000,000)				(1,000,000)
Funding for "Critical Areas" (Note 1)		995,408				995,408
Reinstate .8 FTE eliminated in request				21,520		21,520
Reinstate cuts to fund cost to continue				10,889		10,889
Updates of facility and personnel training				17,591		17,591
Fund salary and health insurance increases	485,411	814,525	200,497	15,154		1,515,587
Total Per Executive Recommendation	$14,102,119	$28,551,944	$7,547,944	$753,359	$—	$50,955,366

Note 1. Added $1,245,408 ($995,408 general fund) to reinvest in critical areas in the Main Station, Branch Stations, Extension and NCI Mill, contingent on approval of SBARE and SBHE. The $250,000 special funds source is "minor use pesticide funds."

House Action

	Amendments to General Fund					
	Extension Service	Main Research Center	Branch Research Centers	NCI	Agronomy Seed Farm	Total General Funds
General Fund per Executive Recommendation	**$14,102,119**	**$28,551,944**	**$7,547,944**	**$753,359**	**$—**	**$50,955,366**
House Amendments:						
Remove funding for salary increases[1]	(186,441)	(314,140)	(69,670)	(6,400)	—	(576,651)
General Fund per House Version	**$13,915,678**	**$28,237,804**	**$7,478,274**	**$746,959**	**—**	**$50,378,715**

[1]Removes Governor's recommendation for state employee salary increases.

Special Funds — Extension Service, Main and Branch Research Centers, Northern Crops Institute and Agronomy Seed Farm

Reconciliation of 2003-05 Budget Request to Executive Recommendation (HB 1021)

	Special Funds					
	Extension Service	Main Research Center	Branch Research Centers	NCI	Agronomy Seed Farm	Total General Funds
95% Budget Request	$20,861,174	$34,570,715	$8,939,857	$717,709	$1,160,872	$66,250,327
Adjustments:						
Eliminate Greenhouse Project		(3,950,000)				(3,950,000)
Fund Pesticide Facilities with ERP (Environmental Research Protection fund)		120,000				120,000
Fund Nestle's Research Mill with other funds (Gifts, Grants, Contracts)		1,000,000				1,000,000
Funding for "Critical Areas" (Note 1)		250,000				250,000
Reinstate .8 FTE eliminated in request				50,745		50,745
Reinstate cuts to fund cost to continue						—
Updates of facility and personnel training						—
Fund salary and health insurance increases	378,144	413,524	43,819	14,444	9,513	859,444
Total Per Executive Recommendation	$21,239,318	$32,404,239	$8,983,676	$782,898	$1,170,385	$64,580.516

Note 1. Added $1,245,408 ($995,408 general fund) to reinvest in critical areas in the Main Station, Branch Stations, Extension and NCI Mill, contingent on approval of SBARE and SBHE. The $250,000 special funds source is "minor use pesticide funds."

House Action

	Amendments to Special Fund					
	Extension Service	Main Research Center	Branch Research Centers	NCI	Agronomy Seed Farm	Total General Funds
Special Funds per Executive Recommendation	**$21,239,318**	**$32,404,239**	**$8,983,676**	**$782,898**	**$1,170,385**	**$64,580,516**
House Amendments:						
Remove funding for salary increases[1]	(107,632)	(144,467)	(15,560)	(5,073)	(3,471)	(276,203)
Remove vacant FTE's[2]	(547,103)	(739,918)	(83,669)			(1,370,690)
Transfer Extension Service FTE[3]	(84,405)		84,405			—
Total Special Funds Adjustments to Executive Recommendation	***(739,140)***	***(884,385)***	***(14,824)***	***(5,073)***	***(3,471)***	***(1,646,893)***
Special Funds per House Version	**$20,500,178**	**$31,519,854**	**$8,968,852**	**$777,825**	**$1,166,914**	**$62,933,623**

[1]Removes Governor's recommendation for state employee salary increases.
[2]Removes "other funded" vacant FTE positions as follows: Extension Service - 6.0 FTE; Main Station - 9.36 FTE; Hettinger Research Center - 1.0 FTE.
[3]Transfers Extension Service FTE position from Bismarck extension office to Dickinson Research Center.

Biennial Budget 2003-2005

North Dakota State University Agriculture
NDSU Extension Service and North Dakota Agricultural Experiment Station

Branch Research Centers

Reconciliation of 2003-05 Budget Request to Executive Recommendation (HB 1021)

	Carrington			Central Grasslands		
	General Fund	Special Funds	Total	General Fund	Special Funds	Total
95% Budget Request	$1,381,139	$1,909,710	$3,290,849	$899,577	$755,391	$1,654,968
Adjustments:						
Fund salary and health insurance increases	39,531	20,496	60,027	22,105		22,105
Total Per Executive Recommendation	$1,420,670	$1,930,206	$3,350,876	$921,682	$755,391	$1,677,073

	Dickinson			Hettinger		
	General Fund	Special Funds	Total	General Fund	Special Funds	Total
95% Budget Request	$1,568,690	$3,596,452	$5,165,142	$857,417	$728,705	$1,586,122
Adjustments:						
Fund salary and health insurance increases	50,955		50,995	19,958	10,542	30,500
Total Per Executive Recommendation	$1,619,645	$3,596,452	$5,216,097	$877,375	739,247	1,616,622

	Langdon			North Central		
	General Fund	Special Funds	Total	General Fund	Special Funds	Total
95% Budget Request	$898,702	$369,101	$1,267,803	$843,803	$850,433	$1,694,236
Adjustments:						
Fund salary and health insurance increases	20,789	4,355	25,144	22,690	8,309	30,999
Total Per Executive Recommendation	$919,491	$373,456	$1,292,947	$866,493	$858,742	$1,725,235

	Williston			Total Research Centers		
	General Fund	Special Funds	Total	General Fund	Special Funds	Total
95% Budget Request	$898,119	$730,065	$1,628,184	**$7,347,447**	**$8,939,857**	**$16,287,304**
Adjustments:						
Fund salary and health insurance increases	24,469	117	24,586	**200,497**	**43,819**	**244,316**
Total Per Executive Recommendation	$922,588	$730,182	$1,[illegible]2,770	**$7,547,944**	**$8,983,676**	**$16,531,620**

Biennial Budget 2003-2005

North Dakota State University Agriculture
NDSU Extension Service and North Dakota Agricultural Experiment Station

House Action
Branch Research Centers — Detail of House Amendments to HB 1021

	Original HB1021	Less Salary Increases	Less Vacant FTE's	Transfer FTE from Extension to Dickinson Research Center	Total Amendments	Amended HB1021 - House Version
Agronomy Seed Farm						
General Fund						
Special Funds	$1,170,385	(3,471)			(3,471)	$1,166,914
Total Funds	1,170,385	(3,471)	—	—	(3,471)	1,166,914
Carrington						
General Fund	1,420,670	(14,358)			(14,358)	1,406,312
Special Funds	1,930,206	(7,406)			(7,406)	1,922,800
Total Funds	3,350,876	(21,764)	—	—	(21,764)	3,329,112
Central Grasslands						
General Fund	921,682	(8,008)			(8,008)	913,674
Special Funds	755,391				—	755,391
Total Funds	1,677,073	(8,008)	—	—	(8,008)	1,669,065
Dickinson						
General Fund	1,619,645	(16,720)			(16,720)	1,602,925
Special Funds	3,596,452	(891)		84,405	83,514	3,679,966
Total Funds	5,216,097	(17,611)	—	84,405	66,794	5,282,891
Hettinger						
General Fund	877,375	(7,064)			(7,064)	870,311
Special Funds	739,247	(2,414)	(83,669)		(86,083)	653,164
Total Funds	1,616,622	(9,478)	(83,669)	—	(93,147)	1,523,475
Langdon						
General Fund	919,491	(7,215)			(7,215)	912,276
Special Funds	373,456	(1,818)			(1,818)	371,638
Total Funds	1,292,947	(9,033)	—	—	(9,033)	1,283,914
North Central						
General Fund	866,493	(7,947)			(7,947)	858,546
Special Funds	858,742	(2,914)			(2,914)	855,828
Total Funds	1,725,235	(10,861)	—	—	(10,861)	1,714,374
Williston						
General Fund	922,588	(8,358)			(8,358)	914,230
Special Funds	730,182	(117)			(117)	730,065
Total Funds	1,652,770	(8,475)	—	—	(8,475)	1,644,295
Total Research Centers						
General Fund	7,547,944	(69,670)	—	—	(69,670)	7,478,274
Special Funds	8,983,676	(15,560)	(83,669)	84,405	(14,824)	8,968,852
Total Funds	16,531,620	(85,230)	(83,669)	84,405	(84,494)	16,447,126

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You've seen those stories about farmers taking time to help an ailing neighbor harvest his crops. In your own neighborhood you've probably pitched in to help an elderly neighbor, donate hay for a drought-stricken rancher, raise money for a sick child or clean out a flood-damaged basement.

You know it's not about the crops. Or money. Or fame. It's about people. Your neighbors. Your friends. Your fellow citizens. It's in our nature to help people and make their lives better.

That's what the work of the NDSU Extension Service and the North Dakota Agricultural Experiment Station is about, too. People. People in your family. Your neighborhood. Your community and your world.

Our history is filled with groundbreaking advances that have helped families, communities and businesses. We've improved crops and livestock, helped farmers and businesses earn more profit, and helped families educate their children and cope with stress and disaster.

We listen to you to learn what you need. You meet with us at field days and seminars, and in e-mail exchanges. When our advisory boards and panels meet, we pay attention and take notes. There is high-speed Internet access at most county extension offices, and two-way video conferencing capabilities are growing. That technology is bringing our full complement of research and outreach specialists closer to the people they serve than ever before.

Our faculty and staff work closely with people across the region. They're dedicated to making life better here and to helping you and your neighbors succeed. The Extension Service has 53 field offices in North Dakota. There are eight research extension centers in the state where researchers solve local problems and demonstrate new ideas under local conditions. We're your local researchers, developers and life-long educators. Simply put: we're here to help.

Yes, our work is about crops and cattle, food and the environment, parenting and life skills. But mostly, it's about people.

This report is a sampling of the efforts by faculty and staff of the NDSU Extension Service and the North Dakota Agricultural Experiment Station. We hope it gives you a flavor of our work and glimpse of how we work with people across the region.

Greening the Plains

Dale Herman's job requires patience. Lots of patience. Herman is an NDSU research horticulturist and teacher. He's been with the university for 31 years, specializing in research of hardy woody plants of the Northern Plains.

"My goal is to release one new variety for each year of service here at NDSU," Herman says. "But it takes a lot of research and patience. With this type of research, you don't always know how many years of testing are required, especially in a Plains environment where you have cold climate hardiness concerns, deficient moisture stress, and variable soil and pH conditions."

NDSU recently released the Prairie Dream Paper Birch (*Betula papyrifera* 'Varen'). Seeds from this native tree were collected in the Killdeer Mountains in 1973. Seedling trees were planted in the NDSU Research Arboretum in 1975.

"Our goal was to find a more environmentally adapted, stress tolerant Paper Birch for landscape planting," Herman says. "After 27 years, we've come up with a tree that has a distinct white, peeling bark and dark green leaves that turn a golden yellow in the fall. It has a high resistance to bronze birch borer since none of the trees have been attacked. Meanwhile, many of the birch trees in our large collection are dead or dying from borers."

Hopefully, trees will be available in 2003 from nurseries. A potential borer-resistant Asian White Birch is also being released.

The work of Herman and other researchers has changed the way landscapers and homeowners do their planting. "The days are gone when people would plant five plants across the front of the house," says Eric Baker of Baker Nursery Gardens in Fargo. "There are so many new plants that allow customers a variety of options. Hosta is a good example. This year, we had over 100 cultivars of Hosta (plantain lily) available."

More cities are requiring developers to add landscaping and green space, according to Baker. "In Fargo, for example, new stores have parking lot buffers using plants and trees. We'll really see the benefits and beauty in 20 to 30 years as the trees become mature. Some suburbs of Chicago started years ago, and it's amazing to see the rich beauty of the trees and plants in mall settings."

Researchers have long developed new varieties that fit the environment and are disease and insect resistant. "Today, it's much more than that," says Herman. "Consumers also want trees, shrubs and plants that add color, including foliage, flowers, fruits or autumn hues, and texture." Baker agrees. "Today's consumer is very educated and often comes to our nursery looking for a specific cultivar. Usually, all I have to say is that the cultivar was developed in North Dakota, and it becomes an easy sale."

The main NDSU Research Arboretum is located near Absaraka, and woody plants are evaluated in statewide trials at NDSU research extension centers in Minot, Dickinson, Carrington and Langdon. "We also collaborate with urban foresters in Grand Forks, Fargo and Bismarck, as well as the North Central Regional Plant Introduction Station in Ames, Iowa, which includes 15 other states in our evaluation process," Herman says. He also collaborates closely with large wholesale production nurseries, which propagate his new introductions.

Herman has traveled to other countries looking for hardy woody plants that would be suitable for our region.

So consumers can make informed choices, results of his research are available through NDSU and extension horticulturists and agents. He also gives presentations at conferences and participates in the Master Gardener program. He will provide a list of NDSU introductions to all who contact him.

While Herman won't say which introduction is his favorite, his research work is being noticed. "Almost every year, he leads a discussion at our North Dakota Nursery and Greenhouse conference," Baker says. "His patience in doing research certainly has provided us with more choices, which is good for consumers."

For more information: Dale Herman, 701-231-8477, dale.herman@ndsu.nodak.edu

New Plants

The Northern Plains are greener, thanks to Dale Herman and his colleagues at NDSU. They've released 25 new woody plants for homeowners and landscapers in the last 31 years that have been exhaustively tested for performance under local conditions. Recent releases:

- **Copper Curls™ Pekin Lilac - *Syringa pekinensis 'SunBak'*** Selected for its showy coppery-orange peeling bark and large, attractive white flower panicles.
- **Northern Acclaim™ Thornless Honeylocust - *Gleditsia triacanthos var. inermis 'Harve'*** A medium-large tree with greater winter hardiness than currently available cultivars. It is thornless and seedless.
- **Prairie Statesman™ Swiss Stone Pine - *Pinus cembra 'Herman'*** A very elegant, stately pine for use as a specimen tree. Very winter hardy. This selection will not be available immediately.
- **Prairie Dream™ Paper Birch - *Betula papyrifera 'Varen'*** A stress-tolerant selection with snow-white exfoliating bark. Excellent grown single or multi-trunked.
- **Prairie Vision™ Asian White Birch - *Betula platyphylla 'NorBule'*** Native to western China. Bark is white with blackish markings. Its broad leaves are golden yellow in fall. Very winter hardy.
- **Prairie Horizon™ Manchurian Alder - *Alnus hirsuta 'Harkin'*** The most drought-tolerant alder in NDSU trials. Rapid-growing, medium-sized with dark green leaves.

Safeguarding Health

West Nile virus. Anthrax. Rabies. Scours. They're all in a day's work for the NDSU Veterinary Diagnostic Laboratory. That's where the region's livestock producers and veterinarians look for help when they have health concerns related to their livestock.

Don Safratovich, a veterinarian at the Hettinger Veterinary Clinic, consults with the NDSU Veterinary Diagnostic Laboratory about three times a week. "They do an excellent job for us," he says. The drought in southern North Dakota has watering holes and dugouts at low levels with water of questionable quality. "We've sent a lot of water samples to the diagnostic lab this summer. We get a good turnaround from them so we can get results back out to ranchers."

"That's our job," explains Neil Dyer, director of the laboratory. "Everything from a bump off a dog to a blood sample to a whole cow may come in the door." Recent work has included water and feed samples, and samples from zoo animals, companion animals and livestock. Cases related to cow-calf production, however, predominate.

For the past five years, the laboratory has seen about 10,000 cases a year. Most come from veterinarians around the region. Along with water tests, specialists check for vomitoxin in scab-infected grain, high levels of nitrate that can accumulate in plants during drought conditions and mold-produced toxins from stored feeds. They detect the toxins and make recommendations for how to best use the contaminated feeds.

"Our laboratory has established a reputation for high-quality work in toxicology. We're able to give our livestock producers a few more options for dealing with those kinds of problems," Dyer says.

The emergence of the West Nile virus in North Dakota added to the laboratory's work. "We were thinking it might be possible for it to reach North Dakota this year. We sent some of our staff to training in conducting the serum test for horses, and we purchased the materials to do the tests," Dyer says. The laboratory diagnosed more than 98 percent of the horses confirmed with the disease in North Dakota.

NDSU Extension Service agents and specialists also work closely with the laboratory to share information and alert the public to livestock and human health risks. Agents have provided public education on the West Nile virus. "They worked with media to create an awareness of the disease, what it is and what it could do," explains Gerald Sturn, extension district director for southwestern North Dakota. The agents also collected dead birds and sent them to the North Dakota Department of Health for testing.

The lab works closely with the health department because the number of infected animals is reflective of the risk to humans. That's similar to other diseases like rabies or anthrax with which the laboratory commonly deals. That relationship is likely to get closer.

"Sept. 11 of last year changed everything: from how we handle samples to plans for responding to a bioterrorism threat," Dyer says. Plans call for the laboratory to serve as an overflow facility for the Department of Health in the event of a large-scale public health emergency. The laboratory also plans to upgrade some of its facilities to deal with organisms that are more virulent and dangerous to humans. "Those activities won't be a big part of our effort, but it improves our ability to serve the state," Dyer says.

The laboratory also benefits from and contributes to NDSU's academic programs. Dyer and some of the other five faculty members in the laboratory teach classes. "Having the student population here forces you to do a better job of staying current. We have other faculty members to collaborate with, and we benefit from the research that goes on," he says. "Students benefit because we use real-world cases in class. They're not always dealing with theory, but actual cases and tissues that we've seen in the lab."

That mutually beneficial relationship will be particularly evident in the doctoral program in molecular pathogenesis offered by NDSU for the first time in the spring of 2003. The program will give students background in studying the most basic biological functions and structures of bacteria, viruses and other pathogens that threaten animal health and food safety.

For more information: Neil Dyer, 701-231-7521, neil.dyer@ndsu.nodak.edu

Disease Threat Strikes Close

"We've made substantial progress in eliminating scrapie from our flock," says Bert Moore, a sheep researcher who oversees sheep used for NDSU research. So much progress, in fact, that a quarantine instituted in March that could have lasted for a number of years will be lifted sooner.

NDSU used a relatively new genetic test to identify sheep resistant to the disease. Except for those to be used specifically for research, susceptible sheep were eliminated. The process has reduced sheep numbers in the flock near Fargo and at the Hettinger Research Extension Center by more than half to about 1,200.

In cooperation with the USDA, NDSU may develop a research project to learn more about the disease and to demonstrate how to eliminate it from flocks. "We were handed a lemon and we want to make lemonade for producers from it," Moore says.

Irrigating Western North Dakota

For David and Monica Hartsoch, irrigation changed their lives. "Absolutely, without a doubt," Monica says. The Hartsoch's farm lies in the Nesson Valley east of Williston. "We have an aquifer that flows under the valley and soil that is suitable for irrigation," David says.

David's father Verland, at age 82, is still active in farming. "He just stacked about 100 hay bales so they could be moved," David says. "My son Klint is also active in our operation. We started irrigating back in 1981 with one pivot but now have four pivots, counting the one Klint just installed. Irrigation seemed like the answer we needed to raise our own cattle feed."

In a joint venture, a 160-acre research site is being established in the valley. The research is being conducted by the NDSU Research Extension Center in Williston, and the Montana State University Eastern Agricultural Research Center and the USDA Northern Plains Agricultural Research Laboratory, both located in Sidney, Mont.

"Between us, we can deliver applied and basic research on any crop grown here. We can cover production, management and technology," says Jerry Bergman, director of the NDSU and Montana State University centers.

Researchers are working with producers and other organizations to increase the use of irrigation. "Irrigation gives us options as to what crops are grown in the region," Bergman says. "As the use of irrigation grows, it also provides us with opportunities to look at value-added possibilities."

The Hartsochs have irrigated small grains, potatoes, sugarbeets, beans, sudan grass, millet and alfalfa. "We're excited about alfalfa because of the new alfalfa processing plant in Tioga," David says. The plant will process the alfalfa into double compressed bales or cubes that will be sent to markets throughout the country and to Pacific Rim countries.

"I think we're going to see more emphasis placed on alfalfa because of the new plant," says Chet Hill, NDSU Extension Service value-added agriculture specialist in Williston. "If we can get the price up around $75 a ton and averages somewhere in the six-ton range, it will be our most profitable crop.

"We'll have educational opportunities in alfalfa management, planting, harvesting and finding the best quality product that the plant in Tioga is requesting. That will be in addition to all the other irrigation and dryland research we do."

That other research has meant a lot to Monica Hartsoch. Monica and her partners started raising vegetables using the corners of the irrigation system. Pipe was trenched in so the vegetables could be watered. "We tapped into the expertise of Ron Smith, NDSU horticulturist; the irrigation specialist in Carrington; and the Extension Service in Williston," she says.

They sold their products at a roadside market. "We had around 100 people lined up every Saturday morning. We did that for about three years before we went to growing commercially."

They developed a homemade ranch dressing that customers could use to taste-test vegetables at the roadside market. "People really liked it and wanted to buy the dressing," according to Monica. "From there, we moved on to soup mixes and other products under the Thunderbird brand name."

As sales increased, they needed to find a commercial kitchen to increase production, which meant a possible large investment. "We visited the Williston Research Extension Center and noticed the kitchen in the Ernie French Center," Monica says. "It was an ideal setup for us. We used the facility for almost a year before we outgrew it." Monica now works out of a facility in Ray.

The Ernie French Center, named for the former WREC superintendent, was recently built as a regional agricultural technology transfer facility.

Monica and her partners no longer raise their own vegetables so they can keep up with increasing sales of their other products.

Increasing indeed. Thunderbird products are now sold in eight states. The company produces five soup mixes, two quick breads, and 11 dips and rubs. "We try to use North Dakota products as much as we can," Monica says. "Our lentils come from Ray, the barley from Grand Forks and the pasta from Carrington."

For more information: Jerry Bergman, 701-774-4315, expwill@ndsuext.nodak.edu

The Western Malting Barley Program

Most current varieties of malting barley and recommended production practices were developed for eastern North Dakota, but the quality of barley grown there has been severely impacted for nine years by Fusarium head blight.

The 2001 North Dakota Legislature directed the North Dakota Agricultural Experiment Station to spend up to $288,000 for research on developing malting barley for western North Dakota.

Research at the NDSU research extension centers at Dickinson, Hettinger and Williston, and at the main station in Fargo focuses on:

- **Developing six-rowed and two-rowed malting barley varieties for dryland and irrigated production.**
- **Developing management strategies for producing malting barley under dryland and irrigated production conditions.**
- **Identifying barley diseases that could threaten the barley crop.**

Diagnostics for Dairying

Jack and Kathy Spah are concerned about the North Dakota Dairy Diagnostic Program's effect on their farm near Tuttle. "It takes a lot longer to get the milking done now that the cows are producing so much milk," Jack explains.

Then he readily admits that "it's not such a bad problem."

The Spahs joined the program with a different perspective than most other participants. "We were looking for a way to get out of dairying," Kathy explains. A team of experts helped them look for ways to boost income and liquidate their dairy herd. The team included a farm records specialist, a dairy nutritionist, the field representative from Cass Clay Creamery and Craig Kleven, the NDSU extension agent in Kidder County.

"We realized that dairy is what's paying the bills and keeping us going," Kathy says. Since those initial meetings about a year ago, the Spahs have boosted milk production from their 50 cows by an average of 15 to 20 percent. Plans to liquidate the dairy herd are on hold.

That kind of improvement is not uncommon, says J.W. Schroeder, extension dairy specialist and director of the program.

The dairy industry is second in gross receipts from animal agriculture in North Dakota. But a declining agriculture economy, aging producers and technology were taking a toll. Dairy cow numbers dropped 3 to 17 percent annually during the last decade. The state's creameries were running far below capacity.

"While the state was talking about value-added industry, one such industry, the dairy industry, was very much at risk," Schroeder says.

With support from the North Dakota Department of Agriculture, a 1997 North Dakota Dairy Summit addressed those concerns. A task force formed there developed the Dairy Diagnostic Program in 1998 and asked the NDSU Extension Service to design and implement it.

The task force included producers, service and support industries, power utilities, processors, regulatory agencies and individuals in public service. "These were all segments of North Dakota communities that had a vested interest in seeing dairying survive and thrive," Schroeder says.

Tom Risdal, a farm management consultant who coordinates the program, says producers are hesitant to sign up despite the program's proven track record. "It takes an admission that you could do things better. Everyone thinks this is a great program for their neighbors." There have been 51 producers enrolled in the program.

"You have to be open-minded and willing to try new things," Jack admits. The Spahs say the team helped them with issues from feeding issues, buying and selling feed, pasturing and grazing, to installing automatic door openers in the milking parlor to alleviate chronic back and shoulder pain for both of them.

The program gives dairy producers access to a broad range of expertise. "The producers take the lead. We'll help them bring anyone on board who can help them with their goals," Schoeder says.

NDSU's involvement also gives producers access to resources of extension and research staff. Even though extension agent Kleven doesn't bring much dairy expertise, he offers advice on grazing, crop production and marketing, all components important to farm business success.

Although not directly linked to the Dairy Diagnostic Program, NDSU researchers support the region's dairy industry. Nutritionist Chung Park developed a widely adopted feeding regimen that enhances heifer growth and udder development. The strategy boosts lifetime milk production by up to 15 percent. Park and Schroeder are now studying how the regimen might improve heifer and cow health. The information the scientists learned about mammary cell development also may provide clues to combating human breast cancer.

Additional research focuses on feeding oilseeds such as canola and sunflower to lactating cows. Boosting conjugated linolenic acid (CLA) in milk by feeding oilseeds could give it anti-cancer properties.

"That kind of research helps set the stage for dairy's future in the state," Schroeder says. "The Dairy Diagnostic Program helps producers improve their operations right now, and they are the foundation that the future will be built on."

For more information: J.W. Schroeder, 701-231-7663, jschroed@ndsuext.nodak.edu

Adding Value to Animal Agriculture

NDSU experts are helping the state's livestock industry find ways to add value to livestock products, putting more dollars into the region's economy.

At the NDSU Hettinger Research Extension Center, small groups of cattle are being accepted into a trial feedlot. Results will show producers how their cattle might perform in a custom backgrounding environment.

The NDSU Extension Service and the N.D. Department of Agriculture sponsored a two-day summit in January focusing on value-added animal agriculture for livestock producers, economic developers and financial lenders from across the state.

Researchers found that potato-processing waste in finishing cattle diets can cut production costs depending on the price of corn. Scientists also found that bread byproducts are 110 to 125 percent of the feed value of corn. They've also studied sugar beet pulp, wheat midds, corn gluten meal and pasta waste to give livestock producers new low-cost feed options and provide information on the potential for finishing livestock in the state.

4-H'ers for Life

To say the Ziegler family has a romance with the North Dakota 4-H program might be an overstatement. But not by much.

Larry and Barbara Ziegler, then Barbara Haugen, were crowned 4-H king and queen of the 1961 McLean County Fair. Larry, a member of the Flickertail Farmers Club, endured the midway rides to impress Barbara, a member of the Nimble Fingers Club, during their first date the next evening.

More than 40 years later, Barbara still loves midway rides. Larry still dislikes them. They're both still stalwart supporters of 4-H and have passed their love of 4-H to their children. Daughter Karen Skjold is a 4-H leader and her children Khale (12) and Clair (10) are in 4-H. Son Steve was crowned 4-H king. He lives in Hazen with his wife, Dawn, whom he met at a state 4-H conference. Daughter Deb, of Minot, was McLean County 4-H Princess and an active 4-H'er.

"It was strictly rural clubs back then," Larry notes. "We had lots of livestock and agriculture-related projects." Larry now serves as president of the McLean County Fair. "We had as many projects this year as we've ever had, but they are much more diverse. Everything from photography to rocketry."

That diversity is reflected in the activities of Khale and Clair. Karen's children are in a club in Grand Forks. Last year, the club had a focus on different sports. This year the group is planning a fishing trip with parents.

Keeping parents involved is a challenge, Karen notes. "If the kids are going to get anything out of 4-H, parents have to be involved," Barbara says. She and Larry served as 4-H leaders for years. Larry was leader of his former club for more than 20 years.

"Lots of clubs have failed, and now we have one club where there were eight or 10 clubs. The population in the country is aging. There just is not the number of kids there used to be," Larry said.

"And we are not the 4-H we used to be," says Brad Cogdill, state 4-H director. "We're still reaching youth through local clubs, but we also reach them through after-school programming and school enrichment programs. We also do training and development activities for people involved with youth."

Examples of school enrichment programs include an embryology project to enhance science in the classroom, food safety programs, and character education, teamwork and conflict resolution curricula for teachers.

The national 4-H centennial this year was more forward-looking than nostalgic. Activities focused on community service. County, state and national "conversations" with youth were held to assess their needs. From North Dakota, several themes emerged:

- Communities and organizations need to develop programs that promote cooperation among business, schools, communities and youth groups.
- Youth organizations need to explore mentoring programs that develop partnerships between individuals that build trust, respect and tolerance.
- Extracurricular activities such as 4-H, Scouts, special interest clubs, etc. need to be embraced by schools to provide the best opportunity for youth success.
- Communities need to involve youth in their decision-making processes to encourage youth to take pride and responsibility in their communities.

"We'll be developing new programming as a result of those discussions," Cogdill says. "They give us some great direction for moving into 4-H's second century."

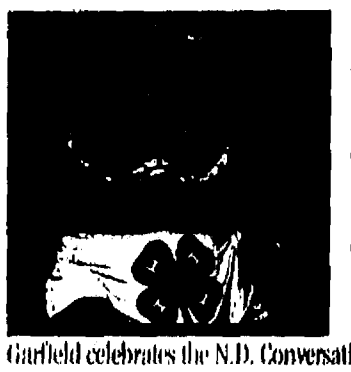
One thing that hasn't and won't change is 4-H's family focus. "Many families have parents and brothers and sisters involved in 4-H programs. That has not changed," Cogdill says. "We're stressing the importance of family activities with today's busy lifestyles. Families are looking for opportunities to spend time together."

That's something Karen and her family appreciate. Her grandmother was a 4-H leader, making her children the fourth generation of her family to be involved in 4-H. "We're not going to do cows in our club. We've gone to rockets, computers and electronics, and we also touch on writing and careers. I'm very grateful that 4-H has kept up with the times."

For more information: Brad Cogdill, 701-231-7253, bcogdill@ndsuext.nodak.edu

100 Years Young

Nationally, 4-H celebrated its centennial in 2002. North Dakota 4-H marked the milestone with strong participation. More than 6,100 youth belong to organized 4-H clubs, and more than 42,000 youth participate in extension 4-H programs in North Dakota, including school enrichment and special interest short-term programs.



Garfield celebrates the N.D. Conversation for Youth.

About 5,100 volunteers work with youth in North Dakota 4-H programs.

The estimated total value of time and expenses of North Dakota 4-H volunteers annually is more than $1 million.

Expanding New and Alternative Crops

When Tom and Nola Borgen moved back to the farm in 1981, Nola's father was already growing canola. "It was a good rotation and the money was there, but there were some difficulties," says Tom, who farms near Langdon.

The Borgen family is one of many that grows new and alternative crops. "We grow approximately 50 crops in North Dakota, but only 10 to 12 are what we call major crops," says Burton Johnson, assistant professor in the NDSU plant sciences department. "A large number of crops grown in the state are considered new or alternative crops, and that's not even counting vegetables."

Experiment Station researchers in Fargo and at NDSU research extension centers, and NDSU Extension Service specialists are working with new and alternative crops. "Our research is related to identifying practices that will improve production and profit," Johnson says. "The practices need to be cost effective. Ultimately, they have to be beneficial to the producer."

Producers growing new or alternative crops face many obstacles. "Seeding, swathing, even the delivery of our product were hurdles," Borgen says. "In the early 1980s, we had to truck our canola into Canada, which meant dealing with export and import papers. I started hauling for other growers and also doing all the paperwork at the border. I guess I was eliminating the middle man."

U.S. elevators began accepting canola as the number of planted acres increased, according to Borgen. "So marketing isn't really as big an issue as it once was."

The use of canola as a cooking oil and in processed foods has risen steadily and so has the number of planted acres. North Dakota producers planted 18,000 acres to canola in 1991. This year, producers planted more than 1,350,000 acres. "What once was an alternative has now become a major crop," Borgen says. "It is estimated that consumption of canola oil will surpass corn and cottonseed oils, becoming second only to soybean oil."

Lentil acreage, while not growing as rapidly as canola acreage, is also increasing. In 1998, the first year the North Dakota Agricultural Statistics Service tracked production, 22,000 acres were planted. This year, lentil growers planted an estimated 50,000 acres.

Mike Youngs and his father started raising lentils in the late '70s or early '80s on their farm near Roseglen. "A company from Canada came to visit the farm looking for growers to try a few acres," Youngs says. "We have been planting lentils ever since."

Youngs, like Borgen, says alternative crops are a good fit in rotation with small grains. "Anything that fits our rotation that also is a good cash crop is looked at pretty seriously. We've made money on lentils every year except for one. Lentils and some other crops are what have kept me on the farm for the past 15 years."

Youngs says research at NDSU research extension centers near Minot and Carrington on lentil varieties and herbicide testing has been helpful. NDSU plant pathologist Art Lamey (now retired) also visited the Youngs farm to study disease problems.

"With new crops, adaptation is a real issue," Johnson says. "Will new crops produce seed during the short North Dakota growing season? Other agronomic deficiencies might be poor stand establishment and low yield. It's important to have a concerted research effort to identify problems and find solutions. In many cases, there isn't a lot of money to support new crop improvements."

Insurability is also an issue, according to Johnson. "If it's a new crop or has entered alternative status, it may or may not be insurable. It's another piece of the puzzle."

Starting small, doing research and becoming involved are issues Borgen, Youngs and Johnson all agree on. "It's important that growers contact researchers to find out what varieties are available," Borgen says. They also need to look at moisture needs, tillage practices, and weed and disease problems, and determine the market needs."

Youngs is an original board member of the North Dakota Dry Pea and Lentil Association. Borgen is president of Northern Canola Growers and a board member of the U.S. Canola Association while Nola Borgen serves on the North Dakota Oilseed Council.

"New and alternative crops offer some exciting possibilities," Johnson says. "Who knows? Some of the new crops we're studying now may become important alternative crops in 10 to 25 years."

For more information: Burton Johnson, 701-231-8895, burton.johnson@ndsu.nodak.edu

New Crops? With funding from the USDA Cooperative State Research, Education and Extension Service, Burton Johnson is studying 11 new crops for their North Dakota potential. They are: **Echium,** an oilseed with high levels of healthy omega-3 and omega-6 fatty acids. • **Cuphea,** an oilseed that could replace palm or coconut oil. • **Niger,** an annual oilseed grown in Ethiopia and India for edible oil. • **Vernonia,** an oilseed. Its oil could replace petroleum products in paints, pesticides and solvents. • **Cumin,** valued for seeds used as a spice and oil used in foods and cosmetics. • **Chia,** an oilseed high in unsaturated omega-3 fatty acids and natural antioxidants. Yes, it's the seed used to make Chia Pets. • **Okra,** used as a food by pre-Columbian people in Central America and high in omega-3 fatty acids. • **Fiber flax,** used to make fine linen cloth. • **Sunnhemp,** grown for its fiber which makes durable twine, rope, rug yarn and paper. • **Kenaf,** a fast-growing annual grown for its fiber. • **Teff,** a small-seeded cereal crop.

Keeping Business Healthy

Bringing a new business to town in North Dakota is cause for celebration. But it's keeping businesses and helping them expand that gets the best economic development results, says Kathy Tweeten, NDSU community economic development specialist.

"Businesses we worked with said to us, 'No one's ever come to us before and asked us what our concerns are and what we need,' " says Bobbi Kukla, Dunn County treasurer and a participant in the North Dakota Business Retention and Expansion Program.

Tweeten, a certified instructor and consultant in the program, says it is designed to help local communities identify strengths and weaknesses, and address both. The national program is implemented in North Dakota by the NDSU Extension Service. "The goal is to support local businesses. Studies show that 40 to 80 percent of all new net jobs are created from existing businesses," she says.

The Dunn County program began in 2000 with a survey of businesses in the county. The project was the first undertaken by the fledgling Dunn County Job Development Authority.

Kukla and Linda Kittilson, city auditor of Dunn Center, were members of the authority's board of directors and helped implement the Business Retention and Expansion Program. They were among the local volunteers who visited each of the participating businesses to develop a picture of their concerns and problems.

"The visitation program is really a needs assessment of the existing businesses. It provides the process and structure for the rest of the program. It helps us formulate responses to issues and concerns," Tweeten says.

"The businesses were all very willing to have us in and express their concerns as well as their opportunities," Kittilson says.

Those volunteer visitors identified businesses that needed immediate assistance and scheduled follow-ups to address those needs, Kittilson says. Other needs, like technolo / training, were more general among businesses. Members of a countywide youth organization assembled by the Job Development Authority provided the training.

"We had youth teaching our business leaders the latest in technology. We were one of the first communities in the state to take that approach," Kittilson says. More than 80 people have taken technology training.

Results from surveys and the business visits were analyzed and organized by agricultural economist Larry Leistritz. Leistritz has built a career at NDSU assessing the economic impact of factors as diverse as the Conservation Reserve Program, Fusarium head blight, alternative crops, potato processing and hospitals. In his Dunn County report, he identified key issues. The local task force outlined an action plan to respond.

"Without the Extension Service, we would not have had access to that expertise and resources," Kittilson says. She says the project wouldn't have gotten off the ground without Tweeten and NDSU extension agent David Twist. "Our Job Development Authority was just getting started, and this was its first project. We would never have been able to accomplish it on our own without their help in coordinating and providing direction." Recently, Twist arranged for the NDSU College of Business Administration to bring a professor to the area to work with business managers to improve their skills.

Kukla says the program has helped drive several economic development happenings in the county. Local leaders are working with a power company to explore potential for wind generation. Local businesses are taking a more serious look at tourism. One community, Dodge, was named North Dakota City of the Year for 2002.

"The project got everybody rallied around economic development," Kukla says. In the past, she says, communities in the region focused on their own issues and problems, often at the expense of neighboring communities. "We still compete to some degree, but now it's gotten to where we're all working together.

"We still have problems, but we've learned some things that allow us to help our businesses and make real progress," she says.

For more information: Kathy Tweeten, 701-328-5134, ktweeten@ndsuext.nodak.edu

Helping Businesses Help Themselves

Since 1995, the NDSU Extension Service has implemented the Business Retention and Expansion Program in 13 areas. They are:

- Adams County
- Bowman County
- Burke County
- Burleigh and Morton Counties
- Cavalier County
- Devils Lake area
- Dickey County
- Dunn County
- Golden Valley County
- Hettinger County
- McLean County
- Mountrail County
- Pembina County

Briefly...

Program highlights from the NDSU Extension Service and North Dakota Agricultural Experiment Station

Drought response

As drought took hold in North Dakota this past year, NDSU geared up its response. Drought seminars across the region featured NDSU Extension staff addressing nutritional needs of livestock, use of alternative feeds, water quality concerns, nitrate poisoning and financial management. Economists developed spreadsheets to help producers evaluate management options. Staff continue to work with nurses, counselors, clergy and other professionals who interact with producers and their families to provide information on detecting depression and explain the availability of low-cost health insurance and other resources. FeedList, an NDSU web site that brings together buyers and sellers of feedstuffs, was expanded to help producers find feed for their livestock. The site had nearly 14,000 hits between May and October.

Meanwhile, range specialists are studying the quality and nutrient content of hay from CRP and other alternative sources to provide guidelines for producers. Research on alternative feeds, annual forages and the use of co-product feeds is helping producers find low-cost alternatives to traditional feeds. Although yields in NDSU research plots were down as well, the information they yield will be important. With test plots at NDSU research extension centers and producers' fields across the state, climatic extremes like drought and excess rain can point out strengths and weaknesses of new varieties or management techniques.

Disease forecasting and research aids producers

North Dakota producers stay one step ahead of crop diseases or insect problems by using a disease forecasting system developed at NDSU. Computer models use data from the North Dakota Agricultural Weather Network to determine whether the previous 24-hour period was suitable for infection. Producers can monitor the system through a phone call or the Web to determine if spraying is necessary.

New applications will benefit more growers. Research has been supported by crop improvement associations and grower associations. For example, the Northern Canola Growers Association, the Minnesota Canola Council and the Canola Council of Canada have teamed up to provide growers with the Sclerotinia Disease Forecasting System. Information is also available for potato, corn, dry beans, wheat, barley, sugar beets, soybean, sunflower and alfalfa growers.

NDSU specialists recognize that no single tool will solve crop disease problems, so they continue to look for innovative approaches. The most effective defense against disease is resistant crop varieties like NDSU's Alsen hard red spring wheat. Alsen is the first hard red spring wheat variety which combines high quality and good agronomic characteristics with resistance to scab. Plant scientists estimate Alsen's impact on North Dakota could be $100 million annually in improved yields. Since its release in 2000, Alsen has become the North Dakota's most-planted wheat variety accounting for more than 30 percent of the state's spring wheat acreage.

Developing rural leadership

What keeps some North Dakota communities viable? Leaders. People who get the ball rolling on projects, build enthusiasm, organize community goal setting and help citizens work toward those goals.

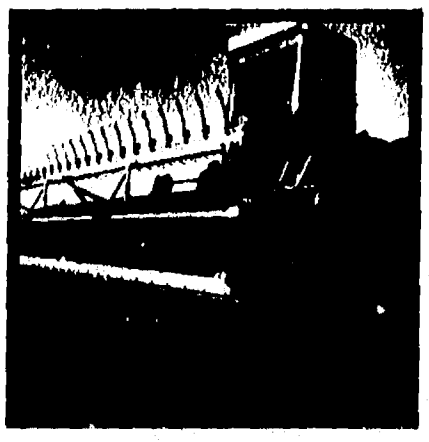
NDSU's new Rural Leadership Program will develop the leadership capacity of North Dakota citizens. About 25 people will be selected for the first 18- to 24-month program that will probably begin in fall 2003. After learning about various aspects of leadership through seminars across the state, they'll be able to apply leadership to economic development, social challenges and other issues to build vibrant, growing rural communities.

The Rural Leadership Program is a university-wide initiative partially funded by NDSU President's Office. The NDSU Extension Service is providing leadership in initiating the program which will eventually involve faculty and staff from departments across the university.

Boning up on biosecurity

NDSU faculty have long battled naturally occurring threats to agriculture, food systems and the ag economy. But after Sept. 11, 2001, the increased potential for deliberate use of pathogens has added more urgency to their work.

- With West Nile Virus, foot-and-mouth disease and Bovine Spongiform Encephalopathy (BSE, "Mad Cow Disease") in the news, the Veterinary Diagnostic Lab is enhancing its ability to identify, diagnose and contain a disease as rapidly as possible. NDSU has applied for federal funds to upgrade its laboratories; provide biosafety training for extension agents, border guards, veterinarians and producers; purchase technology for real-time transmissions from field necropsies; and conduct research on the movement of animals in open range.
- The Plant Diagnostic Lab receives virtual plant samples via computer, thanks to microscopes and digital cameras in some Extension offices across the state. Plant pathologists in the region are connected more and networking nationally to identify plant disease outbreaks.
- The Great Plains Institute of Food Safety encompasses several disciplines and produces graduates (from minor to doctorate) who are alert to possible threats, versed in solutions and capable of communicating with colleagues and the public.
- Research in several departments is helping improve the safety and security of the food supply from farm to fork whether the culprit is natural or deliberate.



Biodiesel heats up

On a swing across the state this summer, NDSU agricultural engineer Vern Hofman demonstrated the potential of biodiesel to producers. Hofman has studied the fuel's impact on diesel engines and says the fuel provides almost as much power and may lubricate better than standard diesel fuel saving wear on injector pumps and other engine components. Biodiesel's primary benefit over petroleum diesel fuel is that it significantly reduces emissions. Hofman says biodiesel tends to gel faster than petroleum diesel in cold weather, but blending with petroleum diesel or additives can address that problem. Soybeans grown in North Dakota could more than replace diesel fuel used on farms in the state. "It's going to provide an excellent new market," he says.

NDSU efforts will expand as federal dollars become available for research on biofuels such as biodiesel, biomass and other renewable fuels.

Adding value to livestock

About 18 percent of agriculture-related revenue in North Dakota is derived from livestock. NDSU faculty are working to boost that number. NDSU efforts include:

- Improvements in feedlot facilities at NDSU's Carrington Research Extension Center will enhance accuracy and efficiency as researchers develop improved diets for feedlot beef and bison using crops and agricultural processing by-products.
- Extension specialists helped the Dakota Lamb Growers Cooperative develop specifications for "Dakota Lean Lamb" and "Natural Lamb." Customers have been upscale supermarket chains, natural food outlets and food service companies.
- NDSU scientists found that field peas could be incorporated into pig diets without compromising performance. Extension staff are working with producers in several counties to develop new hog production facilities.
- Demonstrations on producers' farms and ranches by NDSU livestock specialists are introducing new technologies and practices. Many feature innovations in recordkeeping and measurements of forage quality, water quality and other factors to improve management. A Logan County producer says measuring forage quality during grazing saved on supplements.
- In cooperation with the beef industry, NDSU Extension certified more than 1,400 operations in the Beef Quality Assurance program since 1999. Those producers market more than 20 percent of the state's calves.

Processing facility on drawing board

NDSU is exploring the development of a small-scale meat processing facility that will help segments of the North Dakota livestock industry add value to meat produced here and keep more of the value in North Dakota.

Several efforts in the state attempted to help producers capture more value from their products by integrating livestock production with processing. Planners will take lessons from those efforts and combine them in a new facility. NDSU faculty anticipate that the facility will be built in cooperation with a business partner and be modeled after successful small-scale facilities that focus on product and worker safety, low costs and high productivity.

The facility will allow researchers to improve sire selection, breeding programs and feedlot management by looking at meat quality and value under various strategies. Additionally, the facility would provide data for the development of commercial plants, including optimum plant size, payment formulas, test marketing and brand identification.

In the longer term, researchers would study innovations, such as robotics, that could reduce labor costs or improve safety. They could also study packaging and marketing innovations and new technology, such as video imaging and lasers, that could improve product safety and quality. Scientists may also develop new products or practices that make meat safer, more convenient, and a better value for retailers and consumers. Classroom and laboratory facilities will be included in the facility.

Protecting markets while exploring new technology

Finding out how sustainable and biotech agriculture can coexist will be the focus of a study by NDSU, the Northern Plains Sustainable Agriculture Society, Monsanto and International Certification Services, Inc., an organization that certifies organic crops.

The focus is to ensure that if biotech wheat is commercialized, it won't jeopardize other crop production and marketing systems used in North Dakota. The experts involved are identifying and developing best management practices (BMPs) so producers and grain marketers can avoid cross-mixing of grain.

Representatives from the various industries are meeting quarterly to define the issues, recommend solutions and develop a BMP handbook. In phase two, the handbook will be given to stakeholders who will work with farmers and others to educate and implement the BMPs.

This year, NDSU researchers began evaluating Roundup Ready hard red spring wheat at its Langdon Research Extension Center and Dalrymple Research Site near Casselton. Also, the economic, ethical and social aspects of biotechnology are being studied by researchers at NDSU and eight other universities in five states. The Cankdeska Cikana Community College in Fort Totten is also involved in the project. The work is partially funded by the USDA's Sustainable Agriculture Research and Education program.

Folic acid education effort to prevent birth defects

With support from the March of Dimes, NDSU Extension is launching a statewide educational effort to increase women's knowledge of the importance of folic acid in preventing neural tube defects. "With extension educators in every county, the Extension Service is in a unique position to implement this project," says Julie Garden-Robinson, food and nutrition specialist and member of the North Dakota Folic Acid Task Force. The effort is based on a pilot project conducted at NDSU, Minnesota State University – Moorhead and Concordia University in Moorhead.

Each year in the United States, 2,500 to 3,000 infants are born with neural tube defects. The U.S. Health and Human Services has set a goal to reduce the number of new NTD cases to three per 10,000 live births in the United States. The rate in North Dakota is 5 cases per 10,000 live births. Research shows that folic acid intake prior to pregnancy and throughout the first trimester can prevent 50 to 70 percent of neural tube defects.

Cooperating on ruminant opportunities

NDSU is joining with South Dakota State University, the University of Wyoming and Montana State University to find ways to boost the livestock industry in the region where the four states meet.

"We're looking at a fairly sparsely populated region with good resources for livestock production," notes Tim Faller, director of NDSU's Hettinger Research Extension Center. "We will be looking for ways to build on that traditional strength to spur economic development." Researchers and Extension specialists from the four states will work together to develop, implement and analyze livestock marketing and management strategies. A particular focus will be improved integration of crop and livestock production and marketing.

"A fair amount of this work is already under way," Faller says. "This project will pull those pieces together and provide a focus on this region. The ultimate goal is to provide viable economic gains for both agricultural producers and businesses."

The consortium is being led by the deans of agriculture at the four universities. The project was spurred by their discussions of how the states could work more closely on common issues in this semi-arid area of the Northern Great Plains.

Improving risk management skills

With support from the North Dakota Legislature, 43 marketing clubs were formed to help producers learn how to manage price risk associated with the commodities they produce. The marketing clubs have been coordinated through the North Dakota Farm Business Management Education Program and NDSU.

Each club conducts at least 24 hours of educational programming per year and has between 10 and 25 members. NDSU crops economist George Flaskerud and NDSU livestock economist Tim Petry provide educational support for the clubs. They provide training for Extension agents and farm business instructors who facilitate local clubs. Flaskerud and Petry have been using videoconferencing via the Internet to provide instruction to some of the clubs. The technology allows Petry and Flaskerud to reach more clubs while limiting travel time and expense.

Members of one club made transactions that gained them a total of more than $125,000. Most participants say the greatest benefit from the clubs is increased confidence in making management decisions.

Reaching out electronically

One of NDSU's strengths is collaboration—the ability to get people with diverse expertise together to focus on problems and opportunities. The state's high-speed Internet network is enhancing that effort.

Six of NDSU's eight research extension centers are connected as are almost all county Extension offices. Currently six of the centers, eight extension offices and five campus locations have videoconferencing capabilities via the network. Some uses of the technology so far:

- Networked microscopes can provide up-close viewing of insects and diseased plants for teaching or for advice from diagnostic experts.
- Animal and range science graduate seminars are broadcast to research extension centers every Friday.
- Meetings, workshops, in-service training sessions and continuing education courses are frequently facilitated by NDSU staff.
- Learning centers are evolving at NDSU research extension centers near Hettinger, Langdon, Minot and Williston. The focus is to bring wide-ranging educational resources to local communities.
- NDSU's pesticide applicator training and certification program and educational programs in organic agriculture will use the technology to reach producers and tap into expertise in surrounding states.
- Videoconferencing is frequently used to cross state lines, allowing NDSU staff and others to collaborate with colleagues around the nation.

Patricia Jensen, Jim Venette, Sharon Anderson and Ken Grafton

Thank you for reading about the work of the faculty and staff of the N.D. Agricultural Experiment Station and the NDSU Extension Service. Many other projects are under way. Often those projects involve cooperation with other universities, agencies, businesses and individuals, but they all have the same focus – helping North Dakotans and their neighbors around the globe.

If you would like more information on the programs featured on these pages, contact the faculty and staff listed at the end of each article. If you would like more information about our other programs or have other questions, comments or suggestions, please contact any one of us.

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Prepared by the North Dakota Legislative Council
staff for House Appropriations
January 21, 2003

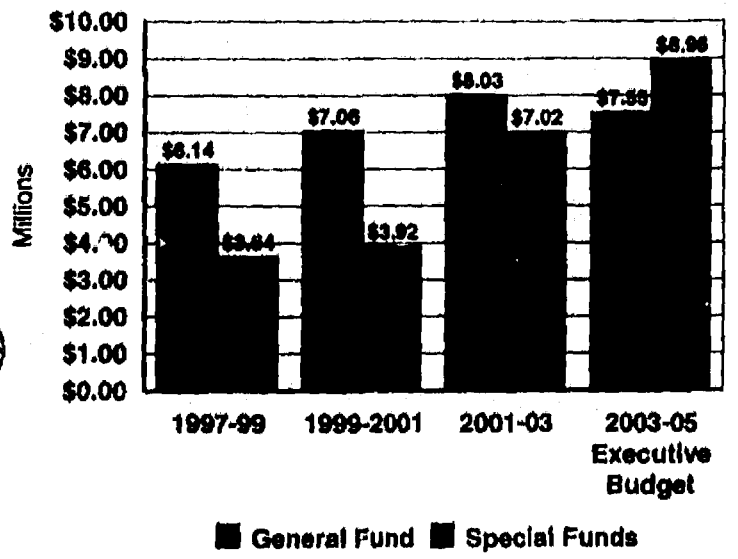
Department 628 - Branch Research Centers
House Bill No. 1021

	FTE Positions	General Fund	Other Funds	Total
2003-05 Executive Budget	73.66	$7,547,944	$8,983,676	$16,531,620
2001-03 Legislative Appropriations	78.10[1]	8,034,160[2]	7,023,485	15,057,645
Increase (Decrease)	(4.45)	($486,216)	$1,960,191	$1,473,975

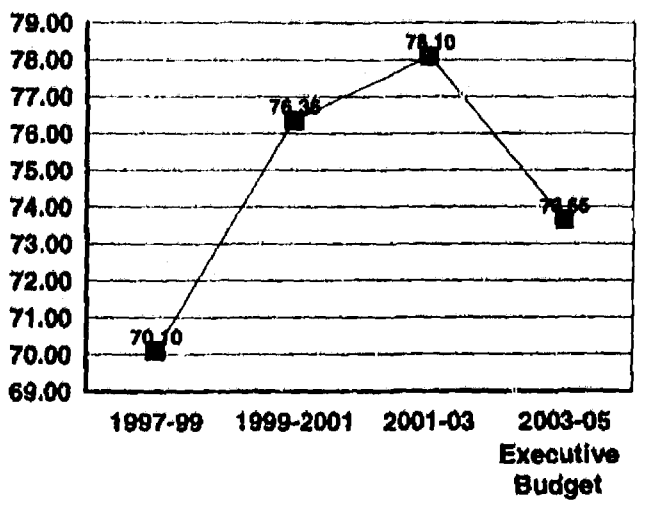
[1] The 2001-03 appropriation is based on 76.36 FTE positions. Section 4 of 2001 Senate Bill No. 2021 authorizes the State Board of Higher Education to adjust FTE positions as needed. The 78.10 FTE positions shown above represent the employee positions reported to the Office of Management and Budget.

[2] The 2001-03 general fund appropriation is the amount appropriated by the 2001 Legislative Assembly and does not include a reduction of $84,359 relating to the 1.05 percent budget allotment ordered by Governor Hoeven in July 2002.

Agency Funding



FTE Positions



Executive Budget Highlights

	General Fund	Other Funds	Total
Dickinson Research Center			
1. Provides funding for the construction of a new Dickinson headquarters office and multipurpose room building (Phase 1) funded from Dickinson station oil revenues ($1 million) and local contributions ($400,000). Revenues from oil royalties are anticipated to be $2,440,452 during the 2003-05 biennium.		$1,400,000	
2. Deletes 1 FTE research technician	($67,682)		($67,682)
3. Increases funding for part-time salaries and benefits from oil revenues		$200,000	$200,000
4. Increases funding for farm equipment over $5,000, from anticipated increases in gifts, grants, contracts, and oil revenues		$148,626	$148,626
Central Grasslands Research Center			
5. Increases funding for animal replacement ($150,000) and other operating costs ($50,000) from anticipated increases in grants and contracts		$200,000	$200,000
6. Provides funding from the branch station revolving equipment pool to purchase a tractor	$83,916		$83,916

Hettinger Research Center			
7. Deletes 1 FTE support position	($47,157)	($12,800)	($59,957)
8. Removes funding authorization from the branch station revolving equipment pool. Hettinger received $88,334 from the pool in the 2001-03 biennium for farm equipment purchases.	($88,334)		($88,334)
9. Increases funding for salaries and operating costs from anticipated increases in grants, contracts, and agricultural product sales		$160,000	$160,000
Langdon Research Center			
10. Removes funding for the Langdon Learning Center which is scheduled to be completed by June 30, 2003	($300,000)	($510,000)	($810,000)
11. Deletes a .5 FTE technician	($32,836)		($32,836)
12. Increases funding for temporary wages, operating costs, and farm equipment from additional gifts, grants, contracts, and agricultural product sales		$106,000	$106,000
13. Provides funding from the branch station revolving equipment pool to purchase a combine	$83,916		$83,916
North Central Research Center			
14. Deletes a .58 FTE stock technician	($31,805)		($31,805)
15. Provides funding from the branch station revolving equipment pool to purchase a field crop sprayer and loader/forklift	$83,916		$83,916
16. Decreases funding to reflect the land purchase completed in the 2001-03 biennium		($320,000)	($320,000)
17. Increases funding for temporary salaries to reflect an anticipated increase in gifts, grants, contracts, and agricultural product sales		$75,000	$75,000
Williston Research Center			
18. Deletes a .37 FTE personnel support position	($22,304)		($22,304)
19. Decreases funding to reflect the land purchase completed in the 2001-03 biennium		($85,000)	($85,000)
20. Removes funding authorization from the branch station revolving equipment pool. Williston received $88,333 from the pool in the 2001-03 biennium for farm equipment purchases.	($88,333)		($88,333)
21. Increases funding for temporary salaries, operating costs, and equipment to reflect an anticipated increase in gifts, grants, contracts, and agricultural product sales		$350,000	$350,000
Carrington Research Center			
22. Deletes 1 FTE research technician	($31,411)	($31,410)	($62,821)
23. Removes funding authorization from the branch station revolving equipment pool. Carrington received $88,333 from the pool in the 2001-03 biennium for farm and other equipment purchases.	($88,333)		($88,333)
24. Removes funding authorization for the bison research building ($130,000) which was not built in the 2001-03 biennium due to lack of grant funding and the Carrington research mill ($300,000) which is anticipated to be completed during the 2001-03 biennium		($430,000)	($430,000)
25. Increases funding for temporary wages ($80,000) and animal replacement ($200,000) to reflect an anticipated increase in gifts, grants, contracts, and agricultural product sales		$280,000	$280,000

Major Related Legislation

Section 3 of House Bill No. 1021 authorizes transfer appropriation authority between the Main Research Center, the branch research centers, NDSU Extension Service, and Northern Crops Institute.

Section 4 of House Bill No. 1021 authorizes the State Board of Higher Education to adjust or increase full-time equivalent positions for the branch research centers and report any adjustments to the Office of Management and Budget.

Section 5 of House Bill No. 1021 authorizes the carryover of any unexpended general fund appropriation and excess income received by the branch research centers.

Exhibit #13

Grazing Land Health & Financial Productivity
Testimony by Gene Goven
March 4, 2003

Chairman Holmberg and members of the committee. I am Gene Goven, a farmer/rancher from north of Turtle Lake I am here today to emphasis the need, and continuing need, for ND Research Extension Centers.

We have about 1500 acres, about one half is cropland, the other half of which is native prairie pasture. We have been doing increasingly intensified planned grazing management on our native prairie since 1982. We have cross fenced our pastures into 18 paddocks. Rotating our cow herd from one paddock to the determined next best paddock as the season progresses. It is a lot more management. A lot more then season long grazing.

However, because of the extra management time spent and required increase in needed expertise, our grazing land health has improved in the last 20 years to the point where we are able to run more than twice as many cattle on the same acres as we previously used to with season long grazing management.

Not only has our soil health improved giving a lot deeper grass root system with a resulting utilization of more real estate, We are also capturing more raindrops where they fall. That means more raindrops are infiltrating into the soil, less raindrops are running off. That gives us more grass to convert to beef. It also means less erosion and an increasing water quality for the whole watershed. Another interesting benefit is that we are also supporting probably double the numbers of wildlife on those same acres.

Raising more grass means more beef produced. The resulting financial productivity enhancement from doubling our pounds of beef raised per acre is not something we did on our own

Our soil health productivity enhancement (financial productivity enhancement) has depended not only from two-way sharing of grassroots techniques with neighbors. It is also highly depended on, and will continue to depend on technical assistance on grazing land management from local agency personal. The technical assistance guidance and local research data from our ND Research Extension Centers is an area I encourage ND to continue to support.

In conclusion I would like to share a quote from Governor Arthur Link from his 1987 presentation "Observations and Reflections on the Death of a Creek.". "Because, while we have come a long way, we still have a long way to go!"

Thank you,

Gene Goven

Kris Kirgwall
HB1021

Dickinson Research Extension Center

Executive Summary for 2003 North Dakota Legislature

In the last biennium of our first century, we at the Dickinson Research Extension Center know we must challenge the limits of conventional thinking by linking the components of agricultural management systems with the environment and value added opportunities for the people of the region.

Public tours are a major part of sharing research.

The new agriculture involves consensus that turns the fork in the road into multiple options for producers. It means we will still grow wheat and raise beef cows but we will manage differently. The DREC has been at the forefront of research on cropping systems that can create economically viable rural communities and sustain individual lifestyles within various environmental components of the western prairie region.

I. Purpose

We realize the need to forge ahead to help producers minimize risks and leverage assets. This involves sustainable cropping agro-ecosystems that are synergistic to forage, grain and protein development while maximizing the biology of the native plant community and sustaining the strength and growing power of the land.

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

Service to the citizens of SWND is important at the DREC. We seek to fulfill that goal through research, education and management assistance in the agricultural industry by modernizing our mission as follows:

•• A. Develop sustainable production strategies that match conditions of the western North Dakota prairie. This includes an inventory assessment of assets within the biome that will quantify environmental and sociological needs within the context of agricultural production. This means agronomy, livestock and management establish a new level of communication so enterprises make full use of the biology of each discipline.

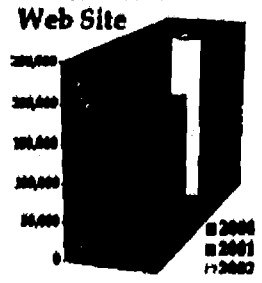
•• B. Enhance the value for commodities produced from forage-based systems by seeking alternative uses.

•• C. Establish partnerships with other industries to create carbon harvesting (sequestering) opportunities within crop, range, livestock and integrated systems in the mixed grass biome.

•• D. Expand land base use to create income opportunities that can provide sustainable individual lifestyles within economically viable rural communities.

II. Measurement

We utilize the technology of the internet to tell our story. The number of visits to our web pages (DREC, CHAPS and BeefLine™) tells us our web page information is current, factual and of interest to many producers. Personal one-on-one dialogue, seminar attendance and consultation services also provide us a very good measure of program acceptance.



III. How Legislature Can Help

As public employees, the DREC staff is dedicated to service. To fulfill that role, we need the support and trust of the legislature to utilize the flexibility given us within the discretionary abilities of our budget. This flexibility allows us some creativity to take risks as we seek to focus on the challenges of production agriculture. Specifically, four items come to mind:

A. Support the Executive Budget recommendation for the DREC budget.

B. Support the SBARE recommendation for the malting barley project.

C. If funds become available, restore the position and cost to continue dollars for the DREC.

D. Transfer the Beef Quality Assurance position and program to the DREC as requested by the NDSU Extension Service.

IV. Reports/Evaluation

The baseline measure of program effectiveness will not be based on production of raw product, rather on the educational, economical and sociological impacts. It will involve refinement of current efforts to be more inclusive and sensitive to rural and urban residents.

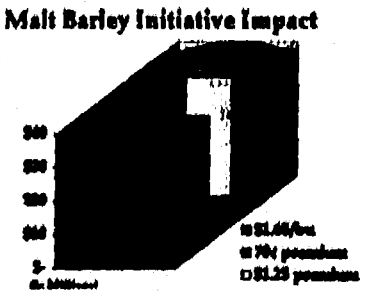
Attendance at our annual field day exceeds 1,000 people annually and is a mix of rural and urban residents showing support of our mission and seeking information about how to best care for the environment in which we live.

Following are some examples of our work:

•• Malt Barley Production Research

Thirteen counties in southwest North Dakota raised barley on 280,000 acres in 2001. The region's climate allows for greater potential in malt barley production. Producers may have a positive economic outcome without changes in equipment if barley varieties and management practices are developed for western North Dakota and adopted by producers. The DREC has evaluated barley breeding lines that demonstrate qualities needed for malting.

Malt Barley Initiative Impact

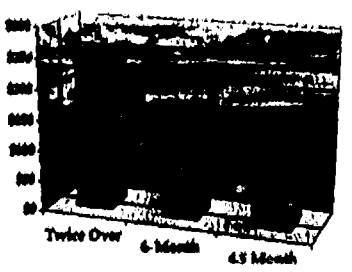


Impact: What if producers had a conservative yield of 45 bushels per acre on 280,000 acres and received 50 cents per bushel premium. This would mean producers would generate $6.5 million increase in revenue just in southwest North Dakota. (Good malting barley premiums are between $0.70 to $1.25 per bushel.)

•• 12-Month Forage Management System

Grasslands wealth generated can be increased through implementation of efficient pasture and forage systems. These systems manipulate plant and ecosystem processes, improve the efficiency of nutrient capture from the plants, and improve the conversion of nutrients into a saleable product.

Net Return Per Cow-Calf Pair

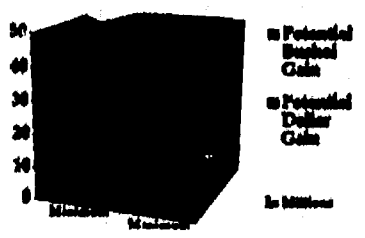


Twice-over management treatment required 11.7 acres, forage-feed cost $171.00 per year, production of calf weaning weight cost $0.28 per pound, and net returns after pasture-forage costs were $251.53 per cow-calf pair. On the 6.0-month season long treatment, net returns after pasture-forage costs were $47.37 per cow-calf pair and $1.74 per acre. On the 4.5-month season long treatment, net returns after pasture-forage costs were $130.88 per cow-calf pair and $5.47 per acre.

•• Early Foliar Applications of Fungicide

Demonstrate how use of foliar fungicides can control tan spot disease, resulting in a yield increase of 4.5 to 6.9 bushels per acre. In recent estimates, wheat was seeded on to small grain stubble 75% of the time.

HRSW Income Potential With Proper Fungicide Application

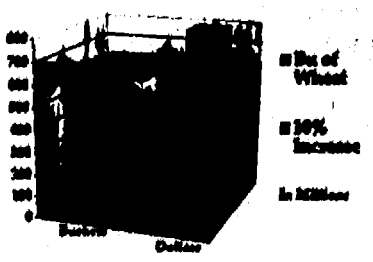


Impact: SWND has 2,073,000 acres of wheat. The direct impact is seven to 11 million bushels of wheat per year. That could mean $21 to $36 million for SWND producers and the state's economy.

•• Wheat-Pea Rotation

DREC scientists have demonstrated that rotating wheat and peas can be done successfully and should be considered as an alternative to continuous wheat and other cropping systems in western North Dakota. Wheat yield and quality is enhanced routinely following peas, compared with a continuous wheat system.

Value Added Potential With Wheat/Pea Rotation



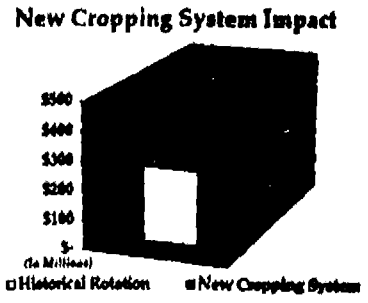
Impact: If yields were increased by 10 per cent and protein produced was two per cent higher, the impact could exceed $8.5 million and increase soil health and productivity for future years.

•• Rotations and Root Disease in Wheat.

The DREC has played a lead role in demonstrating how soil-borne root pathogens on continuous wheat and barley can reduce yields by 40%.

Impact: Consider the year 2000: 2,073,000 acres of wheat were seeded in southwest North Dakota with an average yield of 31.5 bushels per acre. If we could eliminate a 40 percent loss, the result is an increase in production of approximately 30,000,000 bushels of wheat. What does 30,000,000 bushels of wheat at $3.00 per bushel mean to the state's economy?

New Cropping System Impact



There is more: BeefTalk, Organic Cultivar Selection, Southwest Feeders, Xeriscape Landscaping, CHAPS Website, Waste Management Control, Winter Grazing . . .

http://www.ag.ndsu.nodak.edu/dickinso/

The DREC: Proud to Serve Our Citizens!

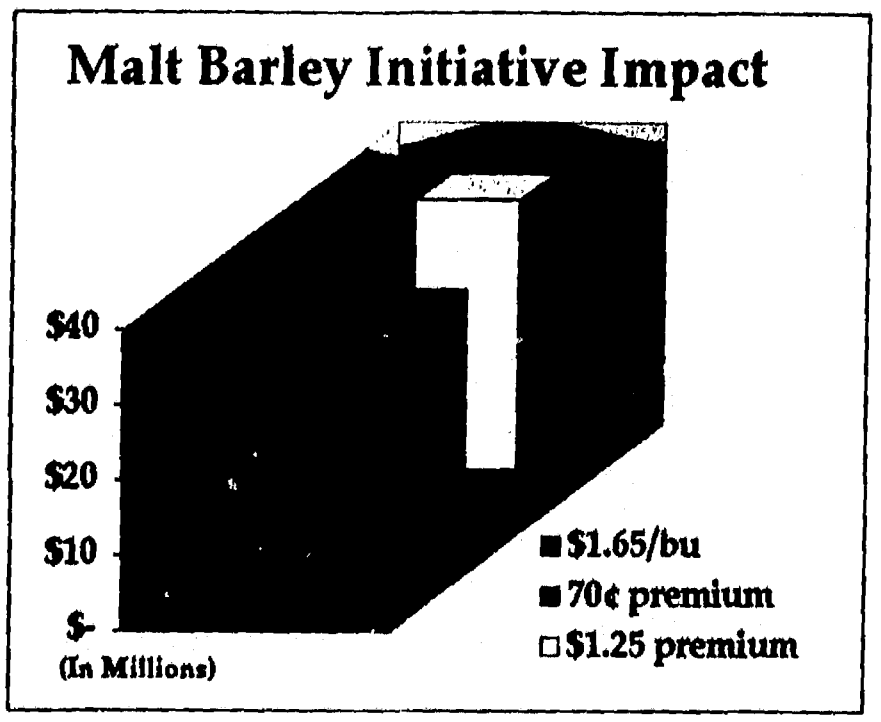
Kris Ringwall
HB 1021

Dickinson Research Extension Center

List of Accomplishments

1. •• Malt Barley production research

Thirteen counties in southwest North Dakota raised barley on 280,000 acres in 2001. The region's climate is less suited to disease development allowing for greater potential in malt barley production. Research through the barley initiative reveals that producers may have a positive economic outcome without changes in equipment if barley varieties and management practices are developed for western North Dakota and adopted by producers. The DREC has evaluated barley breeding lines that demonstrate improved plumpness and lower protein which is preferred for malting.



Impact: What if producers had a conservative yield of 45 bushels per acre on 280,000 acres and received 50 cents per bushel premium. This would mean producers would generate $6.5 million increase in revenue just in southwest North Dakota. (Good malting barley premiums are between $0.70 to $1.25 per bushel.)

2. •• Organic cultivar selection

DREC scientists initiated SBARE, SARE, and Organic Farming Research Foundation supported research to identify modern wheat, barley, and oat varieties that are adapted to organic environments. This research has received recognition from the organic community in the United States and Canada.

Impact: What if the international organic food production business sustains a conservative 10 per cent growth; consider the positive impact of improved varieties on the economies of the United States, Canada and other countries. There is also the discussion that these impacts could have on improving food production and the quality of life for under developed nations.

3. •• Integrated forage/livestock systems

DREC scientists are integrating crop and livestock systems in CSREES- and NCR-SARE funded

research that has been acknowledged in an article published in the Agronomy Journal. The systems will offer alternatives to traditional wheat-fallow and seed/grain systems.

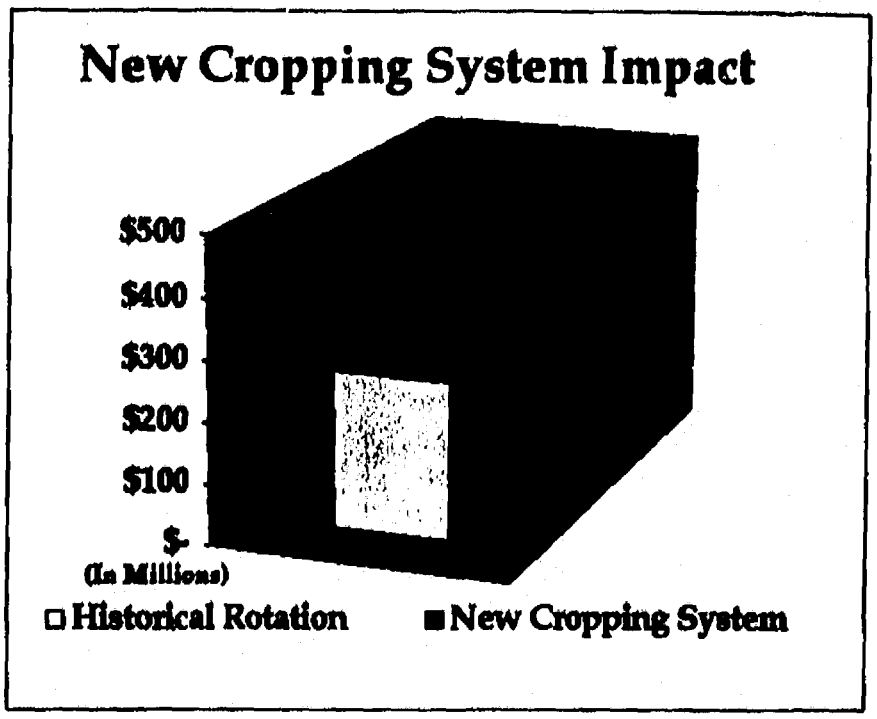
Additionally, DREC scientists have completed research demonstrating that barley is superior to oat in forage quality and that barley should be considered an alternative forage to the more popular oat when small grains are grown.

Impact: Maximizing nutrient harvest in the native, tame and seeded forages by animals or mechanical harvesters results in increased gain per animal, higher stocking rates and income.

4. •• Rotations and root disease in wheat

The DREC has played a lead role in demonstrating how soil-borne root pathogens on continuous wheat and barley can reduce yields by 40%. In western North Dakota in 1997 75% of the wheat grown had been in fields where wheat or barley was grown the previous year.

Impact: Consider the year 2000: 2,073,000 acres of wheat were seeded in southwest North Dakota with an average yield of 31.5 bushels per acre. What if we could eliminate a 40 percent loss with proper rotations? The net result is an increase in production off approximately 30,000,000 bushels of wheat. What does an additional 30,000,000 bushels of wheat at $3.00 per bushel mean to the North Dakota Economy?



5. •• Seed treatment to control soil-borne pathogens in wheat

Demonstrate how fungicide seed treatments can improve wheat yields by two to four bushels per acre.

Impact: Consider the year 2000: 2,073,000 acres of wheat in southwest North Dakota. Only half of the wheat seed that is planted is treated. If the other half of the wheat that is seeded is treated with effective fungicides that could have a direct impact of increasing 2,073,000 to 4,146,000 bushels of wheat per year. That could mean between $6 - $12 million for North Dakota producers and the North Dakota economy.

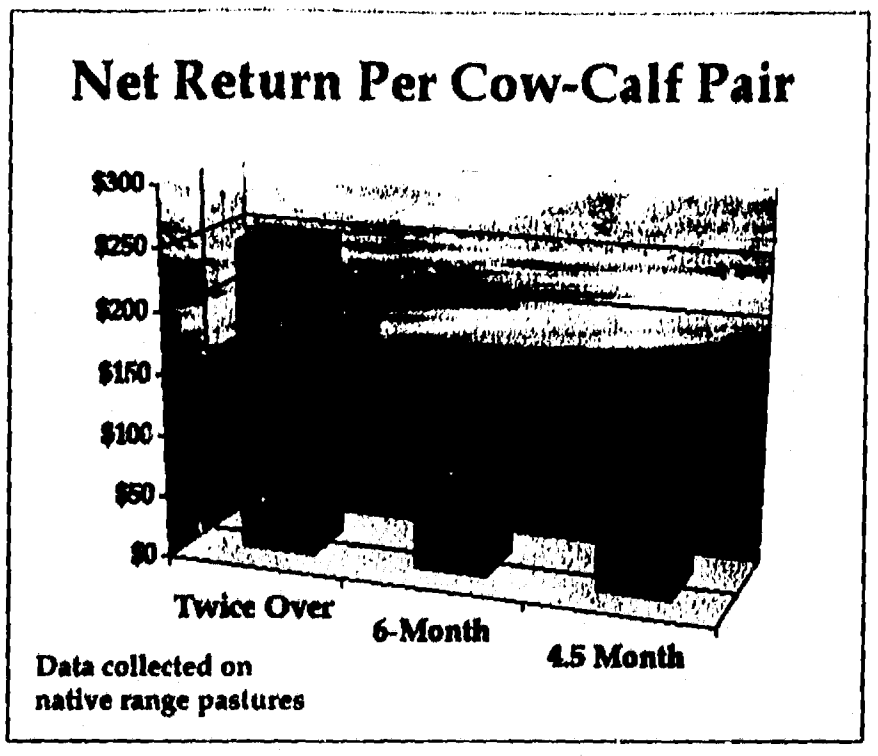
6. •• Twelve-Month Pasture-Forage Management Systems

Wealth generated from agricultural use of land managed by traditional practices can be increased 4.3 times through implementation of efficient pasture and forage systems. These systems beneficially manipulate plant and ecosystem processes, improve the efficiency of nutrient capture from the plants, and improve the efficiency of conversion of nutrients into a saleable product.

The pasture and forage costs per range cow and calf can be reduced from $330.00 per year (or $0.90

per day) on traditional 6.0-month season long management to $171.00 per year (or $0.47 per day) on efficient 12-month pasture-forage management systems. The pasture and forage cost per pound of calf weight gain can be reduced from $0.61 per pound on traditional management to $0.28 per pound on efficient management systems.

Impact: By using an efficient 12-month pasture-forage management system, beef producers with 300 cows can reduce their pasture and forage costs by 48% per year and increased net income three to 10 times on their current land resources.



7. •• Southwest Feeders

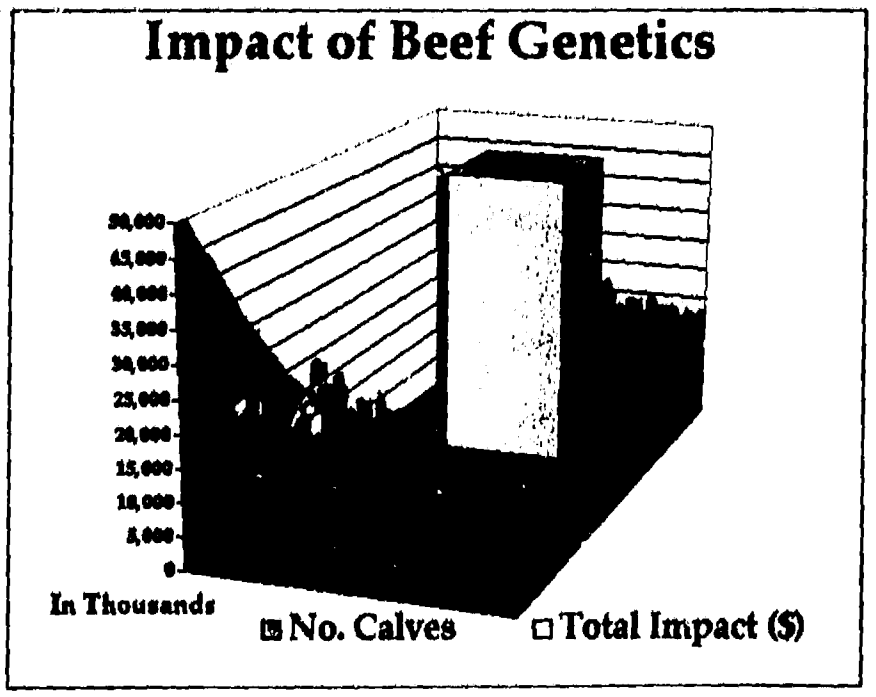
A cooperative effort between the Dickinson and Hettinger R&E Centers converts existing agricultural resources (e.g. high quality livestock, excess feeds, facilities, seasonal labor) into additional economic activity and adding value to beef and sheep production. Opportunities exist to combine this effort into a regional effort (VARAC, Value-Added Ruminant Animal Consortium) focused on stimulating agricultural economic development with ruminant animals (e.g. cattle, sheep, bison).

Impact: What if $140 per calf in SWND and $28 per lamb statewide could be generated, the net result would be nearly $25 million in added economic activity for the region.

8. •• Management/Genetics Increase Returns

The Dickinson Research Extension Center has conducted research in management and genetic research to determine how each protocol can affect profitability. A five-year average of premiums paid shows that the ability to increase the value of a calf seems very real under proper management. Superior genetics showed an increase in net return in sire value based on performance of progeny.

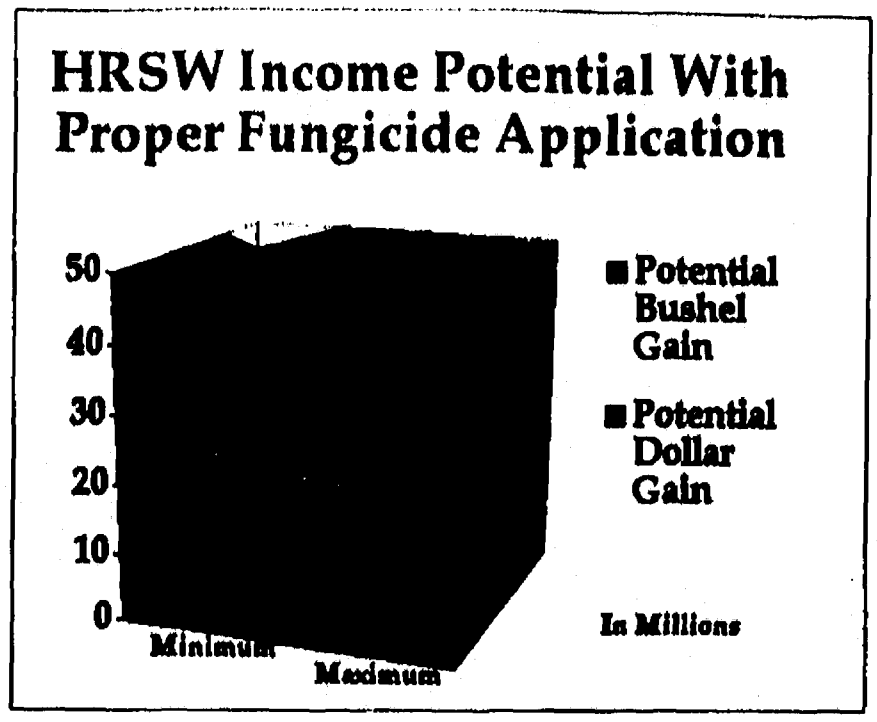
Impact: What if all of the nearly one million calves born in 2002 were able to get the $51.07 extra in net return? The result would be over $50 million in income to North Dakota beef producers.



9. •• Early foliar applications of fungicide on HRSW

Demonstrate how use of foliar fungicides in continuous wheat rotations can control tan spot disease, resulting in a yield increase of 4.5 to 6.9 bushels per acre. In 1997, wheat was seeded on to small grain stubble 75% of the time.

Impact: 2,073,000 acres of wheat in southwest North Dakota. The direct impact is 7 – 11 million bushels of wheat per year. That could mean $21 to $36 million for North Dakota producers and the North Dakota economy.



10. •• Salt-limited pea/wheat midd creep diet

The feeding of pea/wheat midds in creep diets resulted in data that suggested two-thirds pea and one-third wheat midds was optimum for weight gain and regulation of creep intake using salt could effectively deliver nutrients without over consumption.

Impact: Economic analysis revealed that for every dollar invested in creep feed, a dollar over input costs was realized. What if the nearly 1 million calves were fed a pea/wheat midds diet? The reality could be a substantial economic return that would exceed $25 million.

11. •• Tillage systems research

This included research on no-till, reduced-till and conventional-till. relative to seeding rates in the three management regimens.

DREC scientists demonstrated that variety selection under conventional tillage can be applied to reduced-and no-till systems in western North Dakota, and that seeding rates established under conventional tillage also can be applied to reduced- and no-till systems in a wheat-fallow monoculture

Impact: What if seed costs were reduced by a little as 20 per cent on all no-till and reduced till acres, the direct impact could exceed millions of dollars annually. Additionally, data suggests that plot trials for further seeding rate research about conventional till and no-till is unnecessary.

12. •• Xeriscape Landscaping

Xeric techniques are being demonstrated and evaluated as part of the DREC horticulture research program. The xeric outdoor laboratory is being utilized by the general public, agencies, organizations and industry representatives as a resource to obtain new landscape ideas.

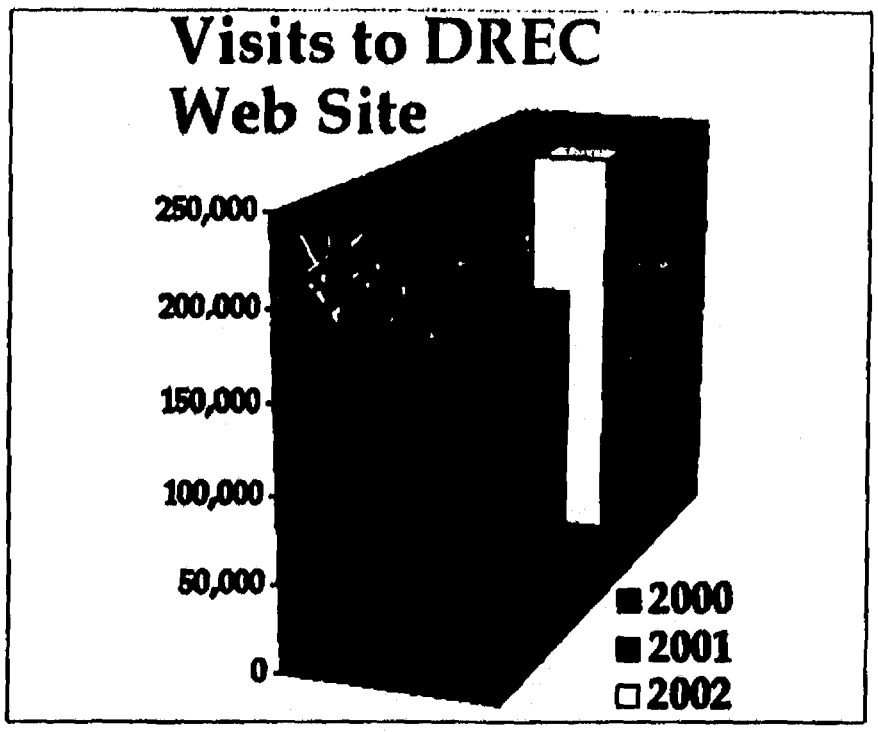
Adoption of xeriscape landscape practices is readily expanding in Dickinson and surrounding areas. The most popular trend is to reduce the amount of Kentucky bluegrass turf and incorporate diverse plantings of xeric plants. The use of organic mulches has increased to the point that local availability is a concern.

Impact: Because water is a limiting resource in southwest North Dakota, xeriscape landscaping can maintain the beauty of home landscape and save homeowners' money. What if this data was used to provide additional landscaping opportunities for the community and homeowners?

13. •• DREC continuing education

A key part of any research program is sharing the knowledge. All Dickinson Research Extension Center researchers are given equal opportunities to have research as part of the DREC website, which is maintained by a staff person. Access to the website is free to anyone seeking information on the activities at the DREC. Information can be downloaded and shared with fellow producers and/or used in an individual enterprise.

Impact: The latest information on grain varieties, fertilizer application, cropping systems (all items discussed in this information piece) is available at the website. It is continuing education in a producer's home and/or office. The website address is as follows: (http://www.ag.ndsu.nodak.edu/dickinso/)



14. •• Documented new paradigms, using corn as a winter feed

DREC research has shown that cow body condition for good health and preparation for post calving breeding can be maintained using standing corn as the winter feed ration. Costs are very competitive and provide alternative use for land mass while potentially decreasing mechanical labor costs for harvesting, reducing potential environmental issues, enhancing soil productivity and enhancing wildlife feed and habitat.

Impact: What if body condition score and pounds gained exceeded the traditional management practices used while lowering per day costs.

15. •• Winter grazing

Non-lactating beef cows have been successfully grazed in winter pastures for the past five years at the Dickinson Research Extension Center. This grazing, coupled with an appropriate supplementation program, can be used to extend the grazing season and reduce reliance on harvested feed from late fall until early winter in southwestern ND.

Impact: Narrow profit margins force producers to explore ways to improve profit potentials. Supplemented winter grazing programs offer one possible approach to improving the profit potential of livestock operations in southwestern ND.

16 •• Integrating crop and livestock systems.

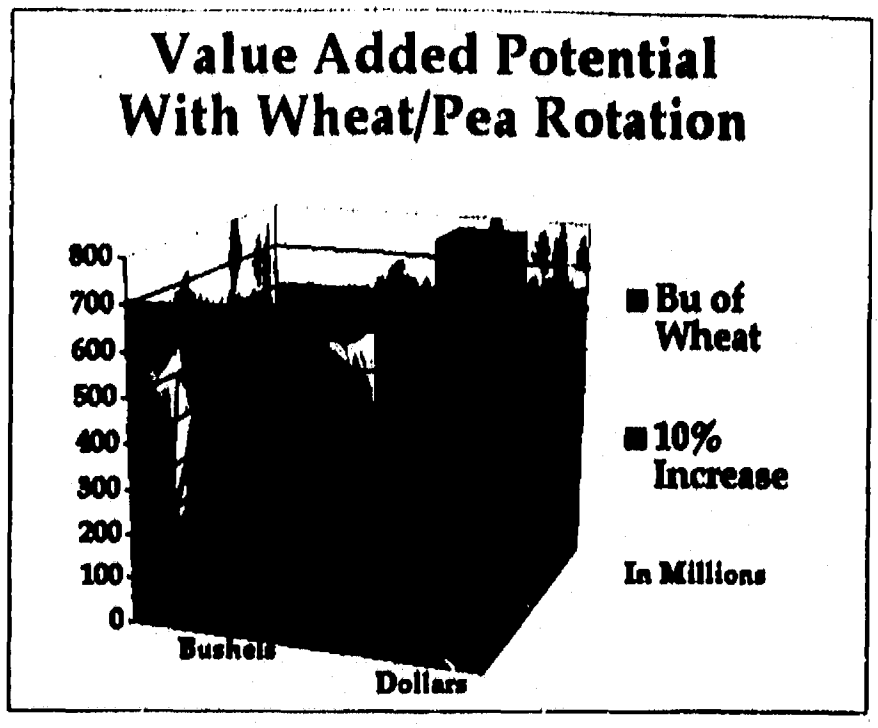
The introduction of alternative forage crops provides viable cash crop alternatives to traditional grain production. Millet, alfalfa and sweet clover were grown as monocultures or intercrops to compare grazing, haying or grain (where applicable) harvesting options.

Impact: At current market prices, a hay harvesting option seems to be the most optimistic alternative. Profit potential from annual forage production exceeds current expectations from traditional grain production. A hay harvest option using current market prices is a more viable alternative compared to a cattle grazing harvest option.

17. •• Wheat-pea rotation

DREC scientists have demonstrated that rotating wheat and peas can be done successfully and should be considered as ar alternative to continuous wheat a.d other cropping systems in western North Dakota. Wheat yield and quality is enhanced routinely following peas, compared with a continuous wheat system.

Impact: What if wheat yields were increased by 10 per cent and protein produced was two per cent higher? The impact could exceed $8.5 million, not to mention increased soil health and potential productivity for future years.



18. •• Plant Diagnostic Clinic

Equipment necessary to identify plant disea es and insects and either provide the correct information for treating a crop or eliminating unnecessary treatment of grain is a tremendous management tool for producers in the region. This equipment is available through the NDSU Extension Service and the Dickinson Research Extension Center. This equipment could potentially recognize symptoms of disease and give producers the jump on treatment protocols that are necessary.

Impact: This equipment was used in identifying insects in grain. The insect found was transitory and not problematic thus saving the application of a fumigant. Wheat streak mosaic is spread by mites. Mites were identified in large numbers in some fields in southwest North Dakota. Producers took action and delayed seeding winter wheat to break the green bridge between crops. The economic impact would reach well into the millions of dollars.

19. •• Waste management control

The outwintering facility on Section 19 at the Dickinson Research Extension Center Ranch has provided an opportunity to evaluate feeding regimens, maintain cattle on non riparian areas, and reduce concentrations of waste. (Statistics show a gestating beef cow can produce up to five ton of waste during the wintering period.) The net result is placement of fertility back on the ground where it belongs without the potentially dangerous concentrations of nitrogen and phosphorous at occurs in normal feedlot situations.

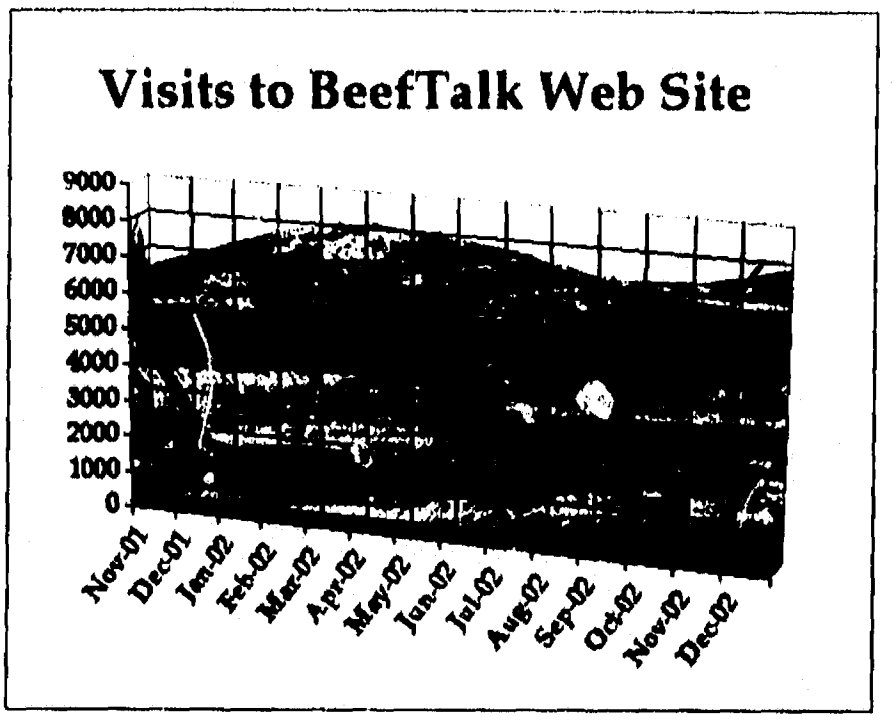
Impact: Minimize mechanical handling of manure is itself a direct savings to an operation. The positive effects of natural fertilization and the elimination of potential harmful concentrations can create positive scenarios for a harmonious environment, all which will have a positive impact on water quality. This facility may become a model for low cost solutions for water quality enhancement.

20. BeefTalk column provides management concepts

The BeefTalk column was initiated in the second quarter of 2000. It chronicles the events and activities of the beef industry, discussing management options, philosophy of the beef business and providing data about how North Dakota producers are doing in comparison with each other and beef producers nationally.

The column, distributed electronically through NDSU Agricultural Communications, is available on the internet (www.BeefTalk.com) at no charge.

Over 60,000 visits have been recorded since it became available electronically, an average of over 150 per day.

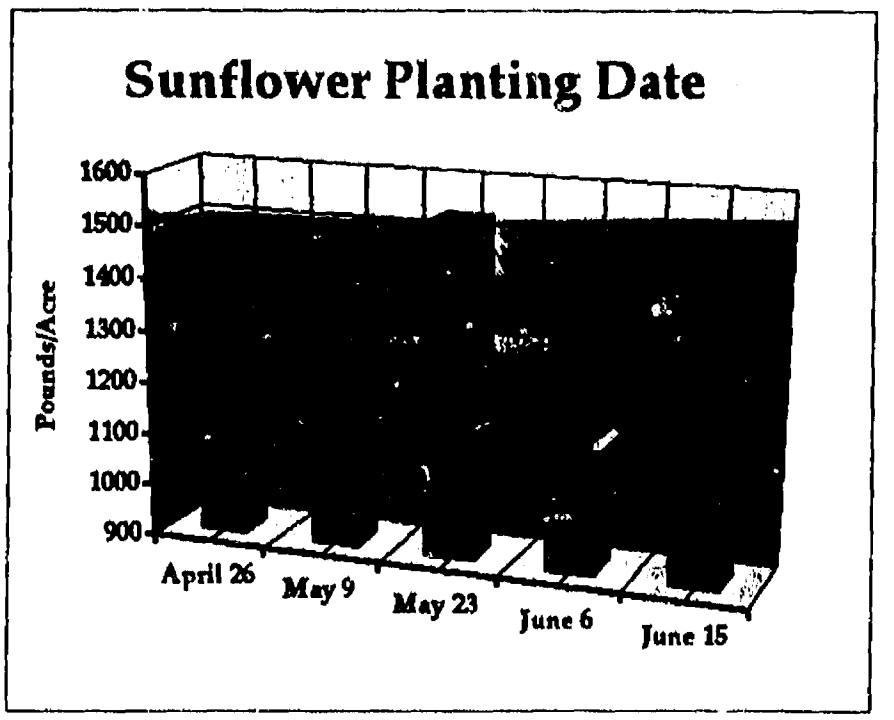


Impact: The infrastructure for continuing education is expensive and at times lethargic when it comes to providing up to date information to business (in this case agricultural producers). Image the use of key data and trends that could improve economic conditions in agriculture and our rural communities.

21. •• Sunflower planting date study in SWND

Determine the optimum planting date of NuSun sunflower, a mid-oleic line of sunflower developed to compete with high quality consumer cooking oils.

Impact: What if yields as the data suggests were increased by 15% by selecting the proper planting date? What if oleic fatty acid content was improved by 35% by selecting the proper planting date?



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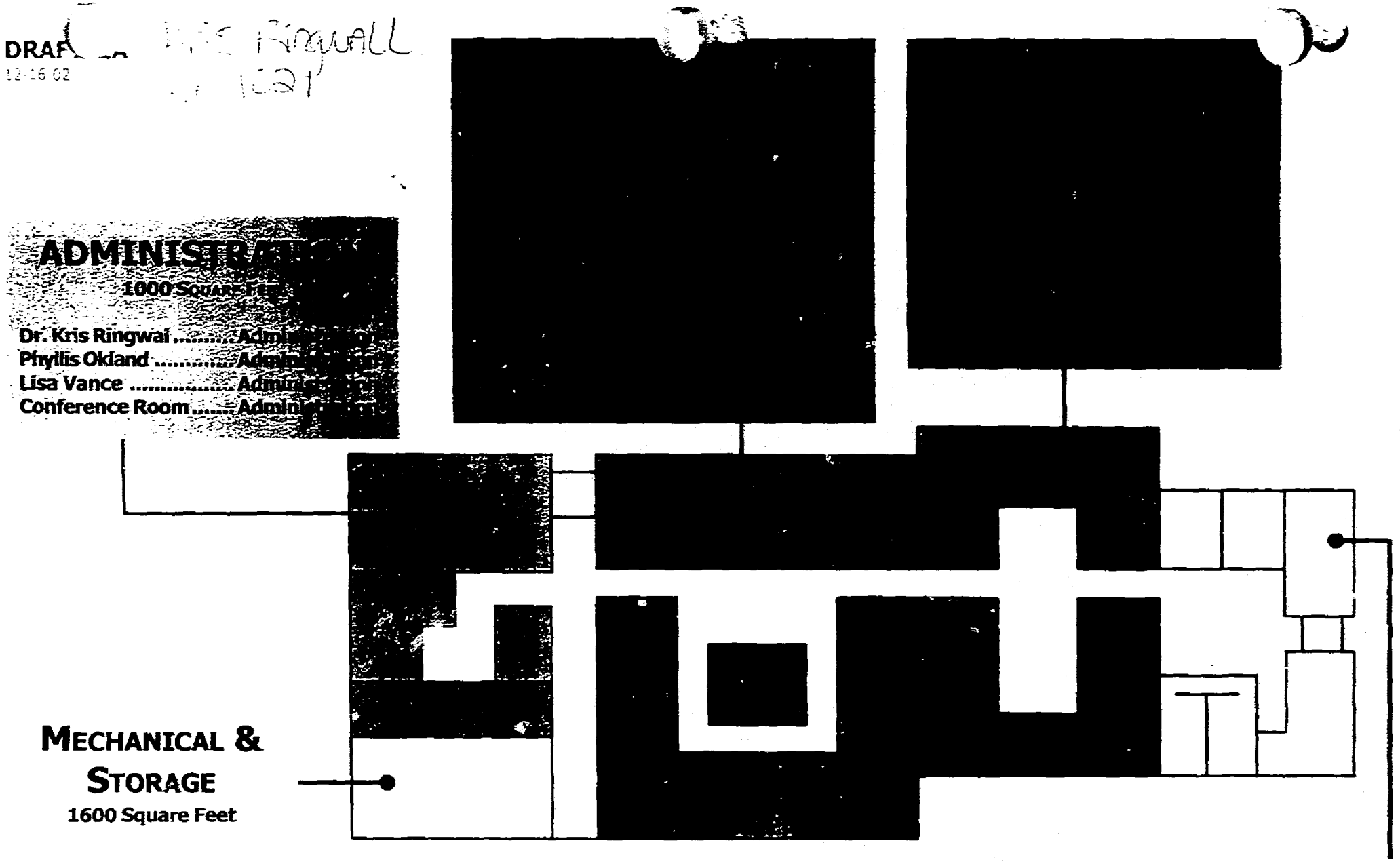

DICKINSON RESEARCH EXTENSION CENTER
AGRICULTURAL CENTER

SERVING SOUTHWEST NORTH DAKOTA AND BEYOND
9,500 SQUARE FEET

COUNTY EXTENSION, RECEPTION, RESTROOMS

1000 Square Feet

Sharon Kickertz Gerbig ..... Extension Agent
Jerry Larson ..... Extension Agent
Dolores Roy ..... Extension Agent
Jane Heth ..... Secretary
Kay Jessen ..... Secretary

North Dakota State University

CGREC

Central Grasslands Research Extension Center

2002 Grass & Beef Research Review

"Improving and Enhancing the Natural Resources of the Coteau Region"

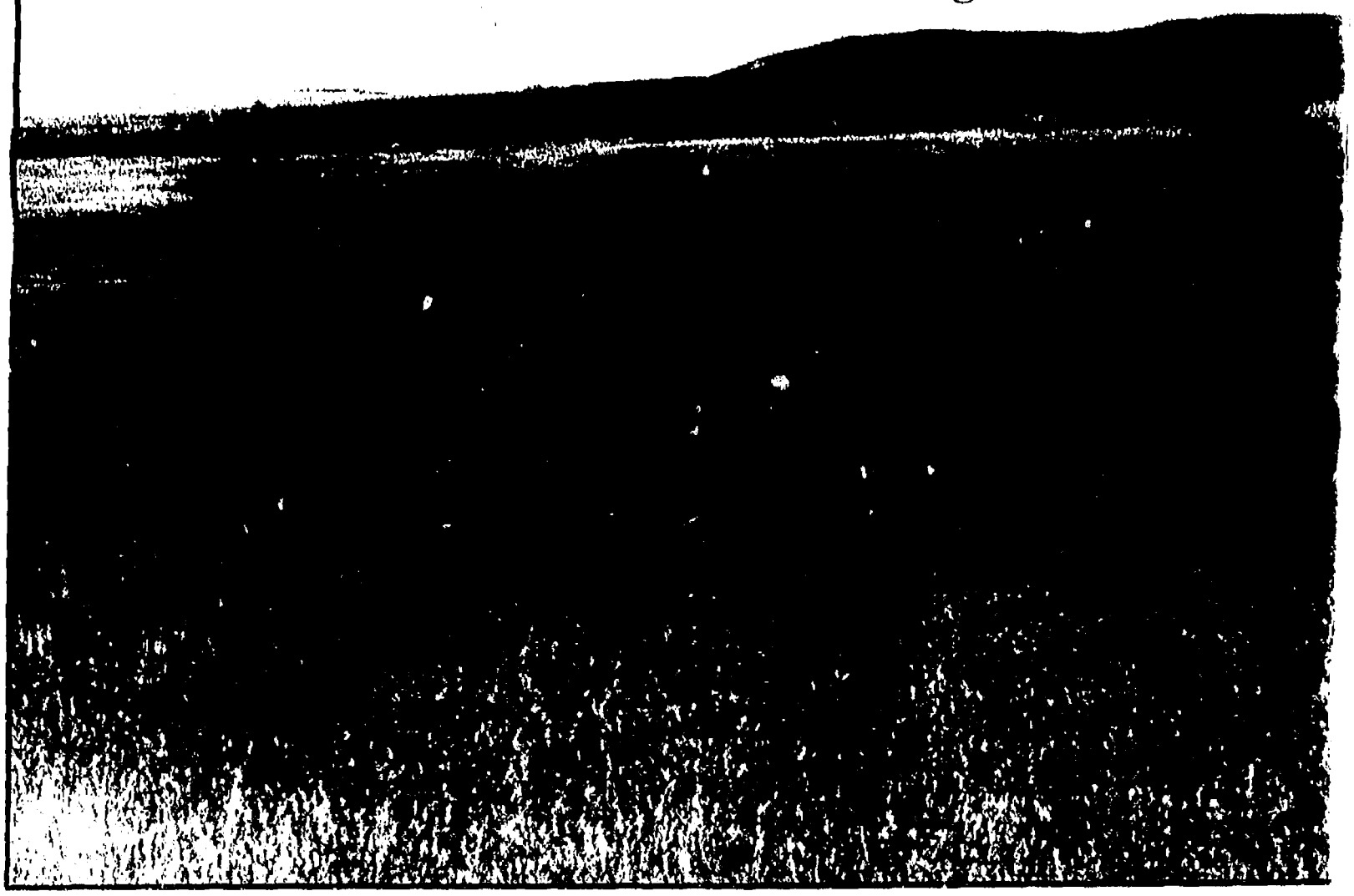

Exhibit #6
HB 1021

HETTINGER RESEARCH EXTENSION CENTER
2003-2005 BIENNIAL BUDGET REPORT

(Budget # 643 as a part of combined Budget #628)

To:

SENATE APPROPRIATIONS COMMITTEE

By:

Timothy C. Faller
Director

March 4, 2003

AGENCY OVERVIEW
Hettinger Research Extension Center

Agency Mission-

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

Major Accomplishments-

Animal and Range

Completed grazing objectives evaluating positive synergy between multi-species grazing and biological bugs for the control of rangelands infested with the noxious weed leafy spurge. This work was a multi-state/multi-discipline effort conducted under the USDA/ARS banner as "TEAM" Leafy spurge. Nearly $700,000. of grant funds were received to conduct this work.

Completed graduate student program of research on the "Nutritive Values of Warm Season Grasses and extended graduate student support in the area of "Winter Grazing".

Acquired grant funds in excess of $250,000. to initiate a new program of research in the area of "Value Added Animal Production" which is focused on calf backgrounding and lamb finishing.

Cooperated with three neighbor states to acquire USDA funding to establish a regional project focused on enhanced livestock production. $400,000. of initial funds were made available to the effort.

Completed and printed for mass distribution a multi-species grazing manual for leafy spurge control and an out-of-season breeding management calendar.

The center environmental plan was updated to allow for acquisition of health permits for both units of Hettinger Research Extension Center where animal research is conducted.

Agronomy

Established loading and handling facilities to distribute seed produced at other NDSU research centers. This makes new varieties as available to southwest North Dakota producers as those in other parts of the state. These varieties are produced at other NDSU centers, primarily Williston.

Found up to a sixty-eight percent advantage for corn raised in forty-eight inch rows as opposed to fourteen inch rows.

Received $[illegible]00. in funds from SBARE to support increased malting barley research as a component of the western malting barley initiative.

Proved a twenty-one percent advantage for corn planted at 27,000 seeds per acre as opposed to 20,000 plants per acre which is the current recommendation.

Initiated studies to develop new fertilizer technologies for Canola anticipating increased yields by optimizing nutrient uptake. Initial results indicate a twenty-eight percent yield increase with no additional fertilizer,

Agra-business and applied economics

Completed project: Using alternative forages on traditional small grain crop land in rotational grazing systems for the Northern Great Plains. An economic analysis of using small grain crop land for grazing beef heifers was finished.

On going project :Uncertainty on the great Plains continues to measure changes in ecological and economic factors relative to changes in farm management on both native range and long term crop land.

Completed project: Economic analysis of Using Sheep to Control Leafy Spurge. Published in the Journal of Range Management.

Technology center

Completed: Nine station computer lab used for NDSU and community education efforts. Funded with a $25,000. Grant from REAP.

Completed: Video conference center for distance education including H 323 video, computer support, document camera and microscope capabilities for diagnostic use (Provided by NDSU Extension). We are one of the NDSU partners sharing in a $400,000. Department of Commerce grant that has provided transmission costs and equipment.

Planned: Develop a staffed learning center to provide personal assistance to individuals and entities that have learning needs. We have received a $50,000 seed grant from REAP to support this issue.

Future Critical Issues

1. **Most Current and pressing is the occurrence of a scrapie infection associated with sharing of animals to meet a common objective of Hatch Project ND 1709 between the Hettinger unit and the Department of Animal and Range Science. This will have a major impact on current programs of research and may re-define future work. There will be special funding needs associated this occurrence due to the loss of income potential in future years. We have received an annual award of $60,000. to conduct cooperative work with the USDA/ARS on the disease scrapie.**

2. **Loss of both complete crops during the current biennium due to hail and the impending drought will create special concerns because of unexpected reductions in available funds due to these circumstances.**

3. **We have reduced staffing by two FTE at the conclusion of the federally funded "TEAM" spurge project. This included the reduction of $83,669 of authorization by house appropriations associated with the reduction in FTE. These positions also supported on going range research efforts which will be negatively impacted or lost.**

Impact of ninety-five percent budget (2003-2005 Biennium) On Hettinger Research Extension Center. Amount of decrease $45,127.00

Options:

-Reduce one full time permanent soft money employee#3258 and convert position #1627 to a soft money position.(Core Staff)

EXPECTED NEW OUTCOMES

- Anticipate attracting funding for an increased emphasis in value added animal agriculture. This will be the result of an effort lead by the Dean's of agriculture from the states of: North Dakota, South Dakota, Montana, and Wyoming. Initial funding of $850,000. has been allocated to the four states and will be made available to numerous entities within the region based on project merit. We anticipate success in attracting some of these funds

WILLISTON RESEARCH EXTENSION CENTER (WREC)
(Budget No. 646 as part of combined budget No. 628)

2003 – 2005 Biennial Budget Report HB 1021

Prepared for:
Senator Bob Stenehjem
and
Representative Rick Berg
by
Jerald W. Bergman, WREC Director

Agency Mission:

The Williston Research Extension Center(WREC) conducts research to increase agricultural productivity in the semi-arid region of northwestern North Dakota while achieving a necessary balance between profitability and conservation of natural resources. Research on irrigated soil and crop management systems and alternative high value/value added crop production is also conducted in partnership with the Montana State University Eastern Agricultural Research Center(EARC) at Sidney, MT.

Measures of Achievement:

A measure of achievement is the continued formal cooperation established between the Williston Research Extension Center and Montana's Eastern Agricultural Research Center at Sidney, MT to coordinate, broaden, and enhance the research programs and educational delivery systems for the MonDak region encompassing 30 million acres. As a result of this joint effort, the USDA Agricultural Research Service has made a commitment to become a stronger partner in this regional effort with new scientists and expanding laboratory research facilities at Sidney, MT and a recent commitment of one 40 acre overhead linear irrigation system for the new 160 acre Nesson Valley Irrigation Project. Also a new developing partnership established with the Ft. Peck Tribal College, Poplar, MT is promoting research and development of the tribal land and water resources to further strengthen our regional agriculture-based economic development efforts. Another measure of achievement is the rapidly growing use of the agriculture-based regional Ernie French Center at WREC for dissemination of research based information, transfer of agricultural technology and meetings of agricultural groups and which now includes interactive video conferencing capabilities.

The economic development through agriculture along several fronts in the MonDak region is another measure of achievement. New overhead sprinkler irrigation has been developed on 25,000 acres over the past 5 years to add revenue, create jobs and diversify North Dakota's economy. Durum production has steadily increased in the MonDak region to over 2.5 million acres and offers new potential for durum mills and specialty pasta plants in our region such as the Bushel 42 Pasta Plant in Crosby, ND. Our potato research and demonstration project, during the past three years, has resulted in 1,500 acres of commercial irrigated potato production for the J.R. Simplot Co., Grand Forks, ND and Cavendish Farms, Jamestown, ND and 2.5 million cwt potato storage facilities in our area. Further potato acreage expansion is anticipated in 2003. The new Enander certified potato operation established in Grenora ND will provide a new seed source of potatoes for North Dakota. Our identity preserved wheat project with NDSU and an IDP wheat company has the potential for our grain growers to become preferred suppliers of value added identity preserved wheats (and barleys) to specific end users. The industrial dairies, Moo Juice at Sidney, MT and Northwestern Dairy at Parshall, ND have created interest in cheese factories in our region. Value added safflower seeds and oil developed cooperatively at WREC and EARC have

increased the demand and market for safflower as an alternative crop. The new Northwest Alfalfa Products baling and cubing plant and Kent Honeybees, Inc., honey plant in Tioga are also examples of agricultural growth in our region.

Malt barley production has been ever increasing from 0.5 M bus. in 1999, 1.2 M bus. in 2000, 6 M bus. in 2001, and 18 M bus. in 2002 with a new 1.5 M bus. storage facility under construction at Sidney, MT and a potential new malt barley plant to be located somewhere in our region. Other expanding crops include dry edible beans and the pulse crops peas, chickpeas and lentils, not only grown but processed and marketed from our region.

The 5th International Safflower Conference hosted at our Williston station July 23-27, 2001 is a world-wide recognition of achievements in safflower research at the Williston and Sidney stations.

The increased participation in the MonDak Ag Open and Ag Tours by food processors, agribusinesses and other potential partners and alliances is an example of achievement in our purpose.

What can the North Dakota Legislature do:

Our continuing efforts in agricultural research and development to build and diversify our agricultural economy and develop our land and water resources need your funding support. The Western Malt Barley Project initiated in 2002 on one time funding to develop 6-row and 2-row malt barleys and malt barley management strategies for barley production in western North Dakota needs your support for the malt barley industry to become firmly established and committed to western North Dakota.

The wide area network access (T-1) mandated for video conferencing has added $20,160 to our biennial operating costs and negatively impacts our ability to conduct research because of reduced operating funds for research projects as well.

A 95% budget at WREC. The 95% budget will reduce our budget $47,269 and result in the loss of an employee at WREC.

Anything the legislature can do to adjust our budget for added costs, the 95% budget and allocation of funds for the Western Malt Barley Project will be greatly appreciated and used to positively improve the North Dakota economy through growth in agriculture.

How do we report:

The WREC hosts an economic development conference each winter at the Ernie French Center and each summer participates in a MonDak Ag Open and ag tours of our area to encourage partnerships and alliances among research, growers, economic development groups, agribusinesses and food processors. A new Nesson Valley Irrigation project under development will be utilized for research and demonstration "show and tell" of irrigated cropping systems and high value/value added products to increase profitability and support new food processing industries in the MonDak region. A regional report of the agricultural research accomplished each year is published every December and distributed to 8,000 stakeholders through the Extension Service, Field Day, Ag Days, and other events. Research information is also posted to the WREC link to the NDSU web page. A high value/value added crop extension specialist located at WREC also facilitates the development of agricultural crop and livestock opportunities, provides assistance to producers in farm management, economics and marketing and strengthens the research and outreach efforts of Williston Research Extension Center.

Testimony to North Dakota House Appropriations Committee: HB1021

North Dakota State University
Carrington Research Extension Center

Chairman Martinson and fellow committee members, I thank you for the opportunity to address your committee. My name is Blaine Schatz, I am the director of the Carrington Research Extension Center. The research and extension program activities of the Carrington Center are very diverse and they address many of the issues that face agriculture today. Researchers at the Center are well networked with project leaders in Fargo and their peers at the other Centers to implement research that most effectively utilizes the environment of central North Dakota and our collective scientific expertise to address the many priorities identified by our constituency. The central location of the Carrington Center is strategic to NDSU's research capabilities since the research program can effectively address crops and related issues that represent a significant part of North Dakota's agriculture. The research and extension program at the Carrington Center addresses both agronomy and livestock issues. Our efforts focus on these general program areas: traditional crop variety evaluation and development, improved crop production and management practices, alternative crop development, cropping systems, irrigation, integration of crop and livestock production, cow/calf nutrition, beef cattle feeding, feedlot management, bison nutrition, and foundation seedstocks production.

Now I would like to share with you a couple of accomplishments that reflect upon the type of contributions that the Carrington Center makes in support of North Dakota agriculture and the viability of our rural economies. In the past year the drought that prevailed across much of North Dakota and the surrounding region resulted in serious shortages of grass and local feeds for livestock producers. The challenge for cattlemen was to either sell off parts or all of their cow herd, or to utilize alternative feed supplies to maintain their herd. Research that identifies effective utilization of ag co-products and alternative feeds for cow-calf pairs has been an ongoing part of Carrington's beef research program. This research data proved invaluable to the livestock industry as cattlemen looked to this information as a means to help maintain their herd numbers. The data that Carrington generated over the past years was a major source of information on cow-calf nutrition that was used by NDSU's livestock specialists as they answered numerous calls for assistance from producers in North Dakota and neighboring states.

I would also like to share one example of contributions from the agronomy program that is proving significant. Plant diseases which cause crop yield and quality losses has continued to be a major problem across the state and especially in the region that the Carrington Center serves. Because of the continuing problems brought on by this complex of diseases, we have been expanding our disease research program to more effectively address these concerns. In the past couple of seasons we have implemented a series of misting nurseries that enables our researchers to create conditions that ensures disease development and increases our ability to effectively evaluate disease control measures such as resistant varieties and improved fungicides. This research includes nurseries to evaluate sclerotinia control in sunflower, canola, and dry edible bean. We also have nurseries for fusarium head blight or scab management research in spring wheat, durum, and barley. This research has contributed to assisting plant breeding programs in identifying disease tolerant cultivars and fungicides that best control these diseases.

The executive budget would permit funding for a 'Feedlot Research Enhancement' at the Carrington Research Extension Center. This enhancement would allow significant expansion of the existing feedlot research program. Expanded feedlot research will be achieved through utilization of additional technical expertise and the operational resources necessary to conduct multiple feedlot research projects.

The proposed enhancements to the beef feedlot program will focus on the following issues and priorities 1) enhancing the value of feedstuffs such as co-products, new and conventional feeds; 2) environmental issues related to waste management; 3) evaluating genetic potential of North Dakota calves; 4) determining economics of feeding beef in North Dakota; and 5) carcass quality as impact by feedlot nutrition and management. These objectives will advance some of the research priorities associated with the initial phase of NDSU's Beefline project.

As I close, I wish to acknowledge our appreciation to the legislature for your support last session that resulted in funding to support the renovation and expansion of the feedmill facility at the Carrington Center. This feedmill will be very instrumental toward conducting the type of beef nutrition research necessary to foster expanded development of the beef industry in our state. The 'Feedlot Research Enhancement' proposed in this budget will effectively utilize the new opportunities created by this feedmill and position NDSU to meet more of research needs of the beef industry.

Thank you.

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Exhibit # 8

North Central Research Extension Center
Response to Appropriations Committee Questions

Purpose:

The main purpose of the North Central Research Extension Center is to conduct crop research, produce and distribute Foundation grade seed, and conduct Extension educational programs in crops and livestock. We do this in concert with scientists and specialists from North Dakota State University, other research extension centers, neighboring states and Canada.

Achievement:

We measure the achievement of our purpose through impact statements, economic impact and multiplier effects, acreage increases, yield improvements and testimonials. For instance, in the 8 counties surrounding Minot, canola has increased from 4,200 acres in 1992 to 532,000 acres in 2002 (Farm Service Agency reported acres) and field pea production has grown from 3,000 acres in 1992 to 99,000 acres in 2002. Production practices, weed control, insect control and disease control have all been researched and results taught to producers and agribusiness people in this region in order for this success to take place.

Alsen wheat, NDSU's scab tolerant variety released in 2000, was increased from Breeder seed to Foundation grade seed at this center. A total of 17,936 bushels of conditioned Alsen seed has been produced at this center alone. If we use a 30 bushel per generation multiplier (Foundation to Registered to Certified), this means 16,142,400 bushels of Certified seed and therefore 484,272,000 bushels of commercial Alsen wheat to be offered for sale had it's beginning at the North Central Research Extension Center. Selling that wheat for $3 a bushel brings $1,452,816,000 of new wealth to the state.

Premier Pulses International, Inc. in Minot, Superior Grains Inc. in Crosby and Agricore in Ray market field peas, chick peas and lentils world wide largely because farmers in north central North Dakota have learned how to grow these commodities. Production practices, weed control products, and disease and insect control measures needed to grow these crops were researched and demonstrated by staff at this center.

For more information on agency description and major accomplishments, please refer to your Biennial Budget book, Agency 628, Branch Research Centers, North Central Research Extension Center, pages 292-295.

Legislature:

The Legislature can continue to fund salaries, operating expenses and equipment needs for the center. We appreciate the flexibility of budgets to move dollars from one category to another. We leverage these funds effectively and supplement them with grants to accomplish our goals. I encourage you to thoroughly analyze the amount of state general fund dollars that go to centers and contemplate the replacement rate on buildings and equipment and the ratio of operating dollars to total budget. Authorize and help fund new buildings where needed and eliminate out-dated ones for greater efficiency.

Report Results:

This center publishes results, provides pest monitoring information and provides updates on our website: www.ag.ndsu.nodak.edu/minot/. The number of 'hits' to our website have steadily increased from 89,311 in 2000 to 130,392 in 2001 and 164,803 in 2002. We print 8,000 copies of our "farmers report" found on your desk today. Two television stations, radio stations and a daily newspaper rely on our people, and we on them to disseminate information. Fact sheets, bulletins and handouts are prepared by our staff. Numerous meetings, schools, workshops, field clinics and demonstrations are held at the center and throughout the counties in which we work. Our technology transfer building, opened in 1999, has hosted 101 events with 3,100 participants in 2000, 179 events with 4,106 participants in 2001 and 262 events with 5,584 participants in 2002 not counting outdoor field days, tours and demonstrations.

THE 10 LEADING STATES AND NORTH DAKOTA'S RANK

Item	1	2	3	4	5	6	7	8	9	10	North Dakota's Rank	Percent of Nation 1/
CROP PRODUCTION - 2001												
Corn, Grain	IA	IL	NE	IN	MN	OH	KS	SD	MO	WI	17	1
Silage	WI	CA	PA	NY	MN	NE	IA	KS	SD	MI	20	2
Wheat, Durum	[redacted]	MT	CA	AZ	SD	MN					1	65
Spring	[redacted]	MN	MT	SD	ID	WA	OR	CO	UT	WI	1	46
Winter	KS	OK	TX	WA	CO	OH	NE	ID	AR	IL	34	*
All	KS	[redacted]	WA	OK	TX	MT	ID	MN	SD	CO	2	15
Oats	[redacted]	MN	WI	IA	SD	PA	TX	OH	NY	NE	1	13
Barley	[redacted]	ID	MT	WA	CO	MN	WY	CA	OR	UT	1	32
Rye	OK	GA	SD	[redacted]							4	5
Flaxseed	[redacted]	SD	MT	MN							1	95
Potatoes	ID	WA	WI	[redacted]	CO	OR	MN	ME	MI	CA	4	6
Sugarbeets	MN	ID	[redacted]	MI	CA	MT	WY	NE	CO	OR	3	17
Soybeans	IA	IL	IN	MN	NE	OH	MO	SD	AR	KS	11	2
Dry Edible Beans, Navy	[redacted]	MN	MI	ID	SD	WY	NE	OR			1	57
Pinto	[redacted]	CO	NE	ID	WY	NM	KS	MT	MN	WA	1	47
All	[redacted]	NE	CO	CA	MN	ID	MI	WA	WY	TX	1	32
Dry Edible Peas	[redacted]	WA	ID	MT	OR						1	48
Lentils	WA	ID	[redacted]	MT							3	21
Sunflower, Oil	[redacted]	SD	KS	CO	NE	MN	TX				1	44
Non-oil	[redacted]	TX	CO	SD	KS	MN	NE				1	44
All	[redacted]	SD	KS	CO	TX	NE	MN				1	44
Canola	[redacted]	MN									1	90
Hay, Alfalfa	CA	SD	NE	MN	IA	ID	WI	KS	CO	[redacted]	10	4
All Other	TX	MO	TN/KY		KS	OK	AR	SD	NE	VA	17	2
All	TX	SD	CA	KS	MO	NE	MN	IA	KY	[redacted]	10	3
Total Acreage												
Principal Crops Planted	IA	KS	TX	IL	[redacted]	MN	NE	SD	MO	IN	5	6
Principal Crops Harvested	IA	IL	KS	[redacted]	MN	NE	TX	SD	MO	IN	4	6
Grain Storage, December 1												
On-Farm Capacity	IA	MN	IL	NE	[redacted]	IN	SD	OH	MO	KS	5	6
Off-Farm Capacity	IL	IA	KS	NE	TX	MN	IN	OH	[redacted]	OK	9	3
LIVESTOCK ON HAND - JANUARY 1, 2002												
All Cattle & Calves	TX	KS	NE	CA/OK		MO	SD	IA	WI	CO	16	2
Cattle & Calves on Feed	TX	KS	NE	CO	IA	CA	OK	SD	ID	AZ	23	*
Cows That Have Calved	TX	CA	MO	OK	NE	SD	KS	WI	MT	KY	14	2
Milk	CA	WI	NY	PA	MN	ID	TX	MI	NM	OH	33	*
Beef	TX	MO	OK	NE	SD	KS	MT	KY	TN	[redacted]	10	3
All Hogs - December 1, 2001	IA	NC	MN	IL	IN	MO	NE	OK	KS	OH	27	*
All Sheep & Lambs	TX	CA	WY	SD	CO	UT	MT	OR	ID	IA	13	2
LIVESTOCK PRODUCTION - 2001												
Calf Crop	TX	MO	CA	OK	SD	NE	MT	KS	WI	IA	13	3
Lamb Crop	TX	WY	MT	SD/UT		CA	ID	IA	CO	OR	14	3
Pig Crop	NC	IA	MN	IL	OK	MO	IN	NE	CO	KS	24	*
Turkeys Raised	MN	NC	AR	VA/MO		CA	IN	PA	SC	IA	16	1
Wool Production	TX	WY	CA	CO	MT	SD	UT	ID	NM	OR	14	2
Honey Production	CA	[redacted]	FL	SD	MT	MN	TX	AR	WI	LA	2	14
Milk Production	CA	WI	NY	PA	MN	ID	MI	NM	WA	TX	33	*
FARM INCOME - 2001												
Cash Receipts, Crops	CA	IL	IA	FL	TX	MN	WA	NE	IN	NC	14	2
Livestock	TX	CA	NE	IA	KS	NC	WI	MN	GA	AR	37	1
Total	CA	TX	IA	NE	KS	MN	NC	IL	FL	WI	28	1
Government Payments	--- Not Available at Publication Time ---											
Value Added to Agricultural Sector 2/												
Net Value Added	CA	TX	IA	NC	IL	FL	MN	NE	WA	GA	18	2
Net Farm Income	CA	TX	NC	FL	IA	GA	KY	AR	IL	MN	23	2

RANK

** Less than one-half of one percent. 1/ North Dakota's percent of the Nation's total. 2/ 2000 data. Value added format replaces gross farm income.*

Exhibit #7

North Central Research Extension Center

5400 Highway 83 South
Minot, North Dakota

2002 Annual Research Report

No. 20

North Dakota State University
of Agriculture and Applied Science

www.ag.ndsu.nodak.edu/minot/

Randy Mehlhoff
HB 1021

2003 Legislative Testimony

Langdon Research Extension Center

Crop Disease Research Program

- First region in ND inflicted with severe small grain disease pressure (mainly fusarium head blight-scab)
- In 1994, redirected much of the research conducted at the station towards finding solutions to the disease problem prevalent in HRSW, durum and barley.
- In cooperation with NDSU plant sciences and with other REC's, by 1998 disease research data results began to provide producers with solutions to minimize disease pressure in their operations.
- Cultural practices such as burying crop residue through moldboard plowing, better rotations and others were found to lower the disease inoculant that over winters in the soil.
- Chemical solutions such as fungicide treatments were found to have an affect on disease. Further research showed that correct timing and rates of fungicide applications further reduced disease pressure.
- Spray technologies again provided additional disease fighting impacts with the use of fungicides (different nozzles and angle of nozzles, etc.)
- With a statewide effort and accelerated variety development program, Alsen HRSW exhibited superior disease tolerant characteristics compared to other HRSW's and was released in 2000.
- The most recent tool now available to producers is the crop disease forecasting model/system now in place to assist producers predict and react to disease pressure PRIOR to the onset of disease.
- Northeast ND is the canola capital of the U.S. With the significant increase in canola acreage the past four years, sclerotinia has become a serious threat to canola producers. Our experience fighting the scab problem in small grains has benefited our sclerotinia research program. Many of the disease fighting tools learned by scab research including cultural practices, chemical applications, spray technologies and disease forecasting is already benefiting local producers that raise canola.
- Overall, the still infant disease research program at the LREC has provided a big impact for producers by enhancing yields that otherwise would have been lost thereby, providing millions of dollars of income as a result of this effort.

Learning Center Concept

- Since 2001, $655,000 has been raised locally for the learning center indicating a strong commitment to our current programs at the LREC. Construction will begin in April with a projected completion date of October 15, 2003.
- New programming, not before available, is being implemented. Our Lake Region State College (LRSC) partners are now searching for an adult farm management instructor to work with up to 50 farm families in our region. Starting date will be in February 2003 and the instructor will be housed in the learning center.
- We have partnered with many economic development organizations in our region that will enable the learning to serve as the hub for rural economic development in northeast ND. This effort will involve agricultural as well as non-agricultural economic development efforts (i.e. technology, tourism etc.).
- We are partnering with LRSC, UND, University of Mary and others to provide rural northeast ND with a facility to deliver undergraduate and graduate programs for rural residents.

earning centers pitched as boon to region

By Mike Nowatzki
mnowatzki@forumcomm.com

fort to make college courses it education more accessible to areas of southwestern North ould help plug the region's on drain, project leaders say.
ties of Beach, Bowman and r are teaming up with the akota University System, the xtension Service and local tions to establish lifelong centers in their communities.
e cities are at least 60 miles n the nearest North Dakota ickinson State University.
Nudell, an agriculture t at the Hettinger Research Center, said many adults in especially those with fami- 't have the time or money to to DSU or live on campus.
e a significant number of o are wanting to upgrade sh college degrees or change nd distance is really an said.
ersity system says the pilot heduled to begin sometime could reduce by half the h Dakotans who live more nutes driving distance from al learning center such as a ate or tribal college.
ger, the plan is to upgrade

> *We have a significant number of users who are wanting to upgrade skills, finish college degrees or change careers, and distance is really an issue.*
>
> **Dan Nudell**
> Agriculture economist at Hettinger Research Extension Center

the Research Extension Center's computers and interactive video system. The system opened 18 months ago and has seen rising interest in ITV college classes, Nudell said.

"Occasionally, somebody will want to use it and we have to say, 'No, it's already booked,'" he said.

But while students are satisfied with the distance courses, Nudell said they have asked for better access to campus services such as libraries, financial aid and registration.

To meet the need, the center plans to upgrade its technology, develop closer ties with the university system and provide more space for students to interact before and after classes, he said.

The Bowman County Development Corp. is working with Bowman High School to make adult learning more accessible, said Cal Klewin, the corporation's executive director. Plans include new computers for online classes and expanding upon the DSU courses offered through the high school's interactive video network, he said.

"The benefit to the community is keeping our youth and our people in the rural areas, and to have access to education the same as you would in a larger community," Klewin said.

Officials in Beach are considering three locations for a learning center, said Harvey Peterson, the Golden Valley County extension agent. The extension office has 10 laptop computers to jumpstart the center, he said.

"Our interest in this is getting the video link so we can do meetings or training or higher education or anything else without leaving town," Peterson said. "Quite frankly, the fact that we're spending so much time on the road and so much money on transportation is huge out here."

The schools and county courthouses in all three cities have interactive video capability through STAGEnet. The 1999 Legislature created the Statewide Technology Access for Government and Education network to provide broadband Internet access, video conferencing and other networking services to all government-related agencies.

"With STAGEnet, basically you can be anywhere in the state and talk to anywhere else," said Tim Paulson, an analyst at the state Interactive Technology Department, which is responsible for connecting the sites.

A long-term goal of the learning centers is to provide more vocational and technical education to keep local youths in the area, Klewin said.

Combined, the counties of Adams, Bowman and Golden Valley lost 1,119 people during the 1990s, or nearly 13 percent of their population, according to census figures.

Project leaders are seeking funding from the Southwest Rural Economic Area Partnership Zone.

Mike Hillman, the university system's vice chancellor for academic and student affairs, said the project meets the Higher Education Roundtable's directive of a more accessible university system.

Learning centers that host college courses are eligible for 20 percent of tuition under the system's revenue-sharing plan, Hillman said.

"We're trying to see what we can put together without a major additional investment," he said.

Readers can reach Forum reporter Mike Nowatzki at (701) 241-5520

HB 1021

Hello! Im Leon Hilton a producer who farms northwest of Langdon and I wish to give testimony as to the benefits recieved by monies spent on agricultural research and on the sites where this research takes place.

I talked to several of my friends and neighbors who are also farmer like me and we feel that the money spent on research and testing is not money spent but money invested and then returned back into the economy several times over. Dollars spent on research and testing enable producers to select the best crop to grow in their area, the best variety of that crop, the most effective and safest chemical to apply to that crop and the best methods of producing their choice. Money spent on disease and insect forcasting models permit each producer to determine if a chemical application is necessary, when or not to apply and, aside from the claims of the chemical companies, which chemical is most effective for the money he'll spend.

Therefore, all this money spent on ag. research has but one goal; to enable the producer to raise his crops more efficiently with less cost thus ensuring that not only the producer and his family benefits but all citizens are able to buy high quality food at the lowest cost

Respectively
D Hilton

Prepared by the North Dakota Legislative Council
staff for House Appropriations
January 21, 2003

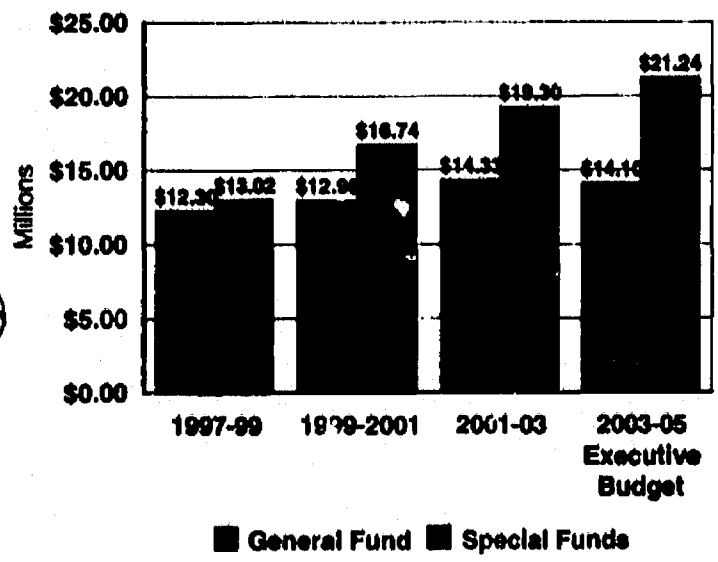
Department 630 - NDSU Extension Service
House Bill No. 1021

	FTE Positions	General Fund	Other Funds	Total
2003-05 Executive Budget	277.67	$14,102,119	$21,239,318	$35,341,437
2001-03 Legislative Appropriations	281.72[1]	14,329,745[2]	19,298,301	33,628,046
Increase (Decrease)	(4.15)	($227,626)	$1,941,017	$1,713,391

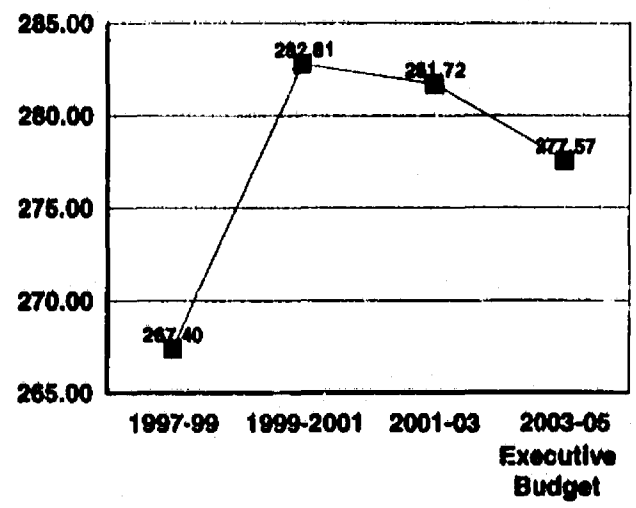
[1] The 2001-03 appropriation is based on 275.81 FTE positions. Section 4 of 2001 Senate Bill No. 2021 authorizes the State Board of Higher Education to adjust FTE positions as needed. The 281.72 FTE positions shown above represent the employee positions reported to the Office of Management and Budget.

[2] The 2001-03 general fund appropriation is the amount appropriated by the 2001 Legislative Assembly and does not include a reduction of $150,462 relating to the 1.05 percent budget allotment ordered by Governor Hoeven in July 2002.

Agency Funding



FTE Positions



Executive Budget Highlights

		General Fund	Other Funds	Total
1.	Deletes the following 4.15 FTE positions:	($544,253)		($544,253)
	.75 FTE agriculture communication editor	$94,663		
	1 FTE extension agent	128,864		
	1 FTE 4-H youth development specialist	159,044		
	.65 extension swine specialist	93,644		
	.75 agriculture communication information systems specialist	68,038		
	Total	$544,253		
2.	Reduces general fund operating costs to meet the 95 percent budget guideline	($182,468)		($182,468)
3.	Increases special funds operating costs due to an increase in grants in contracts		$250,000	$250,000
4.	Increases funding to continue fiscal year 2002-03 salary increases	$3,450	$1,312,873	$1,316,323
5.	Increases funding for salary and health insurance according to the executive budget recommendation	$485,411	$378,144	$863,555

Major Related Legislation

Section 3 of House Bill No. 1021 authorizes transfer appropriation authority between the Main Research Center, the branch research centers, NDSU Extension Service, and Northern Crops Institute.

Section 4 of House Bill No. 1021 authorizes the State Board of Higher Education to adjust or increase FTE positions for NDSU Extension Service and report any adjustments to the Office of Management and Budget.

Section 5 of House Bill No. 1021 authorizes the carryover of any unexpended general fund appropriation and excess income received by NDSU Extension Service.

Exhibit #12

Mr. Chairman and members of the committee:

Good afternoon. My name is Martin Platz, I am sixteen years old, and I am from Devils Lake. I have been a Ramsey County 4-H member for six years. I am highly active in the North Dakota 4-H program. North Dakota 4-H is operated by the NDSU Extension Service. 4-H has changed my life in so many ways, but most of all by the leadership activities I have been able to take part in. I am involved in the North Dakota 4-H Technology Team. A 4-H Technology Team consists of youth with an interest in technology who are willing to develop their technology skills and becoming leaders through training others, and by organizing, maintaining, and researching the latest technology resources available. This might sound technical, but we have a lot of fun together! My roll in the North Dakota 4-H Tech Team consists of providing leadership through presentations to county tech teams, as well as facilitating workshops at county project days, plus much more. Some of our state 4-H Tech Team goals include: provide "train the trainer" opportunities in local communities across the state, seek funding for a "Lab on Wheels" to provide technology opportunities for citizens in rural areas of North Dakota, and build relationships with other universities across the state to plan and develop technology camps for the youth of North Dakota. Through a competitive national application process, I was recently selected to be on the National 4-H Youth Technology Leadership Team. As a member of the National 4-H Technology Team, I have attend a training session in February, and will attend one in March to help build the national 4-H tech team initiative.

To help enhance my skills in the technology world, I had the chance to attend the National 4-H Technology Conference in St. Paul, Minnesota in 2002. The conference gave me the opportunity to communicate with 4-H members from across the United States. Some of my leadership activities include presenting programs to youth across ND. One example of a presentation I designed is called, "Designing websites the 4-H way". I became involved in the North Dakota 4-H Tech Team in the summer of 2001. I got the opportunity to attend and

supervise the computer lab at the National Association of 4-H Extension Agents Conference in Bismarck. The conference consisted mainly of over 300 4-H youth workers from across America. I joined the North Dakota 4-H Tech Team to learn and communicate with other youth from North Dakota, and the NDSU Extension Service made this possible. Because of 4-H's services I decided to dedicate myself to 4-H. I quit my membership to DECA (Distributive Education Clubs of America), and various school committees. Because of 4-H and my participation in Tech Team, I have developed my leadership skills and style. I used to be shy! 4-H has developed my life and has helped me decide on my future plans. I have learned so many skills in 4-H and through being a member of the Tech Team. I plan to attend NDSU for Business Administration. Following college, I plan to start and operate my own business right here in North Dakota. 4-H and Technology Team has developed my leadership and has helped me make many life long friends and contacts.

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W-1223

Figure 1. Saltcedar.

Saltcedar

(*Tamarix* spp.)
Identification and Control

STOP THE SPREAD

Rodney G. Lym
NDSU Department of Plant Sciences

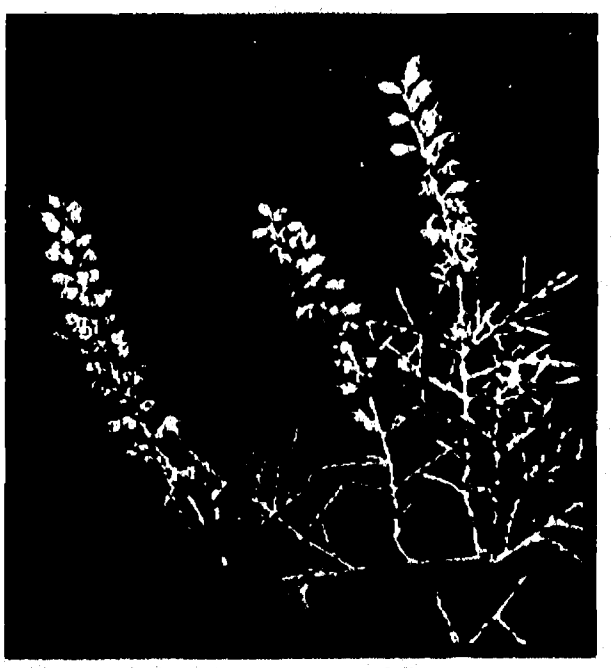

Figure 2. Saltcedar leaves and flowers.

Saltcedar is the common name for several introduced species of shrubs or small trees including *Tamarix chinensis, T. parviflora,* and *T. ramosissima.* Saltcedar invades riparian habitats and displaces native flora and fauna. Saltcedar was first introduced in the U.S. to reclaim eroded areas and prevent further loss of stream banks, primarily in the southwest. Saltcedar is still sold in the horticultural industry, primarily for its wide adaptability and pink flowers.

How do I identify this plant? Saltcedar, or tamarisk, is a shrubby bush or tree that can range in size from 5 to 20 feet tall (Figure 1). The bark is a reddish brown, especially on younger branches. The leaves are small and flat and resemble evergreen shrubs such as arborvitae (Figure 2). Flowers are pink to white in color, five-petaled, and appear from mid to late summer. The seed are extremely tiny and similar in size and color to pepper. Each seed has a pappus which allows it to float long distances in water or move in the wind. Seeds are short-lived and usually germinate within a few months after dispersal.

What is saltcedar's growth cycle? Once saltcedar seed germinates it can grow rapidly to a small flowering shrub in one to two years. The plant is very hardy and horticultural varieties are advertised to grow "in sun or shade, and in wet or dry areas" from USDA hardiness zones 2 to 7. The plant quickly establishes a long, woody, taproot (Figure 3) to support a voracious thirst for water. The root system is capable of producing many new shoots if the top growth is removed by mechanical control methods or fire.

Why is this plant a concern? Saltcedar can quickly become a monoculture along lakes and waterways. A single plant has been reported to transpire over 200 gallons of water per day. In the early morning and evening moisture with high salt content is exuded from the foliage, causing the soil to become saline. Saltcedar can choke waterways and has even

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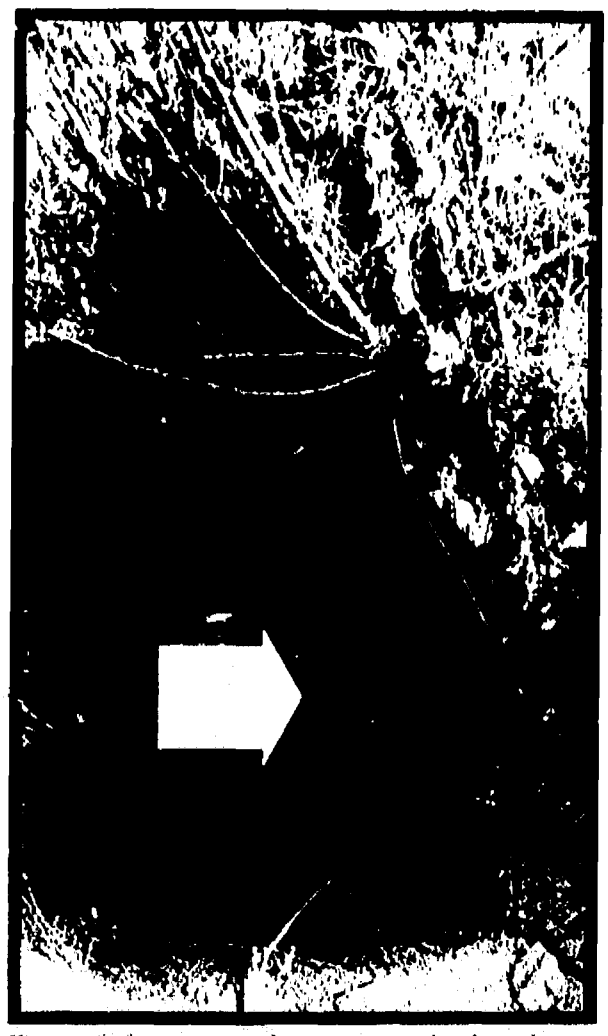

Figure 3. Long, woody, taproot of saltcedar. (Dean Cline, N.D. Dept. of Ag.)

Figure 4. Saltcedar displaces native plants and wildlife. (Keith Duncan, New Mexico State Univ.)

dried up entire lakes (Figure 4). Native riparian species are quickly displaced by saltcedar, which in turn causes displacement of native birds and animals that generally do not feed on the leaves or eat the saltcedar seeds. Saltcedar, even in the seedling stage, will tolerate short-term flooding and can establish away from waterways when seeds are washed in during flooding. Once established the plants can become so thick cattle will not graze the area.

Where in the state is this plant found? Saltcedar has been sold in North Dakota for many years as various tamarisk species, also called tamrix. To date, no known homeowner plantings have escaped to waterways in the state. However, a vigorous wild type of saltcedar is spreading into western North Dakota along the Yellowstone River from Montana in McKenzie County. These plants have been found along the river and several hundred yards away from the river, likely established during spring flooding. Saltcedar has also been collected in Benson County in 1968 and in Belfield in Billings County in 1970. Both sources were likely from ornamental plantings. Saltcedar is also likely to occur in Slope and Bowman Counties in the southwestern corner of North Dakota.

How do I control this plant? Prevention is the best method to keep saltcedar from invading North Dakota wetlands and wildlands. Arsenal is the most widely used herbicide to control saltcedar and should be applied alone at a 1% solution to the foliage or at 12 ounces per gallon of water as a cut-stump treatment. Arsenal can also be applied with a glyphosate formulation labeled for use in water such as Rodeo or Glypro. Consult the label for recommended use rates and locations. Cultural control methods such as burning or bulldozing have not been successful. Biological control is in the beginning research stage and is not recommended in North Dakota because of the limited saltcedar acreage.

If you find this weed, report it to your local weed officer.

HELP STOP THE SPREAD

For more information on this and other topics, see: www.ag.ndsu.nodak.edu

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