

**FISCAL NOTE**  
**Requested by Legislative Council**  
**03/25/2015**

Amendment to: SB 2175

- 1 A. **State fiscal effect:** *Identify the state fiscal effect and the fiscal effect on agency appropriations compared to funding levels and appropriations anticipated under current law.*

	2013-2015 Biennium		2015-2017 Biennium		2017-2019 Biennium	
	General Fund	Other Funds	General Fund	Other Funds	General Fund	Other Funds
Revenues				\$(230,000)		
Expenditures						
Appropriations						

- 1 B. **County, city, school district and township fiscal effect:** *Identify the fiscal effect on the appropriate political subdivision.*

	2013-2015 Biennium	2015-2017 Biennium	2017-2019 Biennium
Counties			
Cities			
School Districts			
Townships			

- 2 A. **Bill and fiscal impact summary:** *Provide a brief summary of the measure, including description of the provisions having fiscal impact (limited to 300 characters).*

SB 2175 second engrossment with House Amendments eliminates the withholding of \$.07 per gallon from ag-related fuel tax refunds, and creates the supplemental extension and research fund.

- B. **Fiscal impact sections:** *Identify and provide a brief description of the sections of the measure which have fiscal impact. Include any assumptions and comments relevant to the analysis.*

Section 2 of re-engrossed SB 2175 with House Amendments eliminates the requirement that \$.07 per gallon be withheld from all ag-related fuel tax refunds for distribution to the agricultural research fund. This change will increase fuel refunds and reduce revenues in the agricultural research fund by an estimated \$230,000 in the 2015-17 biennium.

3. **State fiscal effect detail:** *For information shown under state fiscal effect in 1A, please:*

A. **Revenues:** *Explain the revenue amounts. Provide detail, when appropriate, for each revenue type and fund affected and any amounts included in the executive budget.*

B. **Expenditures:** *Explain the expenditure amounts. Provide detail, when appropriate, for each agency, line item, and fund affected and the number of FTE positions affected.*

C. **Appropriations:** *Explain the appropriation amounts. Provide detail, when appropriate, for each agency and fund affected. Explain the relationship between the amounts shown for expenditures and appropriations. Indicate whether the appropriation or a part of the appropriation is included in the executive budget or relates to a continuing appropriation.*

**Name:** Kathryn L. Strombeck

**Agency:** Office of Tax Commissioner

**Telephone:** 328-3402

**Date Prepared:** 03/26/2015

**FISCAL NOTE**  
**Requested by Legislative Council**  
**02/16/2015**

Amendment to: SB 2175

- 1 A. **State fiscal effect:** *Identify the state fiscal effect and the fiscal effect on agency appropriations compared to funding levels and appropriations anticipated under current law.*

	2013-2015 Biennium		2015-2017 Biennium		2017-2019 Biennium	
	General Fund	Other Funds	General Fund	Other Funds	General Fund	Other Funds
Revenues			\$(1,826,000)	\$1,596,000		
Expenditures						
Appropriations						

- 1 B. **County, city, school district and township fiscal effect:** *Identify the fiscal effect on the appropriate political subdivision.*

	2013-2015 Biennium	2015-2017 Biennium	2017-2019 Biennium
Counties			
Cities			
School Districts			
Townships			

- 2 A. **Bill and fiscal impact summary:** *Provide a brief summary of the measure, including description of the provisions having fiscal impact (limited to 300 characters).*

SB 2175 second engrossment eliminates the withholding of \$.07 per gallon from ag-related fuel tax refunds, and transfers a portion of the farm machinery gross receipts tax to the agricultural research fund.

- B. **Fiscal impact sections:** *Identify and provide a brief description of the sections of the measure which have fiscal impact. Include any assumptions and comments relevant to the analysis.*

Section 1 of re-engrossed SB 2175 transfers 2% of the farm machinery gross receipts tax to the agricultural research fund, up to \$2 million per biennium. This is expected to increase revenue to the research fund by an estimated \$2 million in the 2015-17 biennium. This change will reduce revenues in the state general fund by \$2 million.

Section 2 of re-engrossed SB 2175 eliminates the requirement that \$.07 per gallon be withheld from all ag-related fuel tax refunds for distribution to the agricultural research fund. This change will increase fuel refunds and reduce revenues in the agricultural research fund by an estimated \$230,000 in the 2015-17 biennium.

The estimated biennial net effect of re-engrossed SB 2175, if enacted, is a reduction in state general fund revenues of an estimated \$1,826,000, a reduction in the state aid distribution fund of an estimated \$174,000, an increase in the agricultural research fund of an estimated \$2,000,000 and a decrease of \$230,000 in that fund due to refunds not being withheld and transferred. The last three amounts listed are all "other funds" for the purpose of 1A above.

3. **State fiscal effect detail:** *For information shown under state fiscal effect in 1A, please:*

- A. **Revenues:** *Explain the revenue amounts. Provide detail, when appropriate, for each revenue type and fund affected and any amounts included in the executive budget.*

B. **Expenditures:** *Explain the expenditure amounts. Provide detail, when appropriate, for each agency, line item, and fund affected and the number of FTE positions affected.*

C. **Appropriations:** *Explain the appropriation amounts. Provide detail, when appropriate, for each agency and fund affected. Explain the relationship between the amounts shown for expenditures and appropriations. Indicate whether the appropriation or a part of the appropriation is included in the executive budget or relates to a continuing appropriation.*

**Name:** Kathryn L. Strombeck

**Agency:** Office of Tax Commissioner

**Telephone:** 328-3402

**Date Prepared:** 02/17/2015

**FISCAL NOTE**  
**Requested by Legislative Council**  
**02/02/2015**

Amendment to: SB 2175

- 1 A. **State fiscal effect:** *Identify the state fiscal effect and the fiscal effect on agency appropriations compared to funding levels and appropriations anticipated under current law.*

	2013-2015 Biennium		2015-2017 Biennium		2017-2019 Biennium	
	General Fund	Other Funds	General Fund	Other Funds	General Fund	Other Funds
Revenues			\$(776,000)	\$546,000		
Expenditures						
Appropriations						

- 1 B. **County, city, school district and township fiscal effect:** *Identify the fiscal effect on the appropriate political subdivision.*

	2013-2015 Biennium	2015-2017 Biennium	2017-2019 Biennium
Counties			
Cities			
School Districts			
Townships			

- 2 A. **Bill and fiscal impact summary:** *Provide a brief summary of the measure, including description of the provisions having fiscal impact (limited to 300 characters).*

Engrossed SB 2175 eliminates the withholding of \$.07 per gallon from ag-related fuel tax refunds, and transfers a portion of the farm machinery gross receipts tax to the agricultural research fund.

- B. **Fiscal impact sections:** *Identify and provide a brief description of the sections of the measure which have fiscal impact. Include any assumptions and comments relevant to the analysis.*

Section 1 of engrossed SB 2175 transfers 2% of the farm machinery gross receipts tax to the agricultural research fund, up to a maximum of \$1 million per fiscal year. This is expected to increase revenue to the research fund by an estimated \$850,000 in the 2015-17 biennium. This change will reduce revenues in the state general fund and state aid distribution fund by \$850,000.

Section 2 of engrossed SB 2175 eliminates the requirement that \$.07 per gallon be withheld from all ag-related fuel tax refunds for distribution to the agricultural research fund. This change will increase fuel refunds and reduce revenues in the agricultural research fund by an estimated \$230,000 in the 2015-17 biennium.

The estimated biennial net effect of engrossed SB 2175, if enacted, is a reduction in state general fund revenues of an estimated \$776,000, a reduction in the state aid distribution fund of an estimated \$74,000, an increase in the agricultural research fund of an estimated \$850,000 and a decrease of \$230,000 in that fund due to refunds not being withheld and transferred. The last three amounts listed are all "other funds" for the purpose of 1A above.

3. **State fiscal effect detail:** *For information shown under state fiscal effect in 1A, please:*

- A. **Revenues:** *Explain the revenue amounts. Provide detail, when appropriate, for each revenue type and fund affected and any amounts included in the executive budget.*

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- C. **Appropriations:** *Explain the appropriation amounts. Provide detail, when appropriate, for each agency and fund affected. Explain the relationship between the amounts shown for expenditures and appropriations. Indicate whether the appropriation or a part of the appropriation is included in the executive budget or relates to a continuing appropriation.*

**Name:** Kathryn L. Strombeck

**Agency:** Office of Tax Commissioner

**Telephone:** 328-3402

**Date Prepared:** 02/03/2015

**FISCAL NOTE**  
**Requested by Legislative Council**  
**01/12/2015**

Bill/Resolution No.: SB 2175

- 1 A. **State fiscal effect:** *Identify the state fiscal effect and the fiscal effect on agency appropriations compared to funding levels and appropriations anticipated under current law.*

	2013-2015 Biennium		2015-2017 Biennium		2017-2019 Biennium	
	General Fund	Other Funds	General Fund	Other Funds	General Fund	Other Funds
Revenues				\$(230,000)		
Expenditures						
Appropriations						

- 1 B. **County, city, school district and township fiscal effect:** *Identify the fiscal effect on the appropriate political subdivision.*

	2013-2015 Biennium	2015-2017 Biennium	2017-2019 Biennium
Counties			
Cities			
School Districts			
Townships			

- 2 A. **Bill and fiscal impact summary:** *Provide a brief summary of the measure, including description of the provisions having fiscal impact (limited to 300 characters).*

SB 2175 eliminates the withholding of \$.07 per gallon from ag-related fuel tax refunds.

- B. **Fiscal impact sections:** *Identify and provide a brief description of the sections of the measure which have fiscal impact. Include any assumptions and comments relevant to the analysis.*

Section 1 of SB 2175 eliminates the requirement that \$.07 per gallon be withheld from all ag-related fuel tax refunds for distribution to the agricultural research fund. This will increase fuel refunds and reduce revenues in the agricultural research fund by an estimated \$230,000 in the 2015-17 biennium.

Section 2 of the bill transfers \$2 million of motor fuels to the agricultural research fund. This increases revenue to the research fund and reduces revenue to the highway tax distribution fund by \$2 million each. (These are both "other funds" for the purposes are 1A above and result in offsetting impacts +- \$2 million.) The net amount shown above is the net revenue reduction due to expanded fuel tax refunds.

3. **State fiscal effect detail:** *For information shown under state fiscal effect in 1A, please:*

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**Name:** Kathryn L. Strombeck

**Agency:** Office of Tax Commissioner

**Telephone:** 328-3402

**Date Prepared:** 01/20/2015

**2015 SENATE AGRICULTURE**

**SB 2175**

# 2015 SENATE STANDING COMMITTEE MINUTES

**Agriculture Committee**  
Roosevelt Park Room, State Capitol

SB 2175  
1/22/2015  
Job # 22405

- Subcommittee  
 Conference Committee

Committee Clerk Signature

*Emmery Brothberg*

## Explanation or reason for introduction of bill/resolution:

Relating to fuel tax refunds and special fuels excise tax

## Minutes:

Attachments: #1-6

**Chairman Miller** opened the hearing on SB 2175.

**Senator Klein, District 14** introduced the bill. Agricultural Research Fund (ARF), funds that have traditionally come from a gas tax refund. Back in the late nineties, when this fund was established, it brought in about \$800,000 that went to the ag research programs. Since then, we've seen a decline in gas agriculture vehicles. We've gone from \$8,000 to \$800,000, so it is difficult for these researchers who have to apply to this to get the grant dollars to make it worth their while. When we were discussing ways to build up that fund, we discussed how agriculture provides a ton of money to the Special Fuels Excise tax, because agriculture has gone from gas to diesel. We thought that a portion of that fund could go to the ARF. The bill caps the fund at 2 million dollars because at one point we were at 800,000. With inflation, maybe 1 million dollars per year would be a good starting point. We capped it at 2 million dollars rather than the historical percentage when we used some of the moneys for APUC and also for a variety of projects: the Ethanol Incentive Fund, etc. Three years ago, the gallons taxed were 377 million and currently we are at 431 million gallons. A lot of the moneys were used up in the scab epidemic and there is an opportunity for every commodity to apply for that grant dollar.

## **Mike Beltz, Chairman of the State Board of Agriculture Research and Education:**

Agricultural Research Fund (See attachment #1)

(9:20) ARF 2015 Legislative Report (see attachment #2)

**Senator Larsen:** Have you guys looked at the aviation fuel tax or the special funds? With a lot of crop spraying, is there an ability to gather funds there?

**Mike Beltz:** I have not, so I don't know what the breakdown is on that.

**Chairman Miller:** What is SBARE's (State Board of Agricultural Research & Education) total budget for a biennium?

**Mike Beltz:** We don't actually have money of our own, we serve an advisory role. Our primary responsibility is to bring biannual budget request to the legislature for their consideration on project, but we just have oversight of this fund. It does not come to us; it goes through the Experiment Station.

**Chairman Miller:** Last biennium there was \$150,000 of general funds put into this?

**Mike Beltz:** I'm not sure when that was kicked in; I just know that some point in time that was added. It went from four cents to seven cents and then \$150,000 went in there to shore up a declining balance.

**Chairman Miller:** Right now are you getting roughly about the same per biennium from the gas tax?

**Mike Beltz:** As you can see from the numbers, every year it's declined, from a peak of \$714,000 to \$88,000 in 2013. We actually have the number from 2014--for some reason it did bump back up to \$114,000.

**Chairman Miller:** Do you think some of this decline is that just some people aren't filing for their refund?

**Mike Beltz:** That is certainly possible, but I think the biggest part of it is that the time it was set up gas equipment was still used, on farms now it is all diesel trucks. There isn't much gas used on the farm anymore. It could certainly be that they're not filing for the refund; if they don't file for their refund, a portion of it doesn't come back to us.

**Jerry Doan, McKenzie, ND first president for SBARE:** SBARE was formed in 1997. Representative Dalrymple (current governor), who was the House appropriations chair. The perception that NDSU wasn't paying any attention to our needs out here as producers and the scab issue was front and center at the time; that's why SBARE was formed. The ARF was kind of a side note of that; the whole idea behind the ARF was trying to find some dollars to do some niche things and jumpstart some research that we maybe can't do at the branch station or mains station. It's putting some dollars together for the main crops and the new and emerging crops. There was nothing for livestock, so 18% for livestock was put back into it. The ARF fills a void that we don't get covered in the whole SBARE budget. The ARF is grassroots, producer driven, we see a problem and we address it. Since day one when we set that up we saw right away that the gas tax fund was coming down and at least ten years ago, we said that maybe the diesel tax is the way we should be going as gas tractors have been shifting over to diesel. We obviously didn't address it then, then it was attempted to be addressed through some general fund money being thrown at it. The diesel tax makes sense, it is something we have looked at for a long time, I know that there is some opposition to it but as Senator Klein said, we contribute a lot of those dollars to the diesel tax and we need to fund the AFR.

**Senator Klein:** Will you briefly tell us the whole concept behind SBARE and what they do?

**Jerry Doan:** I think it's a great board. Basically not much parameter at all and then the early board went in there and set up regulations and policy to dictate it all. Basically it goes out and sees what the needs are in ND and set the priorities. It used to be that legislators and folks from NDSU got together and it was a bit of a free for all. With this, producers set the priorities for the research and extension agenda for ND; this is the only one in the United States. We are the only land grant institution that puts 10 producers in control of the budgets at our land grant research and extension facilities. We want to work with NDSU and we meet in the middle to fit the producers and the tax payers. When this was set up, we established a consultation board that was an advisory board on agriculture research to NDSU so we had some knowledge instead of reinventing the wheel.

**Senator Wanzek, District 29:** (20:10) I have two passions: agriculture and infrastructure. And there's some conflict between the two in this bill but I think this fund makes sense to fund the ARF. It has been funded by farmers who would solicit their refunds on gas operated vehicles on the farm and those refunds could be channeled into the ARF. Most of us who are farming now use all diesel and don't use much gas. We pay an excise tax on our ruby red off road diesel tax. In my mind, it made logical sense to use that as the resource funding to fund the ARF budget. I know it takes some money out of the highway fund which I know gives us a little bit of consternation but it makes sense in the fact that this is fuel that I am using that is going in my tractor that operating out in my field, not necessarily going up and down the road. It made sense to me that it is agriculture related fuel tax that is paid and it would help agriculture through the research fund. This seems to be the most logical spot to help replace those dwindling funds where farmers aren't operating these gas powered machines anymore.

**Vice Chairman Luick:** You mentioned earlier that the use of this gas is not necessarily up and down the road, can you expand a little?

**Senator Wanzek:** Yes, I still have to drive that tractor from field A to field B. So there is some road traveling. But the lion share of this fuel is spent operating and working in our fields.

**Neil Fisher, Administrator at the North Dakota Wheat Commission:** At one time, 15 years ago, we would entertain at the wheat granting committee twenty-seven, sometimes thirty, projects to be funded out of this important fund. We called it our "brush fire fund" to allow some research on things that perhaps got missed on the larger SBARE board in their larger function in funding for opportunities and threats to the industry in the interim basis. Of those twenty-seven projects, eleven of them were directed at scab alone. That's not something we've totally whipped, but we've made great progress in that arena. Two varieties that took over the vast majority of the wheat in the Northern counties where scab first appeared virtually saved the wheat industry at that time. As you know, a wheat crop will generate about 2 billion dollars a year in just straight cash returns that turns into 6 or 7 billion in a given year in total economic impact on the community and economy in ND. This fund has fallen and we've talked about various ways to heal it up and bring it up to its full stature: that has not happened except for those transfusions that the governor brought from the general fund. This year we have 8 proposals hunting \$40,000 where we had 27 hunting almost \$200,000. The Wheat Commission has since matched them at a one to one basis.

We're required to match it at a 25% basis to just give it enough substance to be worthwhile. We're in desperate times; this is a bill worthy of consideration. (See attachment #3)

**Lyle Warner, North Dakota Lamb and Wool Producers:** Because of the efforts and the money we get from the granting committee. We've had more graduate students than any other grant university in the United States in the field of sheep production. I think that these dollars are leveraged so well, we have a facility in Hettinger, probably one of the three preeminent facilities in the United States right now in sheep research. We have a facility on campus right now for education and research. We are in a situation right now that hardly any other state in the United States has available to us. It has drawn a large number of qualified young people here to do research. So when we get those dollars, it helps those young people get their degrees and gives a great deal of support to the doctors that are on a research station in Hettinger and also at NDSU. If we can't continue this, I don't think we are going to be able to provide the quality of research that we have in the past. I think if we are going to be leaders in industry and leaders in the United States, it is important that we fund these activities and attract these young people here to the state.

**Chairman Miller:** What's the sheep heard doing in ND?

**Lyle Warner:** We've had a slight decline in the past years. The corn prices got us a little bit. We've had a good turn around now and a comeback because of the price of meat protein.

**Richard Schlosser, ND Farmers Union:** (30:02) We were a bit conflicted, we have policy on support for infrastructure development because every bushel that is derived on the farm travels over township roads, county roads, etc. Also we have policy supporting SBARE programs and research. We sat down and looked at some numbers, the increase in collections of excise tax. We went on eia.gov (Energy Information Administration), and found that farm use in North Dakota totaled about 126.8 million gallons. If you take that time the 4 cents, you roughly come up with about 5 million dollars. So that sort of convinced us. Farmers are making contribution to that fund. We fully understand that part of that goes to state aid distribution for highways. We made a determination there that this was something we could do. The other thing I wanted to point out was that back in 1997, we did support that because it was a producer initiative. In North Dakota, we were losing a lot of money on scab. We became apart of that and supported a new change to SBARE. We also have a representative that sits on the Wheat Granting commission. I can recall, there was a decline in the time that I sat on the Wheat Granting commission representing ND Farmers' Union. There were some short falls and we were dealing with a few issues that were important to our numbers, particularly scab. We did make a contribution out of one of our foundations to The "Double Haploid concept" that brought some of the more resistant varieties to market. With that, we would stand in favor of SB 2175.

**Dan Wogsland, Executive Director of the North Dakota Grain Growers Association:** (33:22) (see attached #4)

**Julie Ellingson, North Dakota's Stockman's Association:** (35:00) (see attached #5)

**Paul Mathison Red River Valley Sugar Beet Growers:** (36:44) The decrease of funding for ARF, eleven years ago, we were at a little over \$220,000. This year, we received

\$85,000. It's really not enough money to fund any project singularly. The ARF provides really the only money that comes to the Sugar Beet Growers in our state, at least in terms of cash. We support funding this fund.

**Tom Lilja, Executive Director of the Corn Growers Association:** (38:08) Our check-off charge with the corn utilization council is to provide funds for research. You heard about the leveraging of funds and the scab epidemic that was in the forefront back in the mid-nineties. Right now, we've really had a wet cycle and our group in cooperation with the Wheat Growers and Soybean Growers, we've been funding some soil health initiatives. This fund is really there to help supplement some of these researchers that are looking at some of these soil health projects. It's not limited to soil health, but in the last few years, that seems to be where we've been leaning. Over all, the corn industry contributed 9.7 billion dollars to the state's economy in the four years from 2008 to 2012. We are losing some that economic productivity with these soil health issues. The ND Corn Grower's stands strongly in support of this. For a couple million dollars to leverage those funds to help improve our soil health, as that is our big problem right now.

**Chairman Miller:** Do you think that the scab issue in the nineties lead to more corn being planted?

**Tom Lilja:** Whenever you see a disease in one crop, you see people shifting to another crop. You could say the same thing about sunflowers and the disease problems they have there as well. There were a couple things that happened: there was the disease issue that was going on at the same time that there was the new technology and the new genetics coming in to corn and soybeans in particular. They both happened at the same time, so that is why you say a major shift rather than could have been a minor shift.

**Grady Thorsgard, ND Dry Bean Council:** (41:14) We are in the process of starting to meet with meeting with people from NDSU and every year we have been able to support a lot of them, but there are a lot of projects that we have to turn down.

**Chairman Miller:** How much research do you do on your own?

**Grady Thorsgard:** I think last year's budget was about \$330,000. Last year we had to turn down a third to half of the projects that were requested.

**Scott Rising, Soy Bean Growers Association:** (42:48) Bottom line is that this is an additive factor and a cost match factor; it's a resolution to a problem we've known that's been there for a very long time.

**Gary Knutson, North Dakota Agriculture Association:** (43:31) We have approximately a five hundred dealer and distributors across the state of crop production inputs. We do pay license fees and register a lot of vehicles and are contributing something to infrastructure. I do think in terms of the research cooperation we've got, every dollar helps. As Senator Klein has introduced the bill, it merits large support.

**Opposing:**

**Steve Salwei, P.E., Transpiration Program Director:** (44:28) (see attached #6)

**Senator Klein:** We heard earlier from one of the folks in favor that we are not decreasing the funds, we are decreasing from the increase. Is this fund not growing in leaps and bounds? We have increased over 50 million gallons. What you are suggesting here is that we are steeling it out of here, but we aren't really taking 2 million, we are just reducing from the increase. You heard, and you would have to agree, that when we make that shift from gas to diesel that the producers have picked up part of that. Am I wrong?

**Steve Salwei:** Traffic has been increasing and the increase in traffic would be an increase in revenues. If you look at the cost of doing business with the cost of inflation and the cost of the DOT having to go out there and time value of money, we are seeing our buying power decrease because of the inflationary factor.

**Senator Klein:** But that's not what we are having the discussion on. We have these tractors that are burning up tons of fuel; they're the ones that are contributing to this. But what I am suggesting is that a lot of the fuel is being burned up in the field, and those folks are paying the tax, and all we are asking is that some of that money back so that they can continue to work in the field rather than lose their crop to some disease. There has been a shift here from gas to diesel and we are just asking that that money should be put back.

**Steve Salwei:** We understand what you are trying to do; we would just like to see the funds that are dedicated to the tax distribution fund be use for transportation purposes.

**Vice Chairman Luick:** Do you know what the increase in the DOT's budget from last biennium to this biennium?

**Steve Salwei:** Are you talking about the overall increase with the one-time revenues that came into the department?

**Vice Chairman Luick:** Just the road tax. What's your normal budget? What percent of this 2 million is part of your budget?

**Steve Salwei:** I do not have that number in front of me, but I will have my finance department compile that.

**Russ Hanson, Association of General Contractors of ND:** (51:15) There has been a lot of talk about the olden days and a little history, and here is one more. Our concern is similar to what the DOT expressed in the funding source. I'm representing a group that keeps a pretty close eye on the highway fund, I would concur that the work the supporters of this bill that the work they do is very important. From 1998 to 2000, I was the executive director of APUC so I got to see the value of the research first hand. With the agricultural economy and all it provides to our state, the funding source of 2 million dollars would be a good investment for the state to make out of the general fund.

**Senator Klein:** We spoke about the good old days and going back to 1997 and looking at what the budget was for the DOT back in 1997 and where it currently is, we have come a long way from the DOTs budget in 1997. Theirs has increased and ours has gone down.

**Russ Hanson:** I wouldn't disagree, the funding decision you have before you is a policy decision. Our thought is that with the impact that agriculture has on the economy, it would be a good investment for the state to make (with the general fund). Also the cost of business in the past twelve years for providing the infrastructure has gone up as well, probably by a couple 100%.

**Mark Johnson, North Dakota Counties:** (54:05) You can obviously understand that we are opposed to the funding source and that is all. I'm conflicted because I look in the room and I have a lot of good friends, some of them whom serve on the transportation coalition, which is a group of people who care about roads and how we get products to market. Bob Stenehjem worked for three or four sessions to try to eliminate diversions from the State Highway Trust Fund and he did a phenomenal job. He cleaned it up and now we're going back and messing it up again. I would urge this committee to find funding for this research, but don't take it away from the highways.

**Chairman Miller:** Do you think that when we see an increase in agriculture we see an increase in available funds to the counties? Do you think there's a correlation when agriculture does well everything does well?

**Mark Johnson:** Absolutely. Agriculture is key to the survival of our most rural counties. But as you know, we have the responsibility to maintain the roads and allow the products to get to market efficiently so that's where we're conflicted.

**Chairman Miller:** Do you have any suggestions for alternative sources?

**Mark Johnson:** Bottom line: the state's general fund. Maybe all the agriculture groups should be trying to develop a firm solid source that would possibly be a general fund allocation to research.

**Senator Klein:** The agriculture groups did work; this was the result of the SBARE meetings. There's been a lot of discussion about whether we should go to the general fund and looking at how consistent the general fund is. Looking at the general fund today, there are obviously some concerns and issues. Agriculture went from gas to diesel and we just want it to shift with agriculture so the funds come back. That was really the consensus that this would be a steady flow of income rather than having these researchers speculate what that dollar figure would be every year. The commodity groups gave a lot of input to get where we're at; we looked at this gas thing and saw it going away, and really we're contributing on the other side now.

**Ken Tupa, Dakota Transit Association and the North Dakota Senior Service Providers:** (59:05) We're certainly not opposed to what the bill would do, it's the funding source. Public transportation does receive a percentage, 1.5% of the dollars in the highway tax distribution fund. Reductions to that do impact the dollars that go to public transportation. Those are the rural services and certainly the urban services that receive some of that state aid and it all goes back to the highway tax distribution fund. Currently in the DOT budget, public transportation is estimated to receive about 9.3 million dollars next biennium. Again, that's distributed state wide to the transit providers. That 9.3 million would

be a reduction from the state aid that public transportation is currently receiving this biennium. We will be asking for additional resources but we are already facing a potential decrease in the state aid that public transportation is receiving. Things like this would further reduce that amount and it is for that reason we have concerns about this.

**Chairman Miller:** How do local cities and counties contribute to public transportation?

**Ken Tupa:** There are local dollars that do contribute to public transportation. It can come in the form of dollars from county budgets, funding from city budgets, etc. Certainly there are also fare requirements from passengers that ride. In the case of senior service centers, when they provide transportation services it's local donations, fund raisers, there's a number of sources of local revenues that are also used to contribute.

**Chairman Miller:** Are there some federal revenues?

**Ken Tupa:** Yes, there are federal revenues also that flow through DOT and to the transit providers.

**Senator Klein:** When did we start funding or help support the transit providers?

**Ken Tupa:** Do you mean through the highway distribution fund?

**Senator Klein:** Correct.

**Ken Tupa:** That change was made in 2009.

**Senator Klein:** Wasn't it going to be a one-time support, and you came back the next session and now it just continues to grow?

**Ken Tupa:** Public transportation used to receive state aid dollars. I think it was three dollars from vehicle registrations. When the change was made to receive a distribution from the highway tax distribution fund in 2009, that changed as well. So they no longer received their funding from that mechanism but they just received a percentage which was pretty equitable at the time from the highway tax distribution funds. It was not a one-time proposition; it was different way of funding public transportation.

**Senator Klein:** We're just asking for what we believe is our share, as you are certainly also.

**Ken Tupa:** We understand. We are already in that position as far as transit where we're facing potential reductions and this just adds to that; that's our concern.

**Arik Spencer, North Dakota Motor Carriers:** (1:04:08) We understand that when agriculture does well, our industry certainly does well. On principle we oppose funds being diverted from the highway fund for non-transportation purposes.

**Kevin Schatz, Supervisor of Motor Fuels of the ND Tax Department:** (1:04:50) Made himself available for questions from the committee.

**Senator Warner:** I remember trying to tap into this fund once when I was in the house and got a memo from legislative council that whatever I was trying to do at that time was unconstitutional. Is this fund mentioned in the constitution, is this a constitutionally protected fund, and are there any constitutional implications of this bill that we have before us?

**Kevin Schatz:** I'm not an attorney and I don't feel qualified to answer that question.

**Chairman Miller:** Can you explain what the fuel tax is currently and what kind of numbers we're generating there and talk about the gas tax refund and any hypothesis you have about why it is falling so fast?

**Kevin Schatz:** The tax on motor fuels is 23 cents a gallon, same as it is for clear diesel fuel. Dyed diesel fuel is 4 cents a gallon, for federal purposes, dyed diesel is not taxed at all. There's a refund available for agriculture industrial purposes for gasoline, for agriculture refunds we are withholding seven cents which goes into the research fund. There is half a cent a gallon that is also withheld. There is no refunds for diesel fuel, it is considered a by right law, you buy the correct product for how you're going to use it. So if you use an off-road if you buy dyed, if you use an on road you buy clear. For all of the motor fuel products, emergency medical services, can get a full refund. The only diesel fuel refund that is available is for refrigeration on a truck because of the non-availability of dyed diesel at most truck stops. That got passed two or three session ago. For aviation, there is no agriculture refund available, but the tax on aviation fuel whether it's AV gas or jet fuel is only 8 cents a gallon.

**Chairman Miller:** What about trains?

**Kevin Schatz:** For railroad use, dyed diesel is four cents a gallon just as it is for agriculture and industrial. For any heating fuel, whether it's propane or whether it's heating fuel, it is exempt from any tax.

**Chairman Miller:** How much money do we generate off four cents a gallon? Can you delineate where that comes for agriculture use versus railroad?

**Kevin Schatz:** For our reporting purposes, that information is not broken out by our dealers. All they provide us with is that they sold clear or they sold dyed diesel. The only delineation we have, there is a code for railroad fuel use but in a lot of cases that's not accurate either because some dealers will just report it as a regular sale of dyed diesel, so we don't rely on those numbers. I do have a spread spreadsheet that I could provide to your committee, it gives the percent increase for each year for each one of those products.

**Chairman Miller:** What's the total that we are collecting on dyed fuel?

**Kevin Schatz:** I don't know that off the top of my head, but it will be on that spreadsheet.

**Chairman Miller:** Just for informational purposes, with the gasoline, the reason we have the refund is because there isn't a distinguishable difference in what type of gasoline is purchased and if you're using it for agriculture, you should show receipts to prove it.

**Dan Rouse, ND Tax Department:** (1:10:31) What you are referring in your question, I believe is article 10 section 11 of the state constitution that provides that "revenue from gasoline and other motor fuel excise and license taxation, motor vehicle registration and license taxes, except revenue from AV gas and unclaimed aviation motor fuel refunds and other aviation motor fuel excise and license taxation used by aircraft after deduction of constant administration and collection authorized by appropriation only and statutory refunds shall be appropriated and used solely for construction, reconstruction, repair, and maintenance of public highways and the payment of obligations incurred in the construction, reconstruction, repair, and maintenance of public highways." I know that that issue has come up before in the context of the aviation arena. I think it is an unresolved issue and I would commend the sponsors of the bill as well as yourself to check with legislative council since they technically advise you on constitutional matters. That's been a subject of debate for many years since section 11 has been in the constitution. I think that there are numerous interpretations that can be derived from that language. So I'm not saying that anyone's right or wrong.

**Chairman Miller:** closed the hearing on SB 2175.

# 2015 SENATE STANDING COMMITTEE MINUTES

**Agriculture Committee**  
Roosevelt Park Room, State Capitol

SB 2175  
1/30/2015  
Job # 22936

- Subcommittee  
 Conference Committee

Committee Clerk Signature



## Explanation or reason for introduction of bill/resolution:

Relating to fuel tax refunds and special fuels excise tax  
(Committee Work)

## Minutes:

Attachments: #1-2

**Chairman Miller** distributed amendments on SB 2175 (see attachment #1). They would take 2% of the total money from the implement machinery taxes on farm equipment and irrigation equipment and put that into the Agricultural Research Fund (ARF) which would be limited to no more than a million dollars a year. If for some reason there was a run up in sales collections, they would only receive a maximum of 2 million dollars a year. The 2% is less than a million dollars right now; they collect about 20 million roughly.

**Senator Warner:** I think this is a very creative way of dealing with this and may actually work well. Does this replace the gas tax refund or does it just supplement?

**Chairman Miller:** It's supposed to replace it.

**Senator Warner:** There was always a complaint in the past that the preponderance of the tax collected on gasoline was by livestock producers because they tended to have smaller equipment and the haying equipment. Then the preponderance of grant research went to the agronomy side. Maybe that's not true anymore--I know there's been a lot of small diesel tractors created in recent years.

**Chairman Miller:** I believe this will repeal that gas tax refund portion and then add this in. So this should do everything we want it to do. I agree with your assessment, Senator Warner, this will probably help things balance out.

**Senator Klein:** It's always about the money and the difficulty we've had finding it when you think you have a great stream. I did sense a lot of people in the room who liked the bill but didn't like where the money was coming from. We'll see how the appropriations process

goes since now we are tapping into the general fund. I still believe that we are in a shift since we were doing all those gas tractors and now we're all diesel.

**Chairman Miller** stated that he would entertain a motion to adopt the amendment

**Senator Warner** moved the amendment 15.0257.01002 to SB 2175.

**Senator Klein** seconded the motion.

**A Roll Call vote was taken. Yea: 5; Nay: 1; Absent: 0.**

**Senator Larsen** indicated that he voted no on the amendment out of concern that if there is a downturn in equipment sales, they will always be putting fuel in those tractors and that equipment to get the crop in the ground. This could ultimately be lower instead of continuing to tap into the fuel fund that will be consistent.

**Chairman Miller:** Equipment sales will continue. If you look at the last three years, it's probably the best time for machinery sales. It will also probably be more consistent than our previous method of funding.

**Vice Chairman Luick:** Does 100% of this sales tax go to the general fund today?

**Chairman Miller:** Yes, I believe it all goes into the general fund.

**Senator Warner:** I agree with Senator Larsen to a point, it worked with gasoline because that was essentially a tax that was never assessed. We created a tax event when we applied for the refund. The fact that it was collected was an artifact of the collection method, nothing. I read through the constitution on the relevant section; you'd have a hard time finding more explicit language that we couldn't touch that. I think that it would have lasted fifteen minutes in court before it was thrown out and then we would've left ARF without recourse for another two years. I think the solution you've come up with is a much more reliable source of revenue than we had in the past.

**Chairman Miller** passed out some information on the fuel taxes (see attachment #2).

**Senator Klein** moved for Do Pass as amended on SB 2175 and refer to appropriations.

**Vice Chairman Luick** seconded the motion.

**A Roll Call vote was taken. Yea: 6; Nay: 0; Absent: 0.**

**Senator Klein** will carry the bill.

**Chairman Miller** adjourned the hearing on SB 2175.

January 29, 2015

43015  
JML

PROPOSED AMENDMENTS TO SENATE BILL NO. 2175

Page 1, line 1, after "sections" insert "57-39.5-02 and"

Page 1, line 1, remove "and 57-43.2-19"

Page 1, line 2, after "to" insert "the transfer of revenue from the farm machinery gross receipts tax and"

Page 1, line 2, replace "and the special fuels excise tax" with "; and to provide an effective date"

Page 1, after line 3, insert:

**"SECTION 1. AMENDMENT.** Section 57-39.5-02 of the North Dakota Century Code is amended and reenacted as follows:

**57-39.5-02. Imposition - Transfer of funds - Exemptions.**

There is imposed a tax of three percent upon the gross receipts of retailers from all sales at retail, including the leasing or renting, of farm machinery or irrigation equipment used exclusively for agricultural purposes. Two percent of the taxes collected under this chapter, but not exceeding one million dollars in a state fiscal year, must be transferred to the state treasurer who shall deposit the moneys in the agricultural research fund. Gross receipts from sales at retail of farm machinery or irrigation equipment are exempted from the tax imposed by this chapter when the sale, lease, or rental is made to a purchaser or lessor who is entitled to a sales and use tax exemption under subsection 6 or 12 of section 57-39.2-04 on otherwise taxable sales at retail. There are specifically exempted from the tax imposed by this chapter the gross receipts from the sale, lease, or rental of used farm machinery, farm machinery repair parts, used irrigation equipment, or irrigation equipment repair parts used exclusively for agricultural purposes. For purposes of this section, "used" means:

1. Tax under this chapter or chapter 57-39.2 or 57-40.2 has been paid on a previous sale;
2. Tax under section 57-39.5-06 has been paid under a previous lease;
3. Originally purchased outside this state and previously owned by a farmer;  
or
4. Has been under rental for three years or more."

Page 1, remove lines 13 through 23

Page 2, replace lines 1 through 7 with:

**"SECTION 3. EFFECTIVE DATE.** This Act is effective for taxable events occurring after June 30, 2015."

Renumber accordingly





**REPORT OF STANDING COMMITTEE**

**SB 2175: Agriculture Committee (Sen. Miller, Chairman) recommends AMENDMENTS AS FOLLOWS** and when so amended, recommends **DO PASS** and **BE REREFERRED** to the **Appropriations Committee** (6 YEAS, 0 NAYS, 0 ABSENT AND NOT VOTING). SB 2175 was placed on the Sixth order on the calendar.

Page 1, line 1, after "sections" insert "57-39.5-02 and"

Page 1, line 1, remove "and 57-43.2-19"

Page 1, line 2, after "to" insert "the transfer of revenue from the farm machinery gross receipts tax and"

Page 1, line 2, replace "and the special fuels excise tax" with "; and to provide an effective date"

Page 1, after line 3, insert:

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1. Tax under this chapter or chapter 57-39.2 or 57-40.2 has been paid on a previous sale;
2. Tax under section 57-39.5-06 has been paid under a previous lease;
3. Originally purchased outside this state and previously owned by a farmer;  
or
4. Has been under rental for three years or more."

Page 1, remove lines 13 through 23

Page 2, replace lines 1 through 7 with:

**"SECTION 3. EFFECTIVE DATE.** This Act is effective for taxable events occurring after June 30, 2015."

Renumber accordingly

**2015 SENATE APPROPRIATIONS**

**SB 2175**

# 2015 SENATE STANDING COMMITTEE MINUTES

## Appropriations Committee Harvest Room, State Capitol

SB 2175  
2/9/2015  
Job #23501

- Subcommittee  
 Conference Committee

Committee Clerk Signature

*Emmery Brothberg for Alice DeLger*

### Explanation or reason for introduction of bill/resolution:

A BILL for an Act to amend NDCC relating to the transfer of revenue from the farm machinery gross receipts tax and fuel tax refunds

### Minutes:

Attachments: #1- 3

**Chairman Holmberg** called the committee to order on Monday, February 09, 2015, at 11:15 am in reference to SB 2175. All committee members were present. Chris Kadmas, Legislative Council and Becky Deichert, OMB were also present.

**Senator Jerry Klein, District 14** introduced the bill regarding the state board of Agricultural Research & Education. SB 2175 bill is to replenish the ARF (Agriculture Research Fund) back to where it once was. It was established back in 1997 with a gas tax refund and back in 1997 it generated nearly \$800,000. As of last year, it only generated \$88,000. That money is put in a fund and administered by the SBARE and it is provided through a granting process. I introduced the bill to reinvigorate that fund and initially I had used the special fuels tax to bring back to what we believe would be a reasonable figure which would be \$2M for the biennium and a \$1M per year. There were some people who thought it was a wonderful idea, agriculture research multiplies out there and brings a lot of money back and helps provide for farmers to be on the roads. But in the meantime we've taken the money away from the political subdivisions that get that money, thus the amendment that I carried the other day provides for 2% of the sales tax on new machinery. However, over the weekend I have come to find the 2% falls way short so I'm just being upfront here that it's not near to \$2M that we were thinking about, so 5% would be more in line as to bringing \$1M into the fund. I would be looking for another amendment or your kind consideration, but of right now it would generate \$776,000.

**Chairman Holmberg:** So now, the money is going to come out of the general fund .

**Senator Klein:** It's a matter of replenishing that fund. I certainly believe that using the special fuels tax was a good way to do it, but then we heard about it being unconstitutional. Thus here we have the appropriation and the bill.

**Senator Robinson:** Two things: (1) You talked about the new machinery sales, but all the projections down significant are for net machinery sales to be down significantly with the agriculture economy down (2) Elaborate a little, you said this past year we generated \$88,000. Was that an annual or biannual?

**Senator Klein:** It would be the annual amount of money received into the fund. We had initially nearly \$800,00 back in 1997 back in the day when everyone had gas equipment on their farm, but the movement has been to diesel, so there has been a shift. All I was asking for bring that shift back into the way currently is working, that gas tractors aren't used anymore, diesels are, let's just use that diesel fund and bring back those dollars but we ran into some opposition.

**Mike Beltz, Chairman of SBARE:** testified in favor of SB 2175

The Purpose of the Fund (see attachment #1). SBARE (State Board of Agriculture Research) is responsible for administering the fund.

(9.44) 2015 LEGISLATIVE REPORT (see attachment #2). The funding is approximately \$20M, 5% of 20 gets you the \$1M.

We propose for your consideration to make it a fixed number rather than a percentage because we've dealt with problems in the past.

**Chairman Holmberg:** What you're saying is that the line should be depending on what the number is, that the first \$1M goes into this fund rather than a percentage? I don't know what the prime sponsor's attitude is towards this suggestion.

**Senator Robinson:** Certainly we've have benefited from agriculture research, is the formula we are looking at here is that comparable to other states? In terms of our investment in agriculture research, how do we compare with our neighboring states?

**Mike Beltz:** I don't know what's available in other states as far as an ARF similar to what we have, as to what other states do for funding, it would run the gamut. A state like SD would certainly be very supportive of the agriculture as well as MN and MT. I can't speak to their particular numbers.

**Neal Fisher, Administer of ND Wheat Commission:** Testified in favor of SB 2175. The Wheat Commission is one of those three commodities in the state that benefit from this, and I would say that at one time the amount of this funding for wheat projects was more than \$185,000. The gentleman on that committee is now splitting up \$40,000. So the origination of the funding has declined considerably, it's in need of refueling; we have great accomplishments from this fund. Back in 1997, perhaps the impression was that the commodity groups and producers themselves were not doing enough to invest their own dollars in the process.

This is a subset of the State Board of Agriculture Research and Education; it has sort of short term approaches. Much of the funding that comes from SBARE is a two year project. There has been benefit from this. The wheat commission is the matching agency; we've been trying to match at a larger rate than we are required under law, thank you for your help in providing.

**Senator Wanzek:** I'm trying to think of how to make a positive statement of support and turn it into a question. Today, the new advancements in technology and the research that's needed is even more important and imperative than it probably was then. Isn't there return on invest in what these dollars do?

**Mr. Fisher:** We feel that there is, that's why producer dollars are invested right along with the general fund from ND, the federal dollars and the industry money that comes into the overall pool. In this case, I look back at the technology to how apply the technology to how you apply a fungicide and research that went into developing new fungicides have made us more effective. At the same time, we had a new outbreak of Scab. So we now have southwest ND producers who are now having to adapt to those technologies that used to be a eastern problem. There is a great potential for return on your investment from the industry.

**Senator Mathern:** I've been reading about wheat and that there is a development going back to old varieties that some of these great new varieties have had some other effects that aren't always so positive. Would any of this money be used for that?

**Mr. Fisher:** In this case, no. However, in reference to Senator Wanzek regarding new technology, they are using the genetics from these older products to find new sources of resistance.

**Senator Carlisle:** Why wouldn't this have been in the agriculture extension budget? This sounds like a good bill that could find funding source in the Agriculture Extension budget.

**Mr. Fisher:** We talk about return of investment, there is a huge reason why we do support these key industries since it is the basis of our economy. I think that this year with new threats in scab and other dieses, I think there reason for this. The approach here is to fill the gaps between the biannual appropriation this is a small slice of the overall agriculture research funding.

**Senator Robinson:** Related question, you indicated a \$2B impact form wheat this past year, how does it compare with the last three years? What are your projections with corn?

**Mr. Fisher:** That's always the question that we have. We have had in recent years the high yield, high quality. We are the wheat state superseding Kansas again so we've done very well. When you have price to go along with that which was better two eyars ago than it is today, we saw some of those numbers approach \$3B or a little excess for just the cash receipts. This year's will be closer to \$2B and yet we have fallen a little less far in price as opposed to corn and soybeans, so we think we'll gain back a few acres in wheat. Had we not had the scab this year, we think we could have had more recovery in the wheat acreage. We're at about 8million acres of wheat.

**Senator Heckaman:** I am not sure who wants to answer this, but I have a question on the research fund itself. On the report that you gave us, there's some projects that were funded. Are there other projects that didn't get funded?

**Mike Beltz:** There would be more projects involved, but it can only go as far as the money allows but it would be considerably more than what was funded. The ARF fund is stable and we can rely on it every year whereas other funds are dependent on prices.

**Chairman Holmberg:** Those who haven't worked on the budget of the extension service know that there are time when this body has weighed in and redirected focus. In the money coming in for Soybean research, they didn't have any soybean research, so we mandated that they use it to research.

**Vice Chairman Bowman:** What you're telling us is that the money that is invested in research in this bill is the money that will keep us going when the oil wells go dry, because if we are getting a return on investment like you just said and we keep that up, the pot will grow for us because of all the business activity that happens in agriculture. This is one bill that has hope to bring us back a lot more over a period of time.

**Mike Beltz:** You are correct, it is a mechanism. It is a HB 1020 which deals with funding for agriculture and extension service.

**Scott Rising, Soybean Growers Association:** (26:15) Testified in favor of SB 2175. My perception of the value of this is that it guarantees that the less quantity crops currently growing will have the opportunity to grow and thrive in that environment. I'm going to assume that one time in ND that Soybeans were in that group.

**Lyle Warner, SBARE committee, Lamb and Wool Association:** (27:02) Testified in favor of SB 2175. Over the years, these funds have been used to attract young people in research. We have attracted more masters and doctorate students than any other state.

**Julie Ellingson, ND Cattlemen's Association:** (28:12) Testified in favor of SB 2175.

**Senator Wanzek:** I am assuming none of those who've spoken, it doesn't matter where the money comes from?

**Ms. Ellingson:** Correct.

**Senator Wanzek:** It made more sense to me that it should come from the Excise Fuel tax comes out of the diesel fund. This is tax that we pay on diesel fuel that we burn in the field, we aren't burning it on the road. We used to get the refund back for gas, but we don't drive gas tractors anymore. That just seemed the make a lot more sense to me, but if that isn't going to work, we'll make this work.

**Ms. Ellingson:** I think the important think the most important thing is that we reinvigorate a fund that has diminished over time. Again in keeping agriculture strong and having that new information and be able to adapt technology makes us competitive and able to do our job and so maybe the funding source is less important, but having strength in a fund is what is important to those of us in this room.

Testimony from **Dan Woglsand, Executive director of the ND Grain Grower's Association** (see attachment #3).

**Chairman Holmberg** closed the hearing on SB 2175

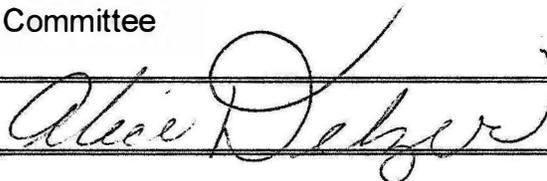
# 2015 SENATE STANDING COMMITTEE MINUTES

**Appropriations Committee**  
Harvest Room, State Capitol

SB 2175  
2/13/2015  
Job # 23818

- Subcommittee  
 Conference Committee

Committee Clerk Signature



## Explanation or reason for introduction of bill/resolution:

A BILL for an Act to amend NDCC relating to the transfer of revenue from the farm machinery gross receipts tax and fuel tax refunds. ( Do Pass as Amended)

## Minutes:

Attachment # 1

**Chairman Holmberg** called the committee to order on Friday, February 13, 2015 in regards to SB 2175. All committee members were present. Brady Larson, Legislative Council and Chris Kadrmaz, Legislative Council and Tammy Dolan, OMB were also present.

**Senator Wanzek** presented Attachment #1, Proposed Amendment #15.0257.02001. 2<sup>nd</sup> by Senator Carlisle. Senator Wanzek explained the amendments.

**Senator Carlisle** asked if he is comfortable the way this amendment sets up, it replenished the fund, is that right?

**Senator Wanzek:** Yes, it replenishes and provides a consistent certainty that's it's going to be there. The fund had gone down from roughly \$1M, kept going down to where there is nobody using gas in machinery anymore on the farm. I felt it was more appropriate from the other fund but that's not going to work.

**Senator Gary Lee:** Where is the money coming from; the \$1M a year coming from?

**Senator Wanzek:** it's coming from the sale tax that is imposed upon farm machinery and irrigation equipment, used exclusively for agricultural purposes.

**Chairman Holmberg** and it comes out before it goes into other funnels which caused trouble constitutionally, I guess.

**Senator Wanzek:** With the excise tax. The excise tax was the question of the constitutionality of it too.

**Senator Mathern:** So eventually, is this a hit to the general fund income?

**Senator Wanzek:** Yes. It is a hit to the general fund in sales tax. It's sales tax that comes from farm machinery that they identified that sales tax and said they were going to take 2% of that but they weren't certain what the 2% would actually generate so we are just making it more certain that it's \$1M per year for the Ag. research fund.

**Chairman Holmberg:** All in favor of the amendment say aye. It carried.

**Senator Wanzek moved a Do Pass as Amended. 2<sup>nd</sup> by Senator Erbele.**

**Chairman Holmberg:** Call the roll on a Do Pass as Amended on 2175.

A Roll Call vote was taken. Yea: 13; Nay: 0; Absent: 0. Senator Klein from Ag. Committee will carry the bill. The hearing was closed on SB 2175.

15.0257.02001  
Title.03000

Prepared by the Legislative Council staff for  
Senator Wanzek

February 9, 2015

2/13/15  
Jone

PROPOSED AMENDMENTS TO ENGROSSED SENATE BILL NO. 2175

Page 1, line 10, replace "Two percent of the taxes" with "Taxes"

Page 1, line 11, replace "one million dollars in a state fiscal year" with "two million dollars in a biennium"

Renumber accordingly

Date: 2-13-15  
Roll Call Vote #: 1

2015 SENATE STANDING COMMITTEE  
ROLL CALL VOTES  
BILL/RESOLUTION NO. 2175

Senate Appropriations Committee

Subcommittee

Amendment LC# or Description: 15.0257.02001

Recommendation:  Adopt Amendment  
 Do Pass     Do Not Pass     Without Committee Recommendation  
 As Amended     Rerefer to Appropriations  
 Place on Consent Calendar  
Other Actions:  Reconsider     \_\_\_\_\_

Motion Made By Wanzek    Seconded By Carlisle

Senators	Yes	No	Senators	Yes	No
Chairman Holmberg			Senator Heckaman		
Senator Bowman			Senator Mathern		
Senator Krebsbach			Senator O'Connell		
Senator Carlisle			Senator Robinson		
Senator Sorvaag					
Senator G. Lee					
Senator Kilzer					
Senator Erbele					
Senator Wanzek					

Total (Yes) \_\_\_\_\_ No \_\_\_\_\_

Absent \_\_\_\_\_

Floor Assignment \_\_\_\_\_

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

*voice vote carried*

Date: 2-13-15  
 Roll Call Vote #: 2

**2015 SENATE STANDING COMMITTEE  
 ROLL CALL VOTES  
 BILL/RESOLUTION NO. 2175**

Senate Appropriations Committee

Subcommittee

Amendment LC# or Description: \_\_\_\_\_

Recommendation:  Adopt Amendment  
 Do Pass     Do Not Pass     Without Committee Recommendation  
 As Amended     Rerefer to Appropriations  
 Place on Consent Calendar  
 Other Actions:  Reconsider     \_\_\_\_\_

Motion Made By Wanzek    Seconded By Erbele

Senators	Yes	No	Senators	Yes	No
Chairman Holmberg	✓		Senator Heckaman	✓	
Senator Bowman	✓		Senator Mathern	✓	
Senator Krebsbach	✓		Senator O'Connell	✓	
Senator Carlisle	✓		Senator Robinson	✓	
Senator Sorvaag	✓				
Senator G. Lee	✓				
Senator Kilzer	✓				
Senator Erbele	✓				
Senator Wanzek	✓				

Total (Yes) 13    No \_\_\_\_\_

Absent \_\_\_\_\_

Floor Assignment Ag Klein

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

**REPORT OF STANDING COMMITTEE**

**SB 2175, as engrossed: Appropriations Committee (Sen. Holmberg, Chairman)** recommends **AMENDMENTS AS FOLLOWS** and when so amended, recommends **DO PASS** (13 YEAS, 0 NAYS, 0 ABSENT AND NOT VOTING). Engrossed SB 2175 was placed on the Sixth order on the calendar.

Page 1, line 10, replace "Two percent of the taxes" with "Taxes"

Page 1, line 11, replace "one million dollars in a state fiscal year" with "two million dollars in a biennium"

Renumber accordingly

**2015 HOUSE FINANCE AND TAXATION**

**SB 2175**

# 2015 HOUSE STANDING COMMITTEE MINUTES

Finance and Taxation Committee  
Fort Totten Room, State Capitol

SB 2175  
3/18/2015  
25050

- Subcommittee  
 Conference Committee

Committee Clerk Signature

*Mary Brucker*

## Explanation or reason for introduction of bill/resolution:

A bill relating to the transfer of revenue from the farm machinery gross receipts tax and fuel tax refunds.

## Minutes:

Attachments #1, 2, 3, 4

**Chairman Headland:** Opened hearing.

**Senator Klein:** Introduced bill. When heard this bill in the ag committee. We established a tax refund on gasoline and that was used and put into this research fund. Over the years farm machinery has gone from gasoline to diesel and that fund in the beginning was \$714,000 as of 2013 it was down \$88,000. That money is then divided among various commodity groups and they are tasked with having grants written against that to do various research. The other idea was that it was a research program and those programs were available quickly. Initially I proposed to take some money out of the special fuels fund but met with a bit of resistance. We moved from that to the bill you see before us which provides taking \$2 million a biennium out of the sales tax on new machinery sales? The idea here is to prop up those dollars because we believe it's an important fund used for the producers of the state and we need to continue to do that.

**Chairman Headland:** Is there any testimony in support?

**Mike Beltz, State Board of Ag Research and Education and a farmer in Hillsboro:** Distributed written testimony in support; see attachments #1 and #2.

**Chairman Headland:** Is there an ending fund cash balance?

**Mike Beltz:** Anything that doesn't get used carries over to the next year so there really is never an ending balance.

**Chairman Headland:** How much general fund money is in the budget for SBARE (State Board of Agricultural Research and Education)?

**Mike Beltz:** SBARE does not have a general fund appropriation; we operate out of funds from the experiment station and the extension service. The maximum set out in statute is \$50,000 for the operation of our board.

**Jerry Doan, McKenzie and first chairman of the State Board of Agricultural Research and Education:** We are the only land grant university that has 10 producers with budget authority over all those research, extension, operations, and the main station. We can be proud of that. The ag research fund came out of those discussions. This is a really positive thing for agriculture. I would encourage you to look hard at this.

**Chairman Headland:** One of our struggles will be finding the \$2 million out of the general fund because we have a lot of work to do in that area.

**Jerry Doan:** I understand the issues with the budget. We just ask that you do the best you can.

**Lyle Warner, Baldwin and is representing SBARE and North Dakota Lamb and Wool Producers Association:** We are in strong support of this. We went from \$800,000 to \$80,000 so it is to the point where we have to do something about it or drop it because it's not worth anybody's time when the money gets divided out with these small grants. We've been very fortunate having the personnel we have in North Dakota's sheep industry. As of late we have attracted more graduate students at the masters and doctorate level than any other state in the United States. When we get these funds made available to our industry it really leverages the ability of these doctors in the program to do valuable research. We are doing some of the best research in the United States and have brought our industry to one of the major states for research in the United States at the present time. I ask for your favorable support of this bill.

**Dan Wogsland, North Dakota Grain Growers Association:** Distributed written testimony in support; see attachment #3.

**Chairman Headland:** Has part of the funding in the past been from private industry as well?

**Dan Wogsland:** I can't answer that but there are folks here that can.

**Mike Beltz:** It is a grant process so it is collaboration.

**Vice Chairman Owens:** What is the cost share?

**Mike Beltz:** Twenty five percent for the major crops and there's no cost share for new and emerging or livestock industry.

**Vice Chairman Owens:** \$.25 on the dollar?

**Mike Beltz:** Yes.

House Finance and Taxation Committee

SB 2175

March 18, 2015

Page 3

**Scott Rising, North Dakota Soybean Growers Association:** Distributed written testimony in support; see attachment #4.

**Chairman Headland:** Is there further support? Is there any opposition?

# 2015 HOUSE STANDING COMMITTEE MINUTES

Finance and Taxation Committee  
Fort Totten Room, State Capitol

SB 2175  
3/23/2015  
25251

- Subcommittee  
 Conference Committee

Committee Clerk Signature

*Mary Brucher*

## Explanation or reason for introduction of bill/resolution:

A bill relating to the transfer of revenue from the farm machinery gross receipts tax and fuel tax refunds.

## Minutes:

No attachments.

Chairman Headland: This is for agriculture research. I'm going to be coming back with an amendment. My proposal will be that we'll continue the fund but it will have to come from donated sources because we don't have money to fund this at this time.

# 2015 HOUSE STANDING COMMITTEE MINUTES

Finance and Taxation Committee  
Fort Totten Room, State Capitol

SB 2175  
3/24/2015  
25324

- Subcommittee  
 Conference Committee

Committee Clerk Signature

*May Brucher*

## Explanation or reason for introduction of bill/resolution:

A bill relating to the transfer of revenue from the farm machinery gross receipts tax and fuel tax refunds.

## Minutes:

Attachment #1

**Chairman Headland:** Distributed proposed amendments 15.0257.03001; see attachment #1.

**Emily Thompson, Legislative Council:** Explained the proposed amendments. The first section of the bill has been removed because all that was being done was the addition of new language and we are no longer looking to collect up to \$2 million from the 3% gross receipts tax on farm machinery and irrigation equipment to transfer into the agriculture research fund. The new section deals with the agricultural research fund. This is amending the section that deals with the agricultural research fund and allowing the fund to accept donations.

**Representative Steiner:** With the Veterans Affairs we had some land donated to the veteran's home and there was an oil well there that started producing millions of dollars. If a farmer would bequest his land and minerals to agriculture research and it would end up being millions of dollars the legislative management felt that it was greater than needed in that fund don't we need an escape clause where legislative management or someone can make a change?

**Emily Thompson:** That's not currently in the amendment. If the committee wishes to have additional changes that could be added.

**Chairman Headland:** We can look at that but I don't know why we would have any say in it at all even if it turns out to be more money than they need. If they're going to bequest their land and minerals to the agriculture research fund I don't know why it would be state's business to intervene in any way.

**Representative Froseth:** Wouldn't this amendment cover that?

**Emily Thompson:** Yes, those could all be accepted. The language as far as cutting off those at a certain amount isn't drafted in here.

**Representative Steiner:** I still think if the legislative body felt that if it was excessive we should have an escape clause in here.

**Chairman Headland:** That is certainly true. I don't know how you would write it in unless you put in a cap on how much you would allow to flow there then the rest would have to go somewhere else.

**Representative Steiner:** You could put something in saying the total funds may be examined by legislative management and caps set at certain future points.

**Chairman Headland:** I still question whether we should medal in a family decision if they choose to give their private property on behalf of this fund.

**Representative Hatlestad:** Do you think we could legally interfere with the family's bequest?

**Emily Thompson:** By placing a cap on the fund right away you may be able to cut off something that was providing additional revenue. Generally if you have a fund cap out at a certain amount and there are excess amounts coming in over that you would have that spill over into some other specified fund. It almost seems that the family would have the ability to condition that gift based on possible occurrences at the time it is given rather than a situation where it might produce an excessive amount of income and fill that fund up more than was intended.

**Representative Haak:** Is there any tax benefit for someone to donate to this fund?

**Emily Thompson:** Currently there is no credit attached to this fund for the donations.

**Representative Haak:** I feel that if we limit the amount in there they are not getting any tax break or donation break for this and we would turn people away from donating to it. I would struggle with putting a limit or a cap on it.

**Representative Steiner:** My experience on government and veterans affairs over the last three sessions there's been quite a bit of consternation about a family who donated some land about 20 years ago with no anticipation. The appropriations committee has a lot of heartburn about how much money could you put into Lisbon. If there's no heartburn that this fund is unlimited and you could have \$100 million in agriculture research then I guess you just let it roll and see what happens. But 20 years from now there could be an appropriator saying that fund is too high and we didn't head it off at the beginning.

**Chairman Headland:** I think in the extensions budget we've got \$100 million that is probably put towards agriculture research so maybe that could all be replaced with this fund if it was ever to go that high. I don't know that it is spelled out. Once it's deposited with the treasurer and it's put in on behalf of agriculture research who's in charge of that money; the legislature or SBARE?

**Emily Thompson:** It goes to the treasurer so it is up to them to make the disbursements.

**Representative Trottier:** In the veterans fund is that principle and interest that can be spent?

**Representative Steiner:** I believe it was the income from the well.

**Representative Trottier:** The principle and the interest can be spent here. It says in here any interest earned by the fund is appropriated so is that any interest also?

**Chairman Headland:** That's a question that when we put this together we didn't consider. Maybe we could deposit anything in excess of a certain number in a special fund to be used for agriculture research as appropriated by the legislature.

**Representative Haak:** In an email I received he said the scientists doing the research didn't even bother to prepare and submit a proposal because the funding was at such a small level. I feel like with the donations and the ability for people to make these gifts on behalf of agriculture research there are a lot of farmers and ranchers in North Dakota who would benefit for that so this would definitely help with that. There is a high demand for agriculture research and is something very valued in the state.

**Representative Steiner:** Also south of Richardton there was a farmer who insisted that when he dies his farm go to extension service. There is potential for this and there are a lot of farmers in this point in their life where they could bequest a farm. I think it's a great way to fund research if that's what the farmer wants to do with his money. I think if you leave it open ended maybe you're going to think they don't need \$10 million for research and only needed \$2 million.

**Chairman Headland:** Could we write the language so that any amount deposited over whatever number this committee would choose would be subject to legislative appropriations?

**Emily Thompson:** We could incorporate that language in the bill.

**Vice Chairman Owens:** We could just say everything over \$200 million goes to legislature. If we would ever get anywhere near there I can see doing away with bequests because they wouldn't know where the money was and they wouldn't want the state to have money.

**Chairman Headland:** We could have the language tight enough where it would have to go to extension or research. It could supplant legislative appropriations.

**Vice Chairman Owens:** Having that stated they know where the money goes and they aren't worried about somebody else getting the money and doing anything they want with it.

**Representative Kading:** Who currently uses this fund? How is it funded?

**Chairman Headland:** It's been funded in the past by special fuels tax and those monies have dried up so the senate decided they would take some of the farm new machinery sales tax. That just goes into the general fund so that wasn't going to work. This was a way to allow for the fund to continue and hope they will go out and raise some money because research is important.

**Vice Chairman Owens:** We're dealing with NDSU and professors in the university so every time they do a proposal and say they need money 41% goes to the university and has nothing to do with the research. The rest of it is used for the research and paying the people. If we really wanted to do this I think \$1-2 million is too low; I'm thinking \$5 or 6 million is better.

**Chairman Headland:** I wouldn't have any problem doing \$2-4 million.

**Representative Klein:** I have a problem with this. Agriculture research is very important to this state. We're basically leaving them high and dry.

**Chairman Headland:** That's just for this particular fund. There is still \$100 million in the extension budget for research. This is something used by SBARE to help commodity groups for specific projects. I don't think it's every gotten to \$2 million or ever been above it. Emily, could you further amend this amendment to allow for a deposit of anything in excess of \$4 million which would be subject to legislative appropriations for extension and research?

**Emily Thompson:** I could add that in.

**Representative Schneider:** I think that amount is way too low. If you're going to have this be a credible research fund you could put it up considerably higher and still meet the concerns of Representative Steiner. You don't want to have a chilling effect on donors. If they see the legislature is going to be able to move the money that they have in their bequest they may not donate it in that way. I would say \$20 million would be more conducive for donors.

**Representative Strinden:** Does the language we are correcting right now specify whether it's per donation or total in the fund?

**Emily Thompson:** No, there's not a specific cap right now in the language.

**Representative Steiner:** If we put something in like this fund may be used by the legislature to fund agriculture extension and agriculture related research projects.

**Chairman Headland:** We have to keep in mind that we're only able to do what this fund will do for two years. Any legislature in the future could come in and change the fund. I would prefer to keep it at a lower amount; something similar to what they're using now because I don't want to have to deal with a slush fund that the universities are going to go after because of who would be in charge of it.

**Representative Trottier:** There could be some disease or something in grain or livestock that \$2 million wouldn't even be enough to research that.

**Chairman Headland:** If that happened under the current bill what would they do? The current bill is \$2 million.

**Representative Trottier:** I just went to a seminar and they said it would be devastating if there was a foot and mouth disease brought into the United States. It could wipe out the economy and the banks would all go under. If you limit it to \$2 million there could be an emergency where that money just wouldn't cover it.

**Chairman Headland:** It may be a stretch to think this fund would ever have a \$100 million or the opportunity for a foot and mouth disease. This is my amendment we're contemplating. I'm going to further amend it how I think it's going to read and we'll talk it about it. Once there's a number in there we can easily change that number.

# 2015 HOUSE STANDING COMMITTEE MINUTES

## Finance and Taxation Committee

Fort Totten Room, State Capitol

SB 2175  
3/24/2015  
25345

- Subcommittee  
 Conference Committee

Committee Clerk Signature



### Explanation or reason for introduction of bill/resolution:

A bill relating to the transfer of revenue from the farm machinery gross receipts tax and fuel tax refunds.

### Minutes:

Attachment #1

**Emily Thompson, Legislative Council:** Distributed proposed testimony 15.0257.03002 and explained; see attachment #1. This is a revision of the amendment we looked at this morning. This creates a second fund called the supplemental extension and research fund. At any point when the funding in the agricultural research fund reaches a \$2 million threshold anything over that amount would go into the second fund, the supplemental extension and research fund. Money in the fund may be expended for purposes of extension service functions or research. It is subject to legislative appropriation so at any time during either a special or regular session the legislature may choose to appropriate these funds.

**Representative Haak:** If at a future date this fund gets bigger can the legislature go back in and decide to increase it to \$5 million due to demand?

**Emily Thompson:** Yes, the legislature could amend that.

**Chairman Headland:** The reason I went with \$2 million is because this money goes to SBARE to distribute for research and is separate from extension. They've never had \$2 million before so I think that will be satisfactory.

**Representative Dockter:** Made a motion to adopt the amendment .03002.

**Representative Steiner:** Seconded.

**Voice vote:** Motion carried.

**Vice Chairman Owens:** Made a motion for a do pass as amended.

**Representative Dockter:** Seconded.

House Finance and Taxation Committee

SB 2175

March 24, 2015

Page 2

**Roll call vote: 13 yes 0 no 1 absent**

**Motion carried for a do pass as amended.**

**Representative Strinden will carry this bill.**

  
3/24/15

PROPOSED AMENDMENTS TO REENGROSSED SENATE BILL NO. 2175

Page 1, line 1, replace "57-39.5-02" with "4-05.1-20"

Page 1, line 2, after "to" insert "the agricultural research fund, the creation of the supplemental extension and research fund, and"

Page 1, line 2, remove "the farm machinery gross"

Page 1, line 3, remove "receipts tax and"

Page 1, replace lines 5 through 24 with:

**"SECTION 1. AMENDMENT.** Section 4-05.1-20 of the North Dakota Century Code is amended and reenacted as follows:

**4-05.1-20. Agricultural research fund - Supplemental extension and research fund - Continuing appropriation.**

1. The agricultural research fund is a special fund in the state treasury. The state board of agriculture research and education may receive and accept in the name of the state any funds that are offered or become available from any federal grant or appropriation, private gift, bequest, or donation. Any grants, appropriations, private gifts, bequests, or donations to the fund must be paid to the state treasurer who shall credit that amount to the agricultural research fund. The moneys in the fund must be expended for purposes of agricultural research. Any interest earned by the fund is appropriated to the state board of agricultural research and education. The fund balance may not exceed two million dollars and any excess amount must be transferred to the supplemental extension and research fund.
2. The supplemental extension and research fund is a special fund in the state treasury. The moneys in the fund may be expended for purposes of extension service functions or research to legislative appropriation."

Page 2, line 10, replace "This" with "Section 2 of this"

Re-number accordingly

Date: 3-24-15  
Roll Call Vote #: 1

2015 HOUSE STANDING COMMITTEE  
ROLL CALL VOTES  
BILL/RESOLUTION NO. 2175

House Finance and Taxation Committee

Subcommittee

Amendment LC# or Description: 15.0257.03002

Recommendation:  Adopt Amendment  
 Do Pass     Do Not Pass     Without Committee Recommendation  
 As Amended     Rerefer to Appropriations  
 Place on Consent Calendar  
Other Actions:  Reconsider     \_\_\_\_\_

Motion Made By Rep. Darter    Seconded By Rep. Steiner

Representatives	Yes	No	Representatives	Yes	No
CHAIRMAN HEADLAND			REP HAAK		
VICE CHAIRMAN OWENS			REP STRINDEN		
REP DOCKTER			REP MITSKOG		
REP TOMAN			REP SCHNEIDER		
REP FROSETH					
REP STEINER					
REP HATLESTAD					
REP KLEIN					
REP KADING					
REP TROTTIER					

Total (Yes) \_\_\_\_\_ No \_\_\_\_\_

Absent \_\_\_\_\_

Floor Assignment \_\_\_\_\_

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

*Voice vote - Motion carries.*

Date: 3-24-15  
Roll Call Vote #: 2

2015 HOUSE STANDING COMMITTEE  
ROLL CALL VOTES  
BILL/RESOLUTION NO. 2175

House Finance and Taxation Committee

Subcommittee

Amendment LC# or Description: 15.0257.03002

Recommendation:  Adopt Amendment  
 Do Pass  Do Not Pass  Without Committee Recommendation  
 As Amended  Rerefer to Appropriations  
 Place on Consent Calendar  
Other Actions:  Reconsider  \_\_\_\_\_

Motion Made By Rep. Owens Seconded By Rep. Dockter

Representatives	Yes	No	Representatives	Yes	No
CHAIRMAN HEADLAND	✓		REP HAAK	✓	
VICE CHAIRMAN OWENS	✓		REP STRINDEN	✓	
REP DOCKTER	✓		REP MITSKOG	AB	
REP TOMAN	✓		REP SCHNEIDER	✓	
REP FROSETH	✓				
REP STEINER	✓				
REP HATLESTAD	✓				
REP KLEIN	✓				
REP KADING	✓				
REP TROTTIER	✓				

Total (Yes) 13 No 0

Absent 1

Floor Assignment Rep. Strinden

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

**REPORT OF STANDING COMMITTEE**

**SB 2175, as reengrossed: Finance and Taxation Committee (Rep. Headland, Chairman)** recommends **AMENDMENTS AS FOLLOWS** and when so amended, recommends **DO PASS** (13 YEAS, 0 NAYS, 1 ABSENT AND NOT VOTING). Reengrossed SB 2175 was placed on the Sixth order on the calendar.

Page 1, line 1, replace "57-39.5-02" with "4-05.1-20"

Page 1, line 2, after "to" insert "the agricultural research fund, the creation of the supplemental extension and research fund, and"

Page 1, line 2, remove "the farm machinery gross"

Page 1, line 3, remove "receipts tax and"

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2. The supplemental extension and research fund is a special fund in the state treasury. The moneys in the fund may be expended for purposes of extension service functions or research to legislative appropriation."

Page 2, line 10, replace "This" with "Section 2 of this"

Renumber accordingly

**2015 CONFERENCE COMMITTEE**

**SB 2175**

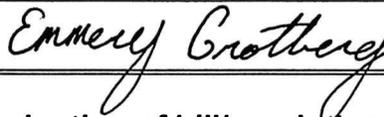
# 2015 SENATE STANDING COMMITTEE MINUTES

**Agriculture Committee**  
Roosevelt Park Room, State Capitol

SB 2175  
4/6/2015  
Job # 25840

Subcommittee  
 Conference Committee

Committee Clerk Signature



## Explanation or reason for introduction of bill/resolution:

Relating to fuel tax refunds and special fuels excise tax

## Minutes:

Attachments: n/a

**Chairman Klein** opened the meeting on SB 2175.

**Representative Klein:** I think it is beyond question that we need to put money into this fund which is probably one of the most successful bills that ever got passed. I have a question; related to that we are also stripping the APUC (Agricultural Products Utilization Commission) funds, shouldn't we at the same time be looking at that area which has also received some of the fuel tax money and has been reduced considerably?

**Senator Klein:** It would seem to me that last session, since those funds had been coming down we put in some general fund dollars. APUC was also complaining that their funds were continued to be diminished. That would be one thing I can do a little research on.

**Representative Klein:** If I recall, we took two cents for the APUC fund and they have done some good work for ND starting many of these Pride of Dakota projects. This is very similar coming out of that same area so maybe we should look at that one too.

**Senator Klein:** What we have left that has come from the house is a bill just to allow for the fund to receive grants and gifts. So there is no funding source left, correct? The gas tax is also gone?

**Representative Klein:** Correct. The gas tax is also gone.

**Senator Klein:** Once again the history was that in 1997, we started with \$714,000 in this fund and the fund is leveraged with dollars from various commodity groups. Initially it started with an attempt to use the Special Fuels tax. Over the years, farmers have moved away from gas equipment and moved to diesel. The money is going out of the gas tax fund into the diesel fund so it would seem to me that the diesel fund has more money than they should have and they owe agriculture the money back. In having done that, the DOT, the

counties, the cities, the transit was all in here and then someone said it was unconstitutional. We did pass it but in the Senate Appropriations committee, they came up with a funding source using some of the sales tax revenue from the sale of new machinery. I would still argue that research and agriculture go together and we need to provide that help.

**Representative Klein:** I don't think there is a question. You have the right source to tap for money, the question is how much. Our chairman of appropriations is pretty tight fisted so the question is how much to put into that fund and at the same time we should look at APUC.

**Senator Wanzek:** I still feel that the most logical place was the diesel fuel excise tax. We don't have much in gas tax refunds. The road people had some concerns about those funds not going to the roads. I hope at some point in time they recognize the value of the research that is going into agriculture and we might just have to do some investigative research to figure out where to get that money from.

**Representative Klein:** The problem with the road situation, whenever you talk about money from the roads, there is a protest. I think you have the right source because it is going to come out of the general fund one way or another. It is just a matter of how much we put in there

**Senator Wanzek:** When you say the right source, that would be the sales tax paid on new equipment?

**Representative Klein:** Correct.

**Representative Kading:** A sales tax on new machinery--is this a new tax or is this just rediverting current tax?

**Senator Wanzek:** It's not a new tax, it is identifying a tax farmers are paying and reinvest it into the Agriculture Research Fund.

**Senator Klein:** If we took money from the sales tax, do we run into the same issue when we suggested we were going to use the special fuels tax? Is it a cleaner approach?

**Dan Rouse, Legal Council to the State office of Tax Commissioner:** I think I would like to do some research and get a cleaner answer for you but I think there are a couple options for you.

**Senator Klein:** We had this discussion and we weren't totally opposed but there is a fine line.

**Dan Rouse:** I would be happy to work with you and your committee.

**Senator Klein:** We'll look into that and get some information on APUC.

**Senator Klein** adjourned the conference committee on SB 2175.

# 2015 SENATE STANDING COMMITTEE MINUTES

**Agriculture Committee**  
Roosevelt Park Room, State Capitol

SB 2175  
4/7/2015  
Job # 25874

Subcommittee  
 Conference Committee

Committee Clerk Signature



## Explanation or reason for introduction of bill/resolution:

Relating to fuel tax refunds and special fuels excise tax

## Minutes:

Attachments: #1 - 2

**Chairman Klein** opened the conference committee on SB 2175. Roll call was taken and all committee members were present.

**Senator Klein:** I visited with analysts upstairs, but at this point I haven't received anything. I did have a chat after the meeting briefly with some of the folks from the tax department and they did suggest that we stay away from special fuels because that is the area that would cause the anxiety. There is a section of code that may or may not apply. We want to put some monies in it.

**Senator Wanzek:** What I heard at our previous meeting was maybe the area where we identified in the senate to get some money, there wasn't total opposition. It sounded like the number was the issues as far as how many dollars. Can I propose a motion for \$1.5M?

**Representative Klein** moved that the house recede and further amend reengrossed SB 2175 version 15.0257.03000 keeping the house amendment from version 15.0257.04000 section 1 and also change \$2M to \$1.75M.

**Senator Wanzek** seconded the motion.

**Senator Wanzek:** So we are going to keep your amendment intact and add on what the new language to the senate version but change it to \$1.75M versus \$2M (see attachments #1 and #2).

**Representative Klein:** That is correct.

**A Roll Call vote was taken. Yea: 6; Nay: 0; Absent: 0.**

**Senator Klein** will carry the bill to the Senate floor.

**Representative Klein** will carry the bill to the House floor.

**Representative Klein** asked that when the amendment was drafted, the conference committee meet to sit down and discuss it.

**Senator Klein** adjourned the conference committee on SB 2175.

# 2015 SENATE STANDING COMMITTEE MINUTES

**Agriculture Committee**  
Roosevelt Park Room, State Capitol

SB 2175  
4/17/2015  
Job # 26206

Subcommittee  
 Conference Committee

Committee Clerk Signature

*Emmanuel Beotherg*

## Explanation or reason for introduction of bill/resolution:

Relating to fuel tax refunds and special fuels excise tax

## Minutes:

Attachments: n/a

**Chairman Klein** opened the conference committee on SB 2175. Roll call was taken and all committee members were present.  
Senators Klein, Wanzek, and Oban  
Representatives Klein, Kading, and Strinden

**Senator Klein:** I'm not actually sure if we have to reconsider our actions from the last conference committee report which never went to the floor.

**Representative Klein:** I move we reconsider our actions on the previous action we've taken on this bill.

**Senator Wanzek** seconded the motion.

**Voice vote was taken.**

**Motion carries.**

**Senator Klein:** We have the bill back to where we were, what we had done was provide \$1.75M in revenue; we've reconsidered our actions so we need to continue having discussion on what we have before us.

**Senator Klein:** Senator Wanzek has been looking for an alternative to the funding source, we've struggled a bit. There is similar language from the .03000 version that is on the extension budget.

**Representative Klein:** Similar language as you mentioned is in the extension budget in HB 1020 which is now in conference. I think the simplest way to handle this would be for the Senate to accede to the House amendment and when the bill comes up on the floor in the Senate, to kill the bill.

**Senator Klein:** I think we can understand the direction we are going here that we're not going to be able to find any 'low hanging fruit' that we are going to be able to put in this particular budget.

**Senator Wanzek:** I think ultimately if we can't find that place where everyone seems to be comfortable with funding, I think ultimately that's what we want to do because the way I understand and the way House has written it, we even lose the little bit of gas tax refund that we still get under the current law. I probably will come to that point if I don't find somewhere else, I know I have been looking through the special funds trying to see if I can identify another area. I haven't quite found that yet, I know there are some research funds that still are general fund dollars. I guess what I'm trying to say is that we might ultimately come to that but maybe we can wait a few more days to see if we can find another funding source.

**Senator Klein** said the committee would not be meeting on Saturday, April 18<sup>th</sup>.

**Representative Strinden:** So the House language that we added in that's permissive for fund raising, my understanding is after to Representative Klein that we actually don't need that because they can fund raise already. Is that correct?

**Senator Klein:** Yes. The language that is currently in there is all language that we currently can do. In fact, the way the research fund does work is that when a commodity group petitions for some of the money, they match it with some of their donations.

**Senator Wanzek:** If we come to that conclusion, I think the meeting will take less than five minutes.

**Senator Klein** stated that he would like to visit with Senator Bowman.

**Senator Klein** adjourned the conference committee on SB 2175.

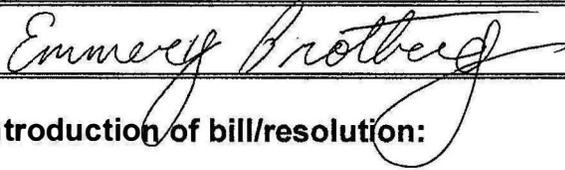
# 2015 SENATE STANDING COMMITTEE MINUTES

**Agriculture Committee**  
Roosevelt Park Room, State Capitol

SB 2175  
4/17/2015  
Job # 26218

Subcommittee  
 Conference Committee

Committee Clerk Signature



## Explanation or reason for introduction of bill/resolution:

Relating to fuel tax refunds and special fuels excise tax

## Minutes:

Attachments: n/a

**Chairman Klein** opened the conference committee on SB 2175 on April 17<sup>th</sup>, 2015 at 2:30 pm. Roll call was taken and Senator Wanzek was absent.

### Members:

Senators Klein, Wanzek (AB), and Oban  
Representatives Klein, Kading, and Strinden

A quorum was declared.

**Senator Klein:** I think we've had enough discussion on this and I would invite a motion.

**Senator Oban:** I move that the Senate accede to the House amendments on SB 2175 as reengrossed.

**Representative Klein** seconded the motion.

**A Roll Call vote was taken. Yea: 5; Nay: 0; Absent: 1.**

**Senator Klein** will carry the bill to the Senate floor.

**Representative Klein** will carry the bill to the House floor.

**Senator Klein** adjourned the conference committee on SB 2175.

April 7, 2015

TW  
4/7/15

PROPOSED AMENDMENTS TO REENGROSSED SENATE BILL NO. 2175

That the House recede from its amendments as printed on page 1018 of the Senate Journal and pages 1136 and 1137 of the House Journal and that Reengrossed Senate Bill No. 2175 be amended as follows:

Page 1, line 1, after "sections" insert "4-05.1-20,"

Page 1, line 1, after "57-39.5-02" insert a comma

Page 1, line 2, after the first "the" insert "agriculture research fund, the creation of the supplemental extension and research fund, and the"

Page 1, after line 4, insert:

**"SECTION 1. AMENDMENT.** Section 4-05.1-20 of the North Dakota Century Code is amended and reenacted as follows:

**4-05.1-20. Agricultural research fund - Supplemental extension and research fund - Continuing appropriation.**

1. The agricultural research fund is a special fund in the state treasury. The state board of agriculture research and education may receive and accept in the name of the state any funds that are offered or become available from any federal grant or appropriation, private gift, bequest, or donation. Any grants, appropriations, private gifts, bequests, or donations to the fund must be paid to the state treasurer who shall credit that amount to the agriculture research fund. The moneys in the fund must be expended for purposes of agricultural research. Any interest earned by the fund is appropriated to the state board of agricultural research and education. The fund balance may not exceed one million seven hundred fifty thousand dollars and any excess amount must be transferred to the supplemental extension and research fund.
2. The supplemental extension and research fund is a special fund in the state treasury. The moneys in the fund may be expended for purposes of extension service functions or research subject to legislative appropriation."

Page 1, line 10, replace "two" with "one"

Page 1, line 11, after "million" insert "seven hundred fifty thousand"

Renumber accordingly

**2015 SENATE CONFERENCE COMMITTEE  
 ROLL CALL VOTES**

BILL/RESOLUTION NO. SB 2175 as reengrossed

**Senate Agriculture Committee**

- Action Taken**
- SENATE accede to House Amendments
  - SENATE accede to House Amendments and further amend
  - HOUSE recede from House amendments
  - HOUSE recede from House amendments and amend as follows
  - Unable to agree, recommends that the committee be discharged and a new committee be appointed

Motion Made by: Representative Klein      Seconded by: Senator Wanzek

Senators	4-6	4-7		Yes	No	Representatives	4-6	4-7		Yes	No
Senator Klein	Y	Y		Y		Representative Klein	Y	Y		Y	
Senator Wanzek	Y	Y		Y		Representative Kading	Y	Y		Y	
Senator Oban	Y	Y		Y		Representative Strinden	Y	Y		Y	
Total Senate Vote				3		Total Rep. Vote				3	

Vote Count      Yes: 6      No: 0      Absent: 0

Senate Carrier Senator Klein      House Carrier Representative Klein

LC Number 15.0257 . 03003 of amendment

LC Number \_\_\_\_\_ . 05000 of engrossment

Emergency clause added or deleted

Statement of purpose of amendment

Change \$2M to \$1.75M

Add House amendment on SB 2175 from version 15.0257.04000 Section 1 to reengrossed SB 2175 version 15.0257.03000





**REPORT OF CONFERENCE COMMITTEE**

**SB 2175, as reengrossed:** Your conference committee (Sens. Klein, Wanzek, Oban and Reps. Klein, Kading, Strinden) recommends that the **SENATE ACCEDE** to the House amendments as printed on SJ page 1018 and place SB 2175 on the Seventh order.

Reengrossed SB 2175 was placed on the Seventh order of business on the calendar.

**2015 TESTIMONY**

**SB 2175**

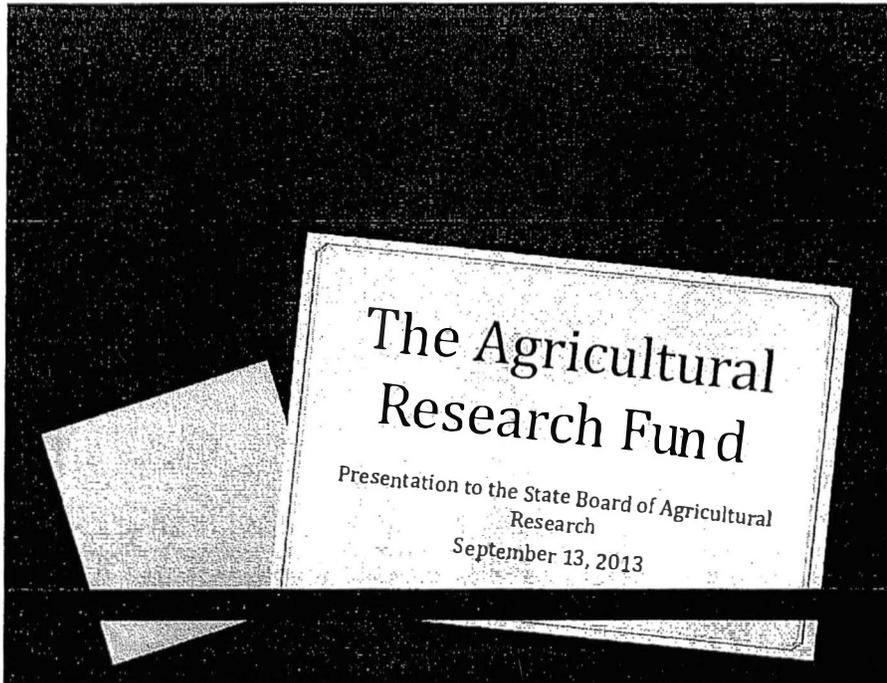
1/22/15

SB 2175

#1

9/12/2013

~~Mike Beltz~~ Mike Beltz, Chair of SBARE



## Purpose of the fund

- o The purpose of the grant program is to fund agricultural research that is responsive to identified needs in the state. The research should:
  - o Have a positive economic impact for producers of crops and livestock in North Dakota
  - o Improve the quantity and /or quality of agricultural productivity
  - o Lead to efficiencies in, or sustainability of agricultural productivity

## **The statute**

- o Created in 1997 by the State legislature at the same time the State Board of Agriculture Research was formed.
- o SBARE is responsible for administering the fund
- o Initially, revenue was derived from a gas tax refund (off-road vehicles) of \$0.04/gallon. Since then, general fund revenues have been added, as well as additional funds from the gas tax refund.

## **SBARE'S Responsibility**

- o Track the balance in the special fund available to the Ag Research Fund each fiscal year
- o Appointing granting committees
- o Apportioning the funds to the committees (based on cash receipts from farm marketing the previous fiscal year)
- o Issuing a call for proposals
- o Receiving full proposals
- o Receiving annual progress reports for continuing projects

## **SBARE's Responsibility** (Continued)

- o Forwarding proposals and annual reports to the granting committees
- o Insuring commodity granting committees meet and award grants expeditiously
- o Insuring successful proposals are in compliance with federal and state regulations that govern the conduct of research.
- o Maintaining records on all ARF grant awards and lists of research requests for accounting purposes.

## **Who's eligible to apply**

- o Eligible applicants are individuals, groups or institutions from either the public or the private sector.

## **Eligible Uses**

- ◊ Generally, for salaries (other than faculty salaries), equipment, supplies, travel, publication, data analysis and fees.
- ◊ Indirect costs are not allowed.

## **Matching funds**

- ◊ 25% for major crop projects
- ◊ 50% for out-of-state projects that have an in-state collaborator
- ◊ No match required for new & emerging crops and animal agriculture
- ◊ Can be in the form of cash, in-kind services and or fair market value of equipment, land or other resource.

## Granting committees

- o A majority must consist of producers
- o Each committee will include the director of the ND Ag Experiment Station and an individual who has a background in agricultural research and experience in the contemplated area, including major crops.
- o The producers serve as the voting members
- o Appointments are for two year terms
- o For the animal category: one each from
  - o ND Beef Commission
  - o ND Pork Producers
  - o ND Lamb & Wool Producers
  - o ND Bison Producers
- o For the new & emerging crops committee – a minimum of four producers
- o There is no per diem for serving on a committee

## How the committees operate

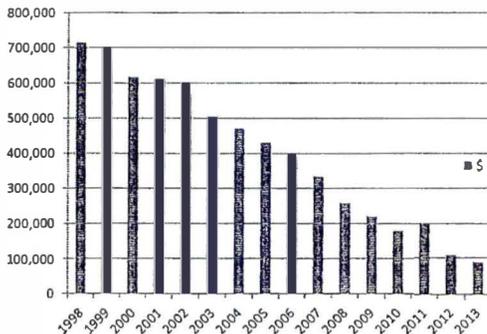
- o Have the authority to each establish its own operating procedures.
- o To save money, try to collaborate with the commodity groups as much as possible.
- o One call for proposals is issued in late September of each year, providing proposal due dates and dollars available for each committee.
- o A public meeting notice is filed.

## Evaluation process

- o Each committee member is provided a copy of the program guidelines prior to each meeting.
- o Evaluation criteria:
  - o Importance of the problem to the commodity/state
  - o Impact of the proposed outcome
  - o Innovation by generating new information
  - o Feasibility
  - o Matching funds

## Annual collections deposited into the Agricultural Research Fund

o 1998	\$714,787
o 1999	\$666,252
o 2000	\$617,585
o 2001	\$612,415
o 2002	\$568,231
o 2003	\$505,763
o 2004	\$470,999
o 2005	\$431,112
o 2006	\$389,528
o 2007	\$334,153
o 2008	\$259,118
o 2009	\$219,864
o 2010	\$179,573
o 2011	\$201,801
o 2012	\$107,850
o 2013	\$ 88,727



## **Distribution of funds**

- o A commodity receives an allocation if they have 2% or more of the cash receipts from farm marketings from the previous fiscal year
- o 70% to major crops; 18% to Animal Agriculture; 12% to New & Emerging Crops
- o Major crops is defined as those that have two percent or more of the cash receipts from farm marketings from the previous fiscal year.
- o The call for proposals is sent out in September of each year and is currently issued to universities in ND, SD, MT & MN

## 2013-2014 Allocations – Agricultural Research Fund

(Figures based on data from the ND Agricultural Statistics Service for 2012)

Commodity	Cash Receipts*	% of Cash Receipts (total)	% of Cash Receipts (major crops)	Allocations
Wheat	\$2,088,108	24%	28.3%	\$42,633
Soybean	1,740,627	20.0	23.9	36,005
Corn	1,543,696	17.7	21.2	31,937
Canola	421,411	4.8	5.8	8,737
Sugarbeet	366,016	4.2	5.1	7,683
Dry bean	313,027	3.6	4.5	6,779
Barley	307,311	3.5	4.3	6,479
Sunflower	300,184	3.4	4.4	6,629
Potato	180,366	2.0	2.5	3,767
Subtotal	\$7,260,746	83.2	100.00	\$150,649
Livestock	\$1,128,593	12.9%		
Flax	54,538	.6		
Hay	100,543	1.1		
Other	139,801	4.4		
Subtotal	\$1,423,475			
Total	\$8,684,221	100.00		

\*In thousands

Total Revenue:	\$88,726.52	(from ND Tax Dept as of 6/30/13)
Interest earned FY '12	\$397.95	(Per Dave Ruhland – 9-2013)
General Funds	\$150,000.00	
Returned funds	\$0.00	
Less set aside for admin.	(\$23,912.00)	
Available for grants	\$215,212.47	
Major crops (70%)	\$150,649.14	
Livestock (18%)	\$ 38,738.23	
New & Em. Crops (12%)	\$ 25,825.10	
Total:	\$215,212.47	

SB 2175  
1-22-15  
Mike Beltz

#2

# STATE BOARD OF AGRICULTURAL RESEARCH & EDUCATION

AGRICULTURAL RESEARCH FUND

**2015**

# LEGISLATIVE REPORT

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# The Agricultural Research Fund

## Overview

The Agricultural Research Fund (ARF) was created in 1997 by the North Dakota Legislature and is administered by the State Board of Agricultural Research and Education (SBARE). ARF is a special fund in the state treasury derived from check-offs indicated on the oil tax refund of \$0.04 per gallon of gasoline. In addition, the program has received \$150,000 of general fund dollars per fiscal year since July 1, 2008. The monies in this fund are expended for agricultural research. Annually, SBARE apportions the funds as follows:

- 70 percent to research activities affecting North Dakota agricultural commodities that account for a least two percent of the gross sales of all agricultural commodities grown or produced in the state. This category currently includes: barley, canola, corn, dry bean, potato, soybean, sugarbeet, sunflower and wheat.
- 18 percent to research activities affecting animal agriculture.
- 12 percent to research activities affecting new and emerging crops.

Funds from ARF encourage agricultural research responsive to identified needs in the state. Projects supported are those that exhibit potential to have a positive economic impact for producers of crops and livestock in North Dakota; improve the quality and/or quantity of agricultural commodities; and lead to efficiencies in, or sustainability of, agricultural productivity. Projects may be submitted by individuals, groups, or institutions of either the public or private sector. Matching funds are required for projects related to the agricultural commodities category.

SBARE appoints granting committees for each of the areas designated above, biennially. In all of the committees, the majority of the membership consists of producers. The producer-members are the voting members. Each of the committees also includes the director of the North Dakota Agricultural Experiment Station and an individual who has a background in agricultural research in the contemplated area, including major crops. These members are non-voting members.

Since 1997, the ARF has allocated \$6,596,513 to 690 research projects. The following is an accounting of funds available for grants per year and the number of projects funded:

- 1998-1999 \$556,790.30 to 45 projects
- 1999-2000 \$679,786.76 to 66 projects
- 2000-2001 \$616,252.76 to 59 projects
- 2001-2002 \$567,585.00 to 66 projects
- 2002-2003 \$530,731.00 to 54 projects
- 2003-2004 \$468,027.00 to 55 projects
- 2004-2005 \$425,617.00 to 47 projects
- 2005-2006 \$405,072.00 to 47 projects
- 2006-2007 \$367,508.00 to 42 projects
- 2007-2008 \$464,347.00 to 42 projects
- 2008-2009 \$384,784.00 to 34 projects
- 2009-2010 \$338,498.00 to 35 projects
- 2010-2011 \$306,041.00 to 34 projects

- 2011-2012 \$323,642.00 to 35 projects
- 2012-2013 \$161,831.00 to 29 projects

Further information on ARF and the application forms can be found on the Internet at [www.ndsu.nodak.edu/sbare/](http://www.ndsu.nodak.edu/sbare/).

# ***Animal Agriculture***

## **Project Name**

Influence of rate of temperature and pH decline on intramuscular beef tenderness variation in muscles in the round

## **Researcher**

Dr. Kasey Maddock-Carlin

## **Project Summary**

This project will evaluate differences in the rate of temperature and pH decline during chilling in a single muscle located in the beef round in order to understand differences in tenderness that occur within single muscles of the round. Additionally, an early fabrication intervention will be conducted in order to equilibrate the differences in temperature within the beef round muscle during chilling and attempt to improve the variation in tenderness.

## **Amount Awarded**

\$7,495

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## **Project Name**

Electrolysis and nanotechnology treatment to mitigate pollutant gases and chemical oxygen demand (COD) from dairy and swine manure

## **Researcher**

Dr. Shafiqur Rahman

## **Project Summary**

In this research, ozone treatment and electrolysis will be carried out in swine lagoon wastewater to reduce ammonia, hydrogen sulfide, and COD. In addition, effects of these treatments on greenhouse gases will also be evaluated. The short term objective of this study is to provide science-based information of different technologies to mitigate environmental concerns from swine production facilities. The long term objectives are to adapt best management practices to minimize environmental concerns resulting from livestock operations for sustainable growth of this important industry.

## **Amount Awarded**

\$8,460

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## **Project Name**

The effects of maternal nutrition during gestation on objective behavioral measures of lamb vitality

## **Researcher**

Dr. Sarah Wagner

# *Animal Agriculture*

## **Project Summary**

Vitality, the ability of young animals to survive and grow, is critical to the success of any livestock enterprise. Decreased vitality of young animals is a threat to animal wellbeing and farm profitability, yet objective methods of determining which young animals are at risk of decreased vitality have not been well-described. By comparing lamb behavior between lambs from undernourished and well nourished ewes, we will identify clear, objective ways to detect decreased lamb vitality. This information will enable producers to identify at-risk animals and target interventions, decreasing lamb mortality. Moreover, this research may translate to cattle health. As ranchers in Western North Dakota and elsewhere are struggling to provide beef cows with necessary nutrients, many calves will be born to undernourished dams. Measures of decreased vitality in lambs may also be applicable to calves, enabling ranchers to accurately assess their calf crop and focus interventions on animals that are at risk due to decreased vitality. This research is novel, important and at the forefront of the growing fields of animal welfare and livestock behavior.

## **Amount Awarded**

\$4,896

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## **Project Name**

Livestock water quality: pilot survey

## **Researcher**

Dr. Michelle Mostrom

## **Project Summary**

This cost-match project proposes to provide 30 livestock producers from 6 counties in North Dakota the opportunity to have one surface or ground water source tested for livestock water potability by county Extension agents in April – May 2013. Water containers, sampling, and testing of one water sample are supported by the grant. If the livestock producer wants additional water sources tested, the agents can sample the additional source(s) but the owner must pay for additional tests. The samples will be shipped to the ND Veterinary Diagnostic Laboratory for testing and results will be returned to the owner and agent. The data will provide information to the livestock owner and Extension agent as to the potability of the water for livestock use, which may be very important in areas where drought continues. If water parameters are in the toxic range, alternative water sources will need to be anticipated for and provided to livestock.

## **Amount Awarded**

\$5,790

---

## **Project Name**

Evaluation of glycated hemoglobin as a metabolic marker for marbling in commercial feeder cattle

# *Animal Agriculture*

## **Researcher**

Dr. Eric Berg

## **Project Summary**

The hypotheses of the proposed research project are 1) that as cattle reach “chemical maturity” and growth associated with muscle deposition slows or ceases, fat deposition accelerates, 2) prolonged consumption of corn-based diets ultimately result in hyperglycemia, 3) hyperglycemia results in production of advanced glycation end-products; the most common being glycated hemoglobin (Hb-A1C), and Hb-A1C is related to accumulation of intramuscular fat. Therefore, the objective of the proposed research is to determine if Hb-A1C change over time on feed is related to USDA marbling score.

## **Amount Awarded**

\$7,256

---

## **Project Name**

Effects of monensin and diet particle size on feedlot performance, carcass traits, nutrient digestibility and incidence of coccidiosis in feedlot lambs

## **Researcher**

Dr. Christopher Schauer

## **Project Summary**

Monensin has been shown to decrease incidence of acidosis and coccidiosis while increasing feed efficiency in feedlot lambs. Profitability per animal and in the lamb feeding industry could potentially be increased with its use. Particle size of corn has also been shown to effect nutrient digestion. This trial will attempt to determine monensin as a safe, beneficial additive for feedlot lambs along with providing more research on the effects of corn particle size.

## **Amount Awarded**

\$8,007

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## **Project Name**

Impact of nutrition on ovarian function in sheep

## **Researcher**

Dr. Anna T. Grazul-Bilska

## **Project Summary**

A critical aspect of reducing the high input costs of livestock production is to improve reproductive efficiency since reproductive failure remains one of the most costly factors in livestock production. One of the major regulators of reproductive function is nutrition. Modern technologies are being developed for the

## *Animal Agriculture*

enhancement of reproductive efficiency and the improvement and preservation of livestock genetics. For

example, modern methods in assisted reproductive technologies (ART) will enable the efficient transfer of embryos, single genes or entire genomes from desirable individuals or embryos, for screening of embryos for genetic defects, and for long-term storage. However, successful application of these technologies depends on the health of donor animals, which is highly affected by diet. This proposal addresses the growing need to determine the effects of nutrition on ovarian function which is a source of oocyte (egg), and to optimize animal diet in order to obtain healthy offspring.

### **Amount Awarded**

\$3,574

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### **Project Name**

Phenotype and Genotype Epidemiology of Infectious Bovine Keratoconjunctivitis (Pink eye) due to *Moraxella bovis* and *M. bovoculi* across North Dakota

### **Researcher**

Dr. Penelope S. Gibbs

### **Project Summary**

Infectious Bovine Keratoconjunctivitis is a devastating disease in both dairy and beef cattle in North Dakota, across the US, and globally. The costs to producers of cattle are significant. In North Dakota, IBK incidence is increasing, and diagnosis due to *Moraxella* spp. has risen by approximately 80% since 2011. This trend has been observed nationwide. This project will explore the epidemiology of *Moraxella bovis* and *M. bovoculi* involved in IBK (pink eye) in the state of North Dakota. The aim is to determine spread and relatedness of various *M. bovis* and *M. bovoculi* across the state. This will provide data and information for the development of protective vaccines against IBK for the state of North Dakota and perhaps the entire US.

### **Amount Awarded**

\$10,333

---

### **Project Name**

The effects of growth promotant technologies on tenderness variation within a beef retail cut

### **Researcher**

Dr. Kasey Maddock-Carlin

### **Project Summary**

The project will evaluate the variation of the activity of the calpain system, which drives the increase in meat tenderness during aging, within a single beef strip steak. Steaks will be obtained from cattle that either were not provided any growth promotant technologies, or provided a growth implant prior to finishing, or provided a growth implant prior to finishing and fed a beta-agonist for the last 20 days prior to slaughter. Results from this study will provide information on the variation of tenderness within a single beef steak and determine if growth promoting technologies contribute more variation of tenderness.

*Animal Agriculture*

### **Amount Awarded**

\$3,292

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### **Project Name**

Rapid serological test for porcine epidemic diarrhea virus

### **Researcher**

Dr. Sheela Ramamoorthy

### **Project Summary**

The porcine epidemic diarrhea virus (PEDV) emerged as a new swine pathogen in the U.S. in May 2013. PEDV causes acute diarrhea and vomiting in up to 100% of the exposed herd with mortality rates as high as 50% in young piglets. There are currently no available PEDV vaccines. Laboratory detection and diagnosis of PEDV is limited to histopathology in dead pigs and PCR on fecal matter. However, PCRs can only detect PEDV in acutely infected animals. The American Association of Swine Veterinarian's guidelines recommend a combination of PCR and serology for viral detection and diagnosis because only serological tests can detect past or subclinical exposure to the virus. The only serological test that is now available is an immunofluorescence assay which requires culture of the virus, is of variable sensitivity and is laborious to perform. There are no tests available to measure protective antibody responses in exposed pigs or pigs subjected to feedback exposure. The goal of this project is to develop a rapid, cost-effective serological assay to detect PEDV using computational methodology. The need for virus culture will be circumvented by direct chemical synthesis of diagnostic targets. While no PEDV cases have been recorded in North Dakota, so far all of the surrounding states are endemic for PEDV. Therefore, the proposed test will have particular value in North Dakota to screen negative replacement or breeding stock prior to sale or transportation.

### **Amount Awarded**

\$6,300

---

### **Project Name**

The role of vitamin A and E deficiency in perinatal calf mortality in ND cattle herds: cost match study with NDSU-VLD

### **Researcher**

Dr. Brett Webb

### **Project Summary**

Loss of calves from abortion, stillbirth and death within the first 24 hours of life are a major source of economic loss to North Dakota cow-calf producers. Unfortunately the cause of death can only be determined in approximately 40% of cases. Diagnostic investigation in cases of perinatal mortality is currently concentrated on testing for infectious agents, which comprise only one category of potential causes. Nutritional aspects, particularly vitamin deficiencies, have been long associated with perinatal mortality but have received considerable less attention. The goal of this project is to determine whether vitamin deficiencies are a significant cause of perinatal calf mortality in North Dakota herds and if so provide

*Animal Agriculture/Barley*

immediately useful information back to producers and veterinarians so that supplementation programs can be

initiated to curtail further losses.

### **Amount Awarded**

\$6,065

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### **Project Name**

Influence of dried distillers grains with soluble on ram lamb growth and reproductive traits

### **Researcher**

Dr. Christopher S. Schauer

### **Project Summary**

Ram lambs will be placed in the feedlot and fed one of four rations containing increasing levels of dried distillers grains with soluble (DDGS). The effects of DDGS on ram lamb feedlot performance will be monitored throughout the study. Throughout the feeding phase, both semen and blood samples will be collected from a subsample of ram lambs to evaluate the effects of DDGS on semen quality and testosterone.

### **Amount Awarded**

\$9,174

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## ***Barley***

### **Project Name**

Utilizing Genotype-by-sequencing for Genome Wide Selection of Net Blotch Resistance loci in Barley

### **Researcher**

Dr. Robert S. Brueggeman

### **Project Summary**

The objective of the project is to deploy durable resistance against the net form and spot forms of net blotch of barley. This project will utilize the latest generation sequencing technologies and genomic selection methods to accomplish this goal.

### **Amount Awarded**

\$6,479

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*Canola/Corn*

## ***Canola***

## **Project Name**

Evaluation of potential conventional canola breeding lines developed from winter x spring crosses in N Dakota

## **Researcher**

Dr. Mukhleseur Rahman

## **Project Summary**

Increased seed yield is the most important and attractive traits for canola growers. Winter type canola produces over two-fold seed yield compared to spring type canola. Because of severe winter hardness, winter type canola is not possible to grow in North Dakota. Therefore, this project has been taken to develop spring type canola by introgression of favorable yield contributing characters from the winter types to create new high seed yield spring canola germplasm. The potential breeding lines already tested in Prosper and Langdon under preliminary yield trial. In this proposed project, the selected breeding lines will be tested in wider location in replicated yield trail to find out the best breeding line adapted in North Dakota. In this project, a winter nursery facility will be used which will reduce the time of reaching practical homozygosis by one half, and will allow to obtain enough amounts of bulked seed per family for early generation testing and selfed seed for generation advancement.

## **Amount Awarded**

\$8,737

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# ***Corn***

## **Project Name**

Nitrogen recalibration for corn in North Dakota

## **Researcher**

Dr. David Franzen

## **Project Summary**

The research in year one will represent enough N-rate studies on corn so that over the past 4 years about 100 site-years of data from across the state will be collected. Nitrogen recommendations for corn will be revised using this modern data set. In addition, algorithms will be developed to enable corn growers to utilize active-optical light sensors on a nitrogen fertilizer applicator to determine whether their corn requires in-season N applications and at what rate.

# ***Corn***

## **Amount Awarded**

\$5,090

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**Project Name**

Corn DDGs – A novel functional material for wood composites

**Researcher**

Dr. Dilpreet Bajwa

**Project Summary**

The project aims at using corn-DDGS in the development of wood fiber composites (particle boards). The chemical composition of DDGS will be exploited to function as a natural lubricant, release agent and a binder in wood composites. These properties will help to minimize or eliminate use of petroleum based wax in the wood composites without compromising physical and mechanical properties of the composite boards.

**Amount Awarded**

\$4,000

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**Project Name**

Fungicide application strategies for corn yield enhancement in North Dakota

**Researcher**

Dr. Mike Ostlie

**Project Summary**

This study involves the collaboration of three NDSU departments in the investigation on the effects of corn fungicides and fungicide application timing for improving corn yields in the absence of disease pressure. The goal will be achieved by identifying optimum fungicide product and application timing combinations for different corn hybrid maturities, while also identifying suboptimal combinations.

**Amount Awarded**

\$7,967

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**Project Name**

Corn stover removal effects on soil properties in North Dakota

**Researcher**

Dr. Larry Cihacek

**Project Summary**

*Corn*

This research will evaluate the impacts of variable stover removal rates on SOM as well as related physical properties such as resistance to penetration (hardening), soil aggregate stability and water infiltration.

**Amount Awarded**

\$2,625

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### **Project Name**

Applied corn breeding for sustainable North Dakota corn production

### **Researcher**

Dr. Marcelo Carena

### **Project Summary**

The Minnesota Corn Research and Promotion Council has joined forces with the ND Corn Utilization Council to support the ND corn breeding efforts for developing short-season drought and cold tolerant unique products not available in industry for northern and western environments. The ND corn breeding program will conduct breeding research that covers all ND and surrounding state regions and maturities serving all farmers in both desirable and marginal state corn production regions independent from industry investment. As a consequence, NDSU will not only increase the genetic diversity of northern U.S. hybrids but will also develop the next generation of short-season corn products for a sustainable North Dakota corn production.

### **Amount Awarded**

\$9,814

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### **Project Name**

Breeding the next generation of short-season corn products

### **Researcher**

Dr. Marcelo Carena

### **Project Summary**

The short-term goal of this project is to develop, in cooperation with industry, unique corn products for commercial production. The long-term goals are to create a common and diverse short-season gene pool for the development of the next generation of northern U.S. hybrids with reduced risk and added value to farmers and ranchers.

### **Amount Awarded**

\$14,187

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### **Project Name**

Potassium recalibration for corn in North Dakota

*Corn/Dry Bean/New & Emerging Crops*

### **Researcher**

Dr. David Franzen

### **Project Summary**

Soil potassium levels in the state have dropped due to transition from a wheat-based rotation to one of corn and soybean production. Our current corn potassium recommendations are over thirty years old and need to be updated for current hybrids and grower practices.

### **Amount Awarded**

\$17,750

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## ***Dry Bean***

### **Project Name**

Dry edible bean disease research

### **Researcher**

Dr. Julie Pasche

### **Project Summary**

This proposal includes requests for funding for four main areas of research: The first objective is to evaluate the biology and detection of the dry bean Anthracnose pathogen *Colletotrichum lindemuthianum* using molecular techniques. The second objective aims to evaluate seed treatment fungicides for the control of root rot pathogens in dry edible beans. The third objective involves the development of resistance to common bacterial blight in NDSU breeding material. The fourth objective is to evaluate the interaction of host plant resistance and foliar fungicides for control of bean rust.

### **Amount Awarded**

\$6,779

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## ***New & Emerging Crops***

### **Project Name**

Enhancing production of uncommon fruits

### **Researcher**

Ms. Kathleen M. Wiederholt

### **Project Summary**

## ***New & Emerging Crops***

The Northern Hardy Fruit Evaluation Project evaluates the suitability of selected cultivars of northern-hardy fruits for production by both home gardeners and commercial enterprises in North Dakota. It is the only known fruit research project in the upper Great Plains collecting long-term data so that local fruit production may be encouraged. The plants in the study are hardy, adapted to prairie climate and soils, easy to grow and produce fruits high in phytonutrients. Information gained from this research can greatly reduce the economic risk of new enterprises for current and potential growers. Cultivars that produce acceptable yield and high

fruit quality are promoted in outreach activities. New fruits may create new marketing opportunities as consumers seek the new products generated.

**Amount Awarded**

\$4,000

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**Project Name**

Developing natural herbicide tolerance and resistance in lentil

**Researcher**

Dr. Kevin McPhee

**Project Summary**

Individual breeding lines of lentil will be selected for tolerance and resistance to herbicides targeting broad leaf weed species. As lentils are broadleaf plants they are susceptible to many of the most effective chemicals available. Genetic resistance to these chemicals will allow the lentil breeding program to develop varieties that are resistant to these chemicals making them available for application during the lentil growing season.

**Amount Awarded**

\$6,190

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**Project Name**

Seeding date determination for selected new pulses in North Dakota

**Researcher**

Dr. Burton Johnson

**Project Summary**

This research will identify optimum seeding date for selected pulses, adzuki, faba bean, lupine, and mung not commercially grown for production in North Dakota. Determination of proper seeding date for new crops introduced into a growing region is essential for optimizing crop performance and sustainability.

**Amount Awarded**

\$4,500

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*New & Emerging Crops*

**Project Name**

Field evaluation of X-disease resistant chokecherry lines for small fruit production in North Dakota

**Researcher**

Dr. Wenhao Dai

## **Project Summary**

In this project, we will select 20 X-disease resistant chokecherry hybrids for field test to confirm the X-disease resistance and to evaluate yield and fruit quality under the field condition. We are expecting to release 3-5 new chokecherry cultivars in 3-5 years. Overall, this project has a great potential to increase production of small fruit trees and conserve natural resources, which will benefit all North Dakotans and enhance the quality of life in communities and family farms.

### **Amount Awarded**

\$4,000

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### **Project Name**

Forage brassicas as new crops for North Dakota

### **Researcher**

Dr. Marisol Berti

## **Project Summary**

The project will be conducted in two environments in North Dakota state (Carrington and Prosper). The main objectives will be to identify the best cultivars (in biomass production) of different brassicas species used as forage full crop and cover crop. In addition, this project will determine the forage quality of this forage brassicas species.

### **Amount Awarded**

\$4,146

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### **Project Name**

Selecting superior juneberry cultivars from North Dakota

### **Researcher**

Dr. Harlene Hatterman-Valenti

## **Project Summary**

This project will compare the growth and production of three blackberry cultivars when subjected to an annual production procedure. Grant funds will be used to offset costs associated with the proposed research.

## *New & Emerging Crops/Potato*

### **Amount Awarded**

\$5,388

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### **Project Name**

Introduction of raspberry cultivars for small fruit production in North Dakota

## **Researcher**

Dr. Wenhao Dai

## **Project Summary**

In this project, we will introduce raspberry cultivars that are not only winter hardy, but also produce high quality and yield for both small fruit production and home grown in North Dakota and surrounding areas. This project has a great potential to increase production of small fruits, which will benefit all North Dakotans and enhance the quality of life in communities and family farms.

## **Amount Awarded**

\$10,482

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## **Project Name**

Selection and breeding of vegetable crops for local production

## **Researcher**

Dr. Chiwon Lee

## **Project Summary**

North Dakota has a short growing season. Vegetable growers in the state often suffer poor harvest due to early frost. Vegetables and other specialty crops that mature early are needed for local growers. This project will initiate a vegetable selection and breeding program at NDSU with special attention on early maturing tomato, pepper, eggplants as well as squash and pumpkin. Genetic improvement for nutritional quality : as increasing pigmentation and antioxidant levels will be emphasized. New cultivars developed from this project will be used by the growers of farmer's market vegetables as well as home growers.

## **Amount Awarded**

\$9,854

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# ***Potato***

## **Project Name**

Support of irrigated potato research

*Potato/Soybean*

## **Researcher**

Dr. Gary Secor

## **Project Summary**

To conduct irrigated potato research at a site typical of commercial production, to facilitate cultivar identification, production guidelines, best management practices and disease control strategies specific for irrigated potato production in North Dakota and the surrounding region.

**Amount Awarded**

\$3,767

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## ***Soybean***

**Project Name**

Increasing awareness and management of nematodes in North Dakota

**Researcher**

Dr. Samuel Markell

**Project Summary**

The goal of this project is to create SCN research/demonstration plots at three locations in North Dakota; that ND soybean growers will be able to observe during associated field days. This project addresses one of the North Dakota Soybean Councils top priorities, SCN, in the 2013 RFP. The objective is to allow growers to observe fungicide and nematicide seed treatment plots during three field days in 2013, and generate local data on nematicide and fungicide efficacy that can be presented at winter meetings and other venues.

**Amount Awarded**

\$3,611

**Project Name**

Virulent types of soybean cyst nematode in North Dakota

**Researcher**

Dr. Berlin Nelson

**Project Summary**

Soybean diseases can seriously reduce yield and quality of soybean. This project examines the diversity of virulent forms of soybean cyst nematode in North Dakota. The information generated will have practical value in understanding management techniques for this important soybean disease.

## ***Soybean/Sugarbeet***

**Amount Awarded**

\$28,650

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**Project Name**

Impact of tillage systems and previous crop on root rots and soybean production

**Researcher**

Dr. Ezra Aberle

### **Project Summary**

The objectives of this study are to 1) compare tillage systems, crop rotations, and previous nitrogen fertilizer treatments on soybean production with an economic analysis of the treatments; 2) quantify the build-up or loss of nitrates supplied by soil organic matter and composted manure resulting from differences in nitrogen fertility and tillage management; 3) determine the impact of these nitrogen credits (residual nitrates) on growth and nitrogen fixation in soybean; 4) determine the effectiveness of rhizobia inoculants on N fixation and yield; and 5) determine what if any impact crop rotations, N fertility and tillage have on indigenous rhizobia and the persistence of rhizobia inoculant.

### **Amount Awarded**

\$7,355

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## ***Sugarbeet***

### **Project Name**

Conduct greenhouse research to evaluate penthiopyrad for controlling Rhizoctonia damping off and root rot of sugarbeet

### **Researcher**

Dr. Mohamed Khan

### **Project Summary**

The purpose of this research is to evaluate Vertisan applications in mixtures with other pesticides to determine fungicide efficacy and safety of mixtures on the plants. This research will address the safety of mixing Vertisan with commonly used insecticides at planting; Vertisan with starter fertilizer at planting; Vertisan with insecticides, and Vertisan with glyphosate at the 4-leaf stage; Vertisan with insecticides and glyphosate at the 4-leaf stage.

### **Amount Awarded**

\$8,963

## ***Sugarbeet/Sunflower***

### **Project Name**

Greenhouse Research

### **Researcher**

Dr. Mohamed Khan

### **Project Summary**

This research will evaluate the effectiveness of Serenade and Sonata (biological control agents) at controlling *R. solani* on sugarbeet under greenhouse conditions. It will be useful to have an effective biological control

agent that can control *R. solani* to reduce our dependence of fungicides and help in prolonging the effectiveness of available fungicides.

### **Amount Awarded**

\$7,683

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## ***Sunflower***

### **Project Name**

Evaluation of pericarp hardness traits for resistance to seed-feeding by the sunflower moth

### **Researcher**

Dr. Jarrad Prasifka & Dr. Deirdre Prischmann-Voldseth

### **Project Summary**

This research will: 1) Determine whether known differences in pericarp strength are associated with differences in thickness of the phytomelanin layer of thickness of the pericarp; 1b) If greater total pericarp thickness is detected in lines with stronger pericarps, test whether the increased thickness also has an effect on oil content or other qualities (e.g., shelling ability); 2) Examine the responses of late-instar sunflower moth larvae to increasing pericarp hardness for lines with and without phytomelanin; 3) Estimate the benefit of hard pericarps and phytomelanin using field infestations of sunflower moth larvae and damage ratings of mature seed

### **Amount Awarded**

\$7,659

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### **Project Name**

Downey mildew: Establishment of baseline sensitivity to two fungicides and monitoring for the Development of fungicide resistance and pathogen race changes

## ***Sunflower/Wheat***

### **Researcher**

Dr. Samuel Markell

### **Project Summary**

The objectives of this research are to: 1) Determine fungicide dosages to assess sensitivity (baseline) to Dynasty and Zorbec; 2) Assess historic and current pathogen isolates for sensitivity to both fungicides; 3) Determine if any isolates exist with resistance to either fungicide; 4) Identify pathogen physiological races from across Midwest to monitor development of new virulent races; 5) Educate another graduate student in sunflower pathology

## Amount Awarded

\$6,629

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# Wheat

## Project Name

Characterization of genetic & cellular mechanisms involved in durable and non-race specific resistance to rust pathogens for development of longer-lasting rust resistant wheat varieties

## Researcher

Dr. Maricelis Acevedo

## Project Summary

Use of resistance genes combination or stacking has been proposed as a tool to provide more durable rust resistance since deployment of cultivars carrying single genes has proved to be short lived. Gene stacking has been supported as a disease control management strategy to increase disease resistance and prolong the use of specific resistance genes. However, to effectively stack genetic resistance knowledge of the resistant genes present in a specific wheat line needs to be known. Use of genetic markers tightly associated with the resistance genes makes the process of gene stacking and selection of individuals carrying multiple genes more efficient. In practice, use of gene combinations, especially those including genes for adult plant resistant (APR) or slow rusting it is complicated by the difficulty of selecting for the gene combination based solely on disease reaction. The central goal of this project is to develop a *resistance gene mode-of-action catalog* for the rust resistance genes. We proposed to develop a set of techniques, based on microscopy fungal quantification in infected plant tissue, that when used in combination can provide a better “picture” of pathogen development and disease progress during infection process that will provide insight about how the different resistant genes respond to pathogen “attack”. Additionally, the data from this project will serve as the foundation for future research projects that may provide a new strategy to improve the utilization of gene combinations to manage cereal rust diseases.

## Amount Awarded

\$29,862

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# Wheat

## Project Name

Survey root rot diseases in North Dakota & identify resistance sources in spring wheat

## Researcher

Dr. Shaobin Zhong

## Project Summary

Root diseases are among the most common disease problems of wheat in North Dakota. They occur in every growing season and can cause as much as 3-5% crop losses in an average year. Losses may be greater in years with drought and hot weather conditions. However, information about the causal agents and the reactions of wheat cultivars to the diseases is very limited and no research has been done in the past five

years. The objectives of this project are to 1) Survey root disease incidence and severity in North Dakota. 2) Identify the fungal pathogens causing the root rot diseases. 3) Screen hard red spring wheat lines for resistance to the root rot disease. We will collect root disease samples in fields across North Dakota, isolate the fungal species associated with the diseases, and test the pathogenicity of the fungal species associated with the diseases, and test the pathogenicity of the fungal species in the greenhouse. The reactions of advanced breeding lines and commercially grown cultivars to the root rot pathogens will also be evaluated by greenhouse inoculation experiments. The information and results gained from this research project will be used to formulate effective disease management methods to reduce the impact of root diseases on wheat production in North Dakota.

### **Amount Awarded**

\$10,000

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### **Project Name**

Evaluation of whole wheat bread quality from hard spring wheat

### **Researcher**

Dr. Senay Simsek

### **Project Summary**

Whole wheat bread is a standardized bread product in the U.S. Popularity of whole wheat breads may be due to their appeal as sources of good nutritional value or their perception by the consumer as healthful products. Incorporation of wheat bran into food matrices poses technical challenges for food manufactures. This study will investigate the whole wheat bread quality of HRS wheat grown in ND. Additionally, researcher will try to develop the strategies to improve the baking quality of whole wheat flour produced from ND wheat.

### **Amount Awarded**

\$7,500

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## *Wheat*

### **Project Name**

Characterization of the current race structure of *Pyrenophora tritici-repentis*, the causal agent of wheat tan spot in North Dakota

### **Researcher**

Dr. Zhaohui Liu

### **Project Summary**

Pathogen populations are in a constant change due to several reasons, including selection pressure from the host, nature mutation and so on. Therefore, it is necessary to examine the pathogen population on a regular basis for its race structure, and more importantly to learn if a new virulent type is present. *Pyrenophora tritici-repentis* is the causal agent of wheat tan spot, a devastating disease in North Dakota. This fungus is

capable of and also has a history of changing in virulence and genetic structure. The race structure of this pathogen population in ND was analyzed more than a decade ago with isolates that were collected from limited geographic areas, which was not comprehensive and is now outdated. We propose to conduct a comprehensive investigation of *P. tritici-repentis* population in North Dakota by systematic sampling of wheat plants in commercial fields across the state, followed by characterization of the race structure and evaluation of wheat lines and cultivars for their resistance to current virulent races. This research will not only provide vital information for developing and employment of resistant cultivars for tan spot resistance, but also have potential to identify sources of tan spot resistance for breeding programs.

### **Amount Awarded**

\$12,082

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### **Project Name**

Characterization of leaf and stem rust resistance in durum wheat germplasm

### **Researcher**

Dr. Maricelis Acevedo

### **Project Summary**

The objectives of this project are to: 1) determine the inheritance of resistance to leaf rust races from Mexico and Southern US identified in durum wheat breeding and landraces from the USDA National Small Grains Collection. 2) Evaluate the leaf resistance lines for stem rust resistance to East Africa races. If stem rust resistance is identified, the inheritance of the resistance will be determined and characterized. Based on preliminary results obtained from a project funded by SBARE in 2010-2011, we have identified sources of resistance to these races in Mexico and to US races from AZ and CA. We have developed bi-parental populations to study the inheritance of the resistance identified. The leaf rust resistant lines and parental lines used in the crosses will be tested for resistance to stem rust races from East Africa. Providing new sources of resistance that can broaden the genetic basis of rust resistance in adapted elite durum materials may reduce the chances of widespread rust epidemics in the future. Additionally, better understanding of the resistance genes in durum will provide a better utilization of resistance genes in all wheat market classes.

## *Wheat*

### **Amount Awarded**

\$11,500

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### **Project Name**

Developing *Sm1* resistance in wheat to the orange wheat blossom midge

### **Researcher**

Dr. Marion Harris

### **Project Summary**

Every year North Dakota's valuable wheat crop is under attack from an array of insect pests. The orange wheat blossom midge has been one of the more significant pests in North Dakota wheat fields in the last 20

✓

SB 2175

1-22-15

#3

①

### 2014-2015 Allocations – Agricultural Research Fund

(Figures based on data from the ND Agricultural Statistics Service for 2013)

Commodity	Cash Receipts*	% of Cash Receipts (total)	% of Cash Receipts (major crops)	Allocations
Soybean	1,931,846	21.0	27.0	\$45,102
Corn	1,838,127	20	25.7	42,930
Wheat	\$1,733,773	19%	24.2%	40,425
Canola	417,873	4.6	5.8	9,689
Sugarbeet	366,016	4.0	5.1	8,520
Dry bean	300,588	3.3	4.2	7,016
Barley	289,754	3.2	4.1	6,849
Sunflower	270,772	3.0	3.9	6,515
Subtotal	\$7,148,749	74.6	100.00	\$167,041
Livestock	\$1,293,877	14.3%		
Flax	45,734	.5		
Hay	149,274	1.6		
Other	382,090	4.2		
Subtotal	\$1,870,975			
Total	\$9,019,724	100.00		

\*In thousands

Total Revenue:	\$114,912.88	(from ND Tax Dept as of 6/30/14)
Interest earned FY '13	\$240.13	(Per Dave Ruhland – 9-2014)
General Funds	\$150,000.00	
Returned funds	\$0.00	
<u>Less set aside for admin.</u>	<u>(\$26,515.30)</u>	
Available for grants	\$238,637.71	
Major crops (70%)	\$167,046	
Livestock (18%)	\$ 42,955	
New & Em. Crops (12%)	\$ 28,636	
Total:	\$238,637	

**Wheat Request Summary**  
**Prepared November 2014**

Tab	Project Title	Researcher	SBARE Funded 13/14	SBARE Request 14/15	NDWC Match Request	Duration	Other Match Request	Individ. Score	Overall Rank
15	Plant-parasitic Nematodes on Wheat in North Dakota	Yan		\$19,571	\$19,571	New 1 year			
19	Mapping of Wheat Leaf Rust and Stem Rust Resistance Genes in Durum Wheat for Incorporation and Better Utilization of Resistance in Durum Wheat Adapted to ND	Acevedo	\$7,000	\$26,784	\$8,928	New 1 year			
20	Condensed Distillers Soluble as Nitrogen Source for Wheat Production – A two-year availability study ( <i>Carrington</i> )	Flores		\$2,618	\$10,632	New 2 years			
21	Utilization of Solvent Retention Capacity Test for Hard Spring Wheat Quality	Simsek	\$7,500	\$7,500	\$2,500	New 2 years			
22	Identification and genetic mapping of resistance to tan spot in elite hard red spring wheat germplasm	Liu	\$12,082	\$16,740	\$16,740	New 2 years			
23	Developing <i>Sm1</i> resistance in wheat to the orange wheat blossom midge	Harris	\$7,000	\$8,664	\$2,887	Continued 1 year			
<b>TOTALS</b>									

**Amount Available for Wheat Grants in Fiscal Year 2014-2015: Not yet determined**

# 40,425

②

# 1999-2000 Agricultural Research Fund Allocations

Funds available: 714,786.76  
 + 15,000.00\*Unused administration funds from 1998-1999  
 729,786.76  
 - 50,000.00 Estimated administration costs  
 \$679,786.76 Available for grants

## Allocation

✓ Livestock (18%): \$122,361.62

✓ New & Emerging Crops (12%): \$81,574.41

Major Crops (70%): \$475,850.73

## Breakdown of major crops

<u>Commodity</u>	<u>% Sales</u>	<u>% Factor</u>	<u>Allocation</u>
✓ <u>Wheat</u>	30.5	38.607	<u>\$183,711.69</u>
Sunflower	8.8	11.139	53,005.01
Soybean	7.7	9.747	46,381.17
Sugarbeet	6.8	8.608	40,961.23
Barley	5.4	6.835	32,524.40
Dry Edible Beans	5.2	6.582	31,320.50
Potatoes	4.4	5.570	26,504.88
Corn	4.2	5.317	25,300.98
Canola	3.6	4.557	21,684.52
Hay	2.4	3.038	14,456.35
Totals	79.0	100.000	\$475,850.73

\*Actual amount remaining from estimated administration costs is \$19,254.62. Bruce Bollinger recommended leaving a balance of around \$5,000 for unforeseen circumstances.

(Draft-needs to be approved by SBARE)

1999-2000

Wheat Committee Funding History/Requested Funding (Prepared October 1999)

Project Title	Year 1 SBARE Funded	Year 1 Match*	Requested Year 2 SBARE	Requested Year 2 Match*	Tentative Year 3
Durum variety development for the semi-arid region of ND & eastern MT	10,000.00		10,000.00		
Discovery of factors influencing success or failures of value-added coops			2,800.00		
Effect of different environments on protein & breadmaking quality of hard red spring wheat	33,800.00	17,000.00	33,800.00	17,000.00	
NDAWN	6,200.00		6,200.00		
Spring wheat response to copper sources & rates	15,000.00		15,000.00		
Wheat foliar disease management			27,100.00	76,060.00	28,270.00
Continuation of a regional disease forecasting system	41,960.62		53,304.00		
Developing improved durum wheat genotypes using doubled haploid breeding method			32,000.00 (yr/3yr.)		32,000.00
Wheat varieties & cultural practices that promote high grain protein in SW ND			21,786.00		
Effect of genotypic differences in wheat starch properties in relation to end-use quality			25,120.00		20,000.00
Using a component of a water-based extract from black walnut husks to inhibit the growth of Fusarium Graminearum			3,150.00	?	3,150.00
Previous crop effects on wheat production			11,250.00	3,750.00	
Variety response to common root rot in HRS wheat, durum & barley			5,200.00	?	
Development of a functional food using durum wheat & flaxseed			21,205.00		17,720.00
Introgression of FHB resistance genes from T. Dicoccoides to HRS wheat	15,000.00	5,000.00	15,000.00	5,000.00	15,000.00 (5 yr total)
Dev. of molecular marker tags for resistance to FHB in durum wheat	15,000.00	5,000.00	15,000.00	5,000.00	15,000.00
Rapid development of wheat lines by double haploid production	34,231.00	1,993.00	29,281.00	1,993.00	29,281.00
Evaluation of crop rotations, cultural practices & herbicide combinations to control Canada thistle	7,433.00		7,933.00		7,934.00
Ident. of fungicide application technique that maximize control of FHB	5,250.00		2,125.00		
Monitoring Wheat Midge in North Central ND	8,500.00	2,500.00			
<b>TOTALS</b>	<b>192,374.62</b>	<b>31,493.00</b>	<b>337,254.00</b>	<b>38,803.00</b>	<b>168,355.00</b>

\*Amount being requested from the wheat commission

**Amount Available for Wheat Grants in Fiscal Year 1999-2000: \$183,711.69**

(7)

2000-2001 Allocations  
(Figures based on data from the ND Ag Statistics Service)

Commodity	Cash Receipts*	% of Cash Receipts (Total)	% of Cash Receipts (Major crops)	Allocations
Wheat	\$728,253	26.1409	35.2853	\$152,212.64
Sunflower	238,477	8.5602	11.5547	49,844.31
Soybean	208,585	7.4872	10.1063	43,596.25
Sugarbeet	181,885	6.5288	8.8127	38,015.95
Beans	146,293	5.2512	7.0881	30,576.43
Potato	135,107	4.8497	6.5462	28,238.80
Corn	125,792	4.5153	6.0948	26,291.56
Canola	118,880	4.2672	5.7600	24,847.31
Barley	118,784	4.2638	5.7553	24,827.04
Hay	61,845	2.2200	2.9966	12,926.64
Subtotal		74.0843	100.0000	\$431,376.93
Livestock	647,425	23.2395		
Flaxseed	27,260	.9785		
Oats	6,865	.2464		
Rye	4,223	.1516		
Other	36,205	1.2997		
Total	2,785,879	100.0000		

\*In thousands

Total Revenue: \$666,252.76 (from ND Tax Dept. – Joan Galster)  
 Less set aside for admin. 50,000.00  
 Available for grants \$616,252.76

Major crops (70%) \$431,376.93  
 Livestock (18%) 110,925.50  
 New & Em. Crops (12%) 73,950.33  
 Total \$616,252.76

2000-2001 Wheat Committee Funding History/Requested Funding

Project Title	98/99 SBARE Funded	99/00 SBARE Funded	Requested 00/01 SBARE	Requested 00/01 Match*	Tentative 01/02
Monitoring Wheat Midge in North Central ND	8,500.00				
Effect of different environments on protein & breadmaking quality of hard red spring wheat	33,800.00	25,642.20			
Spring wheat response to copper sources & rates	15,000.00	15,000.00			
Ident. of fungicide application technique that maximize control of FHB	5,250.00	0			
Dev. of molecular marker tags for resistance to FHB in durum wheat	15,000.00	0			
Using a component of a water-based extract from black walnut husks to inhibit the growth of Fusarium Graminearum		1,825.00			
Screening ND hard red & white spring wheats for resistance to orange blossom wheat midge (Harris)			11,250.00	3,750.00	11,250.00
Screening ND durum wheats for resistance to orange blossom wheat midge (Harris)			11,250.00	~3,750.00	11,250.00
Monitoring for the orange wheat blossom midge using pheromone traps (Knodel)			5,000.00	1,667.00	5,000.00
✓ Resistance of HRS wheat to leaf rust (Rasmussen)			18,762.00	7,921.00	
✓ Variety response to common root rot in HRS wheat & durum (Riveland & Stack)		5,200.00	6,000.00	~2,000.00	6,000.00
✓ Continuation of a regional disease forecasting system (Francl)	41,960.62	25,304.00	35,550.00	~15,650.00	0
✓ Introgression of FHB resistance genes from T. Dicoccoides to HRS wheat (Kianian, Berzonsky, Frohberg & Stack)	15,000.00	15,000.00	15,000.00	~5,000.00 <small>5,000 for FHB</small>	15,000.00
Developing improved durum wheat genotypes using doubled haploid breeding method (Elias)		27,000.00	27,000.00	~9,000.00 <small>5,000 for FHB</small>	27,000.00
Rapid development of wheat lines by double haploid production (Berzonsky)	34,231.00	24,281.00	29,232.00	1,994.00	29,232.00
Durum variety development for the semi-arid region of ND & eastern MT (Bergman & Elias)	10,000.00	10,000.00	11,000.00	0	0
Modified SDS micro-sedimentation test (Manthey)			8,775.00	2,970.00	0
Effect of genotypic differences in wheat starch properties in relation to end-use quality (Bhattacharya)		16,526.49	28,000.00	0	0
Eval. production practices for dormant seeding wheat (Peel & McKay)			9,375.00	3,125.00	9,375.00

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Management practices for high-yielding irrigated wheat (Schatz, Gregoire, Steele, Hendrickson & Kirkpatrick)			5,000.00	1,500.00	0
Variety selection, rotation & tillage effects on hard red spring wheat (Carr)			11,111.00	3,778.00	11,110.00
Evaluation of crop rotations, cultural practices & herbicide combinations to control Canada thistle (Jenks)	7,433.00	5,933.00	5,934.00	0	0
Feeding value of sprouted barley & wheat (Anderson & Lardy)			4,000.00	4,000.00	0
Enhancing digestibility of high fiber feeds in ruminants (Anderson & Lardy)			5,000.00	5,000.00	0
NDAWN (Enz)	6,200.00	2,000.00	6,200.00	0	0
A comparison of white wheat end-use quality under dryland & irrigated production (Berzonsky)			24,200.00	*3,000 +3,000 G. Mills?	*24,200.00
Wheat foliar disease management (Francl)		10,000.00	10,480.00		
<b>TOTALS</b>	<b>192,374.62</b>	<b>183,711.69</b>	<b>288,119.00</b>	<b>71,105.00</b>	<b>149,417.00</b>

\*Amount being requested from the wheat commission

~Combined with other sources

76,105.00

**Amount Available for Wheat Grants in Fiscal Year 2000-2001: \$152,212.64**

## CHECKOFF SUPPORTED PROJECTS AT NDSU

## RESEARCH AND CUSTOMER SERVICE

	Actual FY 2013-14	Budget FY 2014-15
<b>End Use Quality</b>	<b>\$372,116</b>	<b>\$453,200</b>
Durum Color Study	\$25,000	\$0
Durum Quality Research Support	\$25,000	\$35,000
Equipment Maintenance Contingency	\$0	\$30,000
Genotypes for Whole Wheat Pasta	\$0	\$12,500
Historical HRS Varieties	\$0	\$36,000
HRS Quality Research	\$20,000	\$30,000
HRW Quality Survey	\$7,766	\$9,000
HRW Quality Research Support	\$50,000	\$50,000
Kernel Bleaching of Durum	\$0	\$30,000
Pasta Press	\$30,000	\$0
Protein Content Prior to Flowering	\$0	\$23,200
Protein Functionality Post Planting	\$22,600	\$0
Regional Crop Quality Survey	\$52,000	\$55,000
Specialty Wheat Quality Research Support	\$40,000	\$40,000
Specialty Wheat Quality Research Technician	\$50,000	\$50,000
Technical and Information Services	\$47,250	\$50,000
*Whole Wheat Bread Quality	\$2,500	\$2,500
<b>Wheat Breeding/ Genetics</b>	<b>\$503,500</b>	<b>\$430,000</b>
Cytogenetics-Scab Resistance	\$30,000	\$35,000
Developing Durum Wheat w/low Cadmium Uptake	\$43,500	\$40,000
Durum Breeding	\$85,000	\$95,000
Durum Combine	\$40,000	\$0
HRS Wheat Breeding	\$95,000	\$90,000
Harvest/Planting Equipment	\$40,000	\$0
HRW Breeding Material	\$60,000	\$60,000
Increase Durum Yields	\$30,000	\$30,000
Specialty Wheat	\$30,000	\$30,000
White/Specialty Wheat Breeding Technician	\$50,000	\$50,000
<b>Disease/Pest Management</b>	<b>\$185,358</b>	<b>\$255,378</b>
Bacterial Leaf Streak Resistance	\$25,000	\$25,000
Cereal Aphids/Barley Yellow Dwarf	\$0	\$31,281
Don Accumulation in PI344467 during FHB	\$0	\$20,000
*Durum Rust Resistance	\$13,858	\$0
*Durum Germplasm Rust Resistance	\$0	\$11,580
FHB Resistance In Wheat	\$30,000	\$30,000
Mapping Resistance Leaf Diseases/Emmer	\$0	\$25,000
Orange Wheat Blossom Midge Survey	\$7,000	\$8,000
Pest Management App	\$8,000	\$0
*Root Rot Diseases	\$5,000	\$0
Rust Resistance/HRS Germplasm	\$50,000	\$37,000
Sawfly Resistance	\$6,500	\$0
*Sm1 Resistance/Orange Blossom Midge	\$0	\$2,500
*Tan Spot	\$5,000	\$8,000
Ug 99 Mapping/Cloning	\$35,000	\$25,500
Waterlogging Tolerance	\$0	\$1,517
<b>Marketing/Economics</b>	<b>\$144,000</b>	<b>\$154,000</b>
Biotech Partnering Strategies	\$42,000	\$42,000
Commodity Trading Room	\$50,000	\$50,000
Market Development Support	\$18,000	\$18,000
Transportation Issues	\$0	\$10,000
Upper Great Plains Transportation Institute	\$34,000	\$34,000
<b>Miscellaneous</b>	<b>\$7,500</b>	<b>\$107,500</b>
Biotech Education WIBC/NAWG	\$7,500	\$7,500
**Biotech Contingency	\$0	\$100,000
<b>Soil Science</b>	<b>\$0</b>	<b>\$34,469</b>
Reduced Phosphorus Requirement	\$0	\$6,750
Wheat Response to Salinity	\$0	\$27,719
<b>Total</b>	<b>\$1,212,474</b>	<b>\$1,434,547</b>

\*Checkoff match to grants approved by the Wheat Research Committee of the State Board of Agricultural Research and Extension (SBARE).

\*\*Biotech contingency can be used for public/private research projects.

North Dakota producer check-off investment in research totaled \$1.21 million in 2013, a slight decline from recent years, but still roughly 30 percent of the total budget. NDWC research funding is primarily focused on supporting technicians and operating funds for key programs and projects, but it has also enabled programs to make needed equipment upgrades and focus on special issues. The 2014 budget shows an even greater emphasis on research, indicating the long-term commitment of the NDWC.

The hard red spring, durum and hard red winter breeding programs all receive an important share of their annual operational funding from the NDWC. Investment is also being made in the development of specialty wheat varieties, such as sawfly resistant varieties and hard white wheat.

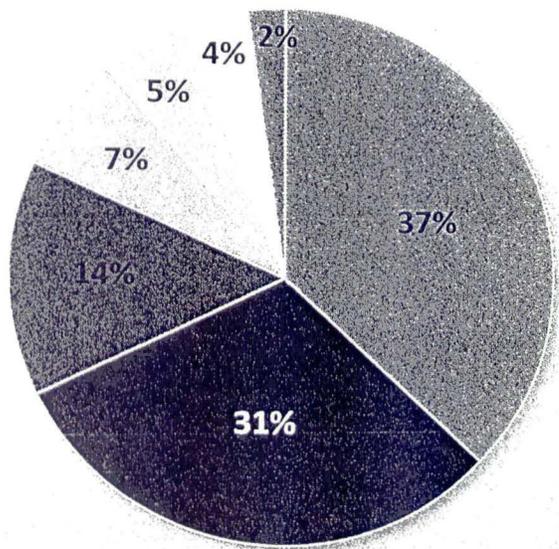
Ensuring North Dakota wheat remains at the top of the world wheat spectrum for quality is the primary reason a significant portion of the NDWC research funding is devoted to quality. Wheat lines are evaluated for quality early on in the development process, a luxury many breeding programs do not have. In addition, having updated lab equipment, and excellent scientists and technicians to oversee the programs has provided cutting edge research on functional wheat quality, gaining confidence from customers.

A higher share of funding in 2013 was for disease related research. Producers have expressed a need for greater disease resistance in wheat lines and expanded research on disease management. In addition, emerging global issues like the Ug99 stem rust virus require proactive attention to ensure resistance is established in future varieties.

Key investments are also being made in marketing, economics and transportation related research. Producer funds have helped expand the educational outreach for the world class commodity trade mission at NDSU, and provided resources to explore potential biotech partnerships, and monitor rail transportation issues.

# YOUR CHECKOFF INVESTMENT AT WORK

2013-2014 Operating Expenditures



- Trade Policy \$64,123
- Research & Customer Service \$1,470,288
- Public Information \$151,289
- International Marketing \$1,233,422
- Domestic Promotion \$186,576
- Domestic Policy \$553,886
- Administration \$294,892

# OPERATING EXPENDITURES

	Actual FY 2013-14	Budget FY 2014-15
<b>Administration</b>	<b>\$294,893</b>	<b>\$359,840</b>
Salaries, Per Diem & Benefits	\$181,445	\$202,540
Travel & Expenses	\$17,648	\$21,600
Equipment, Rents & Rentals	\$62,406	\$75,000
General Operating	\$33,394	\$60,700
<b>International Marketing</b>	<b>\$1,233,421</b>	<b>\$1,334,917</b>
Salaries, Per Diem & Benefits	\$168,792	\$186,717
Travel & Expenses	\$44,951	\$56,700
U.S. Wheat Associates	\$1,019,678	\$1,091,500
<b>Trade Policy &amp; Issues</b>	<b>\$64,123</b>	<b>\$163,025</b>
Salaries, Per Diem & Benefits	\$60,638	\$56,015
Travel & Expenses	\$13,485	\$17,010
Legal Counsel (Trade Case)	\$0	\$40,000
Economic Analysis	\$0	\$50,000
<b>Domestic Policy</b>	<b>\$553,886</b>	<b>\$645,355</b>
Salaries, Per Diem & Benefits	\$30,383	\$33,609
Travel & Expenses	\$8,091	\$10,206
N.D. Grain Growers Association	\$435,006	\$500,400
U.S. Durum Growers Association	\$72,906	\$93,640
Biotech Education WIBC/NAWG	\$7,500	\$7,500
<b>Domestic Promotion</b>	<b>\$186,576</b>	<b>\$204,535</b>
Salaries, Per Diem & Benefits	\$13,245	\$12,659
Travel & Expenses	\$12,592	\$16,200
National Pasta Association	\$9,500	\$13,000
Wheat Foods Council	\$138,294	\$133,176
Postage/Printing/Other Support	\$12,945	\$29,500
<b>Research &amp; Customer Service</b>	<b>\$1,470,288</b>	<b>\$1,733,124</b>
Salaries, Per Diem & Benefits	\$87,772	\$97,093
Travel & Expenses	\$23,375	\$29,484
N.D. State University Support		
Disease/Pest Management	\$185,358	\$255,378
End Use Quality	\$372,116	\$453,200
Marketing Economics	\$144,000	\$154,000
SBARE Matching Contingency	\$0	\$0
Wheat Breeding Genetics	\$503,500	\$430,000
Soil Science	\$0	\$34,469
Other Support		
Biotech Research Contingency	\$0	\$100,000
Consultant Fees & Expenses	\$1,500	\$20,000
Northern Crops Institute	\$50,000	\$50,000
Wheat Marketing Center	\$50,000	\$50,000
Wheat Quality Council	\$8,000	\$8,000
Wheat Variety Survey	\$18,960	\$17,000
Miscellaneous Support	\$25,707	\$34,500
<b>Public Information</b>	<b>\$151,289</b>	<b>\$218,406</b>
Salaries, Per Diem & Benefits	\$38,650	\$44,306
Travel & Expenses	\$23,426	\$28,800
Advertisements	\$21,330	\$30,000
Other Support	\$26,822	\$53,300
Postage (Dakota Gold/Other)	\$24,529	\$34,000
Printing (Dakota Gold/Other)	\$14,367	\$25,000
Website	\$2,165	\$3,000
<b>Total</b>	<b>\$3,954,476</b>	<b>\$4,659,202</b>

# FINANCIALS FOR JULY 1 TO JUNE 30

	Actual FY 2013-14	Budget FY 2014-15
Beginning Balance	\$4,449,480	\$5,021,566
Checkoff collected	\$4,830,395	\$4,048,000
Interest Income	\$3,895	\$5,000
Sales/Miscellaneous	\$266	\$500
<b>Total Receipts</b>	<b>\$9,283,936</b>	<b>\$9,075,066</b>
Refunds to Producers	\$307,894	\$283,360
Expenditures	\$3,954,476	\$4,659,201
<b>Ending Balance</b>	<b>\$5,021,566</b>	<b>\$4,132,505</b>



Your voice for wheat and barley. [www.ndgga.com](http://www.ndgga.com)

## North Dakota Grain Growers Association Testimony on SB 2175 Senate Agriculture Committee January 22, 2015

Chairman Miller, members of the Senate Agriculture Committee, for the record my name is Dan Wogsland, Executive Director of the North Dakota Grain Growers Association. NDGGA appears here today in support of SB 2175.

Committee members, you are very aware that funding through the fuel tax refunds and special fuels excise tax for ag research has fallen precipitously especially in light of the fact North Dakota agriculture uses diesel fuel for its operations. This decrease has hurt ag research funding especially in cases where projects needed a boost to aid in the completion in the research initiative. Ag research is the lifeblood of North Dakota agriculture; it is our ag research efforts in our state that helps to make North Dakota agriculture number 1 not only domestically but on a global scale. The modest funding request you find in SB 2015 will pay huge dividends for the state's agriculture and the state's economic future.

Chairman Miller, members of the Senate Agriculture Committee, the NDGGA representative to the Wheat Granting Committee, Mike Martin, has commented time and again on the need to address this research funding. His concern is the lack of funds due to the collapse of the funding source. SB 2175 seeks to correct that problem; therefore the North Dakota Grain Growers Association appears before you today in support of SB 2175 and respectfully requests the Senate Agriculture Committee's Do Pass recommendation.

*NDGGA provides a voice for wheat and barley producers on domestic policy issues – such as crop insurance, disaster assistance and the Farm Bill – while serving as a source for agronomic and crop marketing education for its members.*

1/22/15

#5

**SB 2175**

Good morning, Chairman Miller and members of the Senate Agriculture Committee. For the record, my name is Julie Ellingson and I represent the North Dakota Stockmen's Association, an 85-year-old cattle producers' trade organization, and its 3,000 members.

We rise in support of SB 2175. Research is the lifeblood of agriculture. It helps ranchers and farmers harness and adapt cutting-edge technology and scientific findings to stay competitive, be profitable and, ultimately, feed and clothe the world.

As Sen. Klein explained, the existing agricultural research fund has diminished over time, as agriculturists use less and less gasoline and more and more diesel fuel because of the type of equipment used on our operations. We appreciate the bill sponsors' willingness to bolster the fund to return it to a more substantial, meaningful level, as well as the legislature's support of other research efforts, like those presented in the NDSU Extension Service and Experiment Station budget, HB 1020, that you'll hear more about tomorrow.

As an organization, we recognize that we, as producers, must also have some skin in the game, if you will. That's why the Stockmen's Foundation recently established its own research fund and why that we, as producers, will be asking your support this session to allow us to enhance our beef checkoff, so forward-thinking cattlemen and women who want to contribute to industry research, promotion and education can do so and help leverage the strong commitment the legislature has shown to these endeavors.

Thank you for the opportunity to visit with you about the merits of SB 2175. We'd respectfully ask for your favorable consideration of it.

**SENATE AGRICULTURE COMMITTEE**  
**January 22, 2015 - 9:45 a.m. – Roosevelt Room**

**North Dakota Department of Transportation**  
**Steve Salwei, P.E., Transportation Programs Director**

**SB 2175**

Mr. Chairman and members of the committee, I'm Steve Salwei and serve as the Transportation Programs Director for the North Dakota Department of Transportation (DOT). I'm here today to oppose as written **SB 2175**.

This bill would divert \$2 million per biennium from the Highway Tax Distribution Fund to the Agricultural Research Fund. This diversion of funds would not only impact the DOT's ability to plan and reconstruct roadways, it would also have an impact on counties, cities, townships and transit as well.

The table below shows the impact this diversion of funds would have on the distribution of funding for various governmental entities:

Department of Transportation	61.3%	-\$1,226,000
Counties	22.0%	- \$440,000
Cities	12.5%	-\$250,000
Townships	2.7%	- \$54,000
Transit	1.5%	-\$30,000
	<b>Total Impact</b>	<b>-\$2,000,000</b>

Just to clarify, DOT is not opposed to agricultural research, we would prefer that the research funds do not come from the Highway Tax Distribution Fund.

This concludes my testimony. I would be happy to answer any questions you may have. Thank You.

PROPOSED AMENDMENTS TO SENATE BILL NO. 2175

Page 1, line 1, after "sections" insert "57-39.5-02 and"

Page 1, line 1, remove "and 57-43.2-19"

Page 1, line 2, after "to" insert "the transfer of revenue from the farm machinery gross receipts tax and"

Page 1, line 2, replace "and the special fuels excise tax" with "; and to provide an effective date"

Page 1, after line 3, insert:

**"SECTION 1. AMENDMENT.** Section 57-39.5-02 of the North Dakota Century Code is amended and reenacted as follows:

**57-39.5-02. Imposition - Transfer of funds - Exemptions.**

There is imposed a tax of three percent upon the gross receipts of retailers from all sales at retail, including the leasing or renting, of farm machinery or irrigation equipment used exclusively for agricultural purposes. Two percent of the taxes collected under this chapter, but not exceeding one million dollars in a state fiscal year, must be transferred to the state treasurer who shall deposit the moneys in the agricultural research fund. Gross receipts from sales at retail of farm machinery or irrigation equipment are exempted from the tax imposed by this chapter when the sale, lease, or rental is made to a purchaser or lessor who is entitled to a sales and use tax exemption under subsection 6 or 12 of section 57-39.2-04 on otherwise taxable sales at retail. There are specifically exempted from the tax imposed by this chapter the gross receipts from the sale, lease, or rental of used farm machinery, farm machinery repair parts, used irrigation equipment, or irrigation equipment repair parts used exclusively for agricultural purposes. For purposes of this section, "used" means:

1. Tax under this chapter or chapter 57-39.2 or 57-40.2 has been paid on a previous sale;
2. Tax under section 57-39.5-06 has been paid under a previous lease;
3. Originally purchased outside this state and previously owned by a farmer;  
or
4. Has been under rental for three years or more."

Page 1, remove lines 13 through 23

Page 2, replace lines 1 through 7 with:

**"SECTION 3. EFFECTIVE DATE.** This Act is effective for taxable events occurring after June 30, 2015."

Re-number accordingly

## North Dakota Diesel Fuel Use

(Does not include Railroad and Heating Fuel Gallons)

Fiscal Year	Clear Diesel Gallons	Dyed Diesel Gallons	Clear Diesel Gallon Increase	Gallon Increase/Decrease	Dyed Diesel Gallon Increase	Gallon Increase/Decrease
2008	207,505,950	192,100,846				
2009	210,009,603	191,976,066	2,503,653	1.21%	(124,780)	-0.06%
2010	225,277,996	208,233,444	15,268,393	7.27%	16,257,378	8.47%
2011	278,569,396	283,943,398	53,291,400	23.66%	75,709,954	36.36%
2012	376,667,456	367,033,001	98,098,060	35.21%	83,089,603	29.26%
2013	384,339,031	364,738,310	7,671,575	2.04%	(2,294,691)	-0.63%
2014	431,297,292	414,062,426	46,958,261	12.22%	49,324,116	13.52%
Increase 2008 - 2014	108%	116%				

# 2  
SB 2175  
1/30/2015

## North Dakota Diesel Fuel Use

(Includes Railroad and Heating Fuel Gallons)

Fiscal Year	Clear Diesel Gallons	Dyed Diesel Gallons	Clear Diesel Gallon Increase	Gallon Increase/Decrease	Dyed Diesel Gallon Increase	Gallon Increase/Decrease
2008	207,505,950	275,114,176				
2009	210,009,603	283,368,113	2,503,653	1.21%	8,253,937	3.00%
2010	225,277,996	275,534,476	15,268,393	7.27%	(7,833,637)	-2.76%
2011	278,569,396	358,254,336	53,291,400	23.66%	82,719,860	30.02%
2012	376,667,456	478,430,305	98,098,060	35.21%	120,175,969	33.54%
2013	384,339,031	433,830,343	7,671,575	2.04%	(44,599,962)	-9.32%
2014	431,297,292	497,833,484	46,958,261	12.22%	64,003,141	13.38%
<b>Increase 2008 - 2014</b>	<b>108%</b>	<b>81%</b>				

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### North Dakota Motor Vehicle Fuel Use

Fiscal Year	Gasoline Gallons	Gasohol Gallons	Gasoline Gallon Increase	Gallon Increase/Decrease	Gasohol Gallon Increase	Gallon Increase/Decrease
2008	159,120,935	200,600,919				
2009	151,133,985	212,160,809	(7,986,950)	-5.02%	11,559,890	5.76%
2010	159,907,606	215,702,928	8,773,621	5.81%	3,542,119	1.67%
2011	169,817,585	223,934,186	9,909,979	6.20%	8,231,258	3.82%
2012	188,983,004	237,904,533	19,165,419	11.29%	13,970,347	6.24%
2013	183,517,088	254,250,492	(5,465,916)	-2.89%	16,345,959	6.87%
2014	95,013,843	366,462,128	(88,503,245)	-48.23%	112,211,636	44.13%
Increase 2008 - 2014	-40%	83%				

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North Dakota LP Fuel Use

Fiscal Year	On Road LP	Off Road LP and Heating Fuel	On Road Gallon Increase	Gallon Increase/Decrease	Off Road Gallon Increase	Gallon Increase/Decrease
2008	788,054	93,581,643				
2009	805,354	119,524,736	17,300	2.20%	25,943,093	27.72%
2010	1,158,999	108,747,784	353,645	43.91%	(10,776,952)	-9.02%
2011	96,113	99,656,249	(1,062,886)	-91.71%	(9,091,535)	-8.36%
2012	621,032	96,791,151	524,919	546.15%	(2,865,098)	-2.87%
2013	727,104	115,549,320	106,072	17.08%	18,758,169	19.38%
2014	581,563	173,670,000	(145,541)	-20.02%	58,120,680	50.30%
Increase 2008 - 2014	-26%	86%				

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## Motor Fuel Tax Revenue

Motor Vehicle Fuel:	FY 2008	FY2009	FY2010	FY2011	FY2012	FY2013	FY2014
Taxed Gasoline	\$36,328,738.32	\$33,886,237.81	\$36,820,545.64	\$38,519,346.74	\$42,657,702.28	\$41,497,020.38	\$21,542,325.86
Taxed Gasohol (w/ E85)	\$45,249,977.17	\$47,771,851.39	\$48,729,976.50	\$50,480,535.92	\$53,631,074.93	\$57,457,858.66	\$82,469,898.31
Penalties	\$34,615.77	\$34,914.67	\$31,732.47	\$36,094.56	\$29,413.10	\$13,688.10	\$38,374.24
Interest	\$3,610.87	\$5,046.70	\$81,328.80	\$4,677.50	\$9,347.87	\$2,615.17	\$5,914.70
<b>Total Motor Vehicle Fuel</b>	<b>\$81,616,942.13</b>	<b>\$81,698,050.57</b>	<b>\$85,663,583.41</b>	<b>\$89,040,654.72</b>	<b>\$96,327,538.18</b>	<b>\$98,971,182.31</b>	<b>\$104,056,513.11</b>
Less Refunds	(\$1,107,565.64)	(\$1,539,815.21)	(\$1,729,320.81)	(\$1,083,903.87)	(\$746,133.62)	(\$684,383.85)	(\$600,412.20)
<b>Net Motor Vehicle Fuel Receipts</b>	<b>\$80,509,376.49</b>	<b>\$80,158,235.36</b>	<b>\$83,934,262.60</b>	<b>\$87,956,750.85</b>	<b>\$95,581,404.56</b>	<b>\$98,286,798.46</b>	<b>\$103,456,100.91</b>
<b>Special Fuels (including LP):</b>							
Clear Taxed Fuel	\$47,872,944.64	\$47,612,295.13	\$52,829,018.07	\$64,461,904.85	\$86,508,718.80	\$90,251,620.29	\$97,058,094.76
Dyed Taxable Gallons @ \$.04	\$10,647,239.57	\$10,669,362.97	\$8,639,404.71	\$13,906,222.58	\$16,650,676.58	\$17,388,175.34	\$19,197,523.67
Dyed Taxable Gallons @ \$.04 - Railroad	\$0.00	\$0.00	\$1,944,388.97	\$0.00	\$0.00	\$0.00	\$0.00
Heating Fuel	\$158,951.75	\$271,532.71	\$27,145.51	(\$1,588.54)	\$110.25	\$0.00	\$0.00
Penalties	\$34,181.88	\$29,446.71	\$17,146.14	\$39,473.09	\$39,689.07	\$47,209.16	\$47,223.64
Interest	\$22,419.69	\$2,600.51	\$9,621.26	\$14,809.03	\$7,790.45	\$14,959.05	\$7,851.90
<b>Total Special Fuels (other than LP)</b>	<b>\$58,735,737.53</b>	<b>\$58,585,238.03</b>	<b>\$63,466,724.66</b>	<b>\$78,420,821.01</b>	<b>\$103,206,985.15</b>	<b>\$107,701,963.84</b>	<b>\$116,310,693.97</b>
<b>Liquefied Petroleum</b>							
Gallons Taxed @ \$.23	\$195,292.45	\$197,482.64	\$211,953.61	\$187,762.53	\$148,175.20	\$173,958.12	\$157,702.80
Taxable Gallons @ 2%	\$1,997,491.73	\$1,353,394.92	\$1,392,625.68	\$1,134,412.59	\$1,386,669.22	\$1,242,377.84	\$3,317,794.47
Heating Fuel	\$616,022.68	\$1,217,142.08	\$50,103.96	(\$12,177.32)	(\$5,547.02)	\$0.00	\$0.00
Penalties	\$4,250.66	\$4,419.57	\$4,379.18	\$4,353.99	\$4,742.27	\$3,503.41	\$12,374.51
Interest	\$762.35	\$10,590.96	\$1,398.75	\$2,530.44	\$7,468.41	\$954.44	\$6,481.97
<b>Total LP Fuel</b>	<b>\$2,813,819.87</b>	<b>\$2,783,030.17</b>	<b>\$1,660,461.18</b>	<b>\$1,316,882.23</b>	<b>\$1,541,508.06</b>	<b>\$1,318,975.57</b>	<b>\$3,494,353.75</b>
Less Refunds	(\$200,186.43)	(\$266,508.31)	(\$521,155.04)	(\$379,872.56)	(\$641,663.09)	(\$557,695.42)	(\$281,824.63)
<b>Net Special Fuel Receipts</b>	<b>\$61,349,370.97</b>	<b>\$61,101,759.89</b>	<b>\$64,606,030.80</b>	<b>\$79,357,830.68</b>	<b>\$104,106,830.12</b>	<b>\$108,565,062.23</b>	<b>\$119,523,223.09</b>
<b>Aviation Fuel Tax:</b>							
Aviation Gasoline	\$149,181.77	\$170,964.62	\$157,828.98	\$149,528.10	\$164,373.15	\$165,688.11	\$149,922.27
Jet Fuel	\$1,126,330.45	\$1,100,302.21	\$1,190,410.90	\$1,410,155.65	\$1,708,618.15	\$1,732,029.71	\$1,916,567.39
Penalties	\$156.02	\$92.57	\$174.22	\$178.28	\$2,531.23	\$274.58	\$3,021.58
Interest	\$1.83	\$8.05	\$312.01	\$0.97	\$27.67	\$245.03	\$2.11
<b>Total Aviation Fuel</b>	<b>\$1,275,670.07</b>	<b>\$1,271,367.45</b>	<b>\$1,348,726.11</b>	<b>\$1,559,863.00</b>	<b>\$1,875,550.20</b>	<b>\$1,898,217.43</b>	<b>\$2,069,513.35</b>
Less Refunds	(\$18,417.21)	(\$28,085.96)	(\$33,853.29)	(\$34,503.68)	(\$13,117.20)	(\$19,575.49)	(\$30,938.25)
<b>Net Aviation Fuel Receipts</b>	<b>\$1,257,252.86</b>	<b>\$1,243,281.49</b>	<b>\$1,314,872.82</b>	<b>\$1,525,359.32</b>	<b>\$1,862,433.00</b>	<b>\$1,878,641.94</b>	<b>\$2,038,575.10</b>

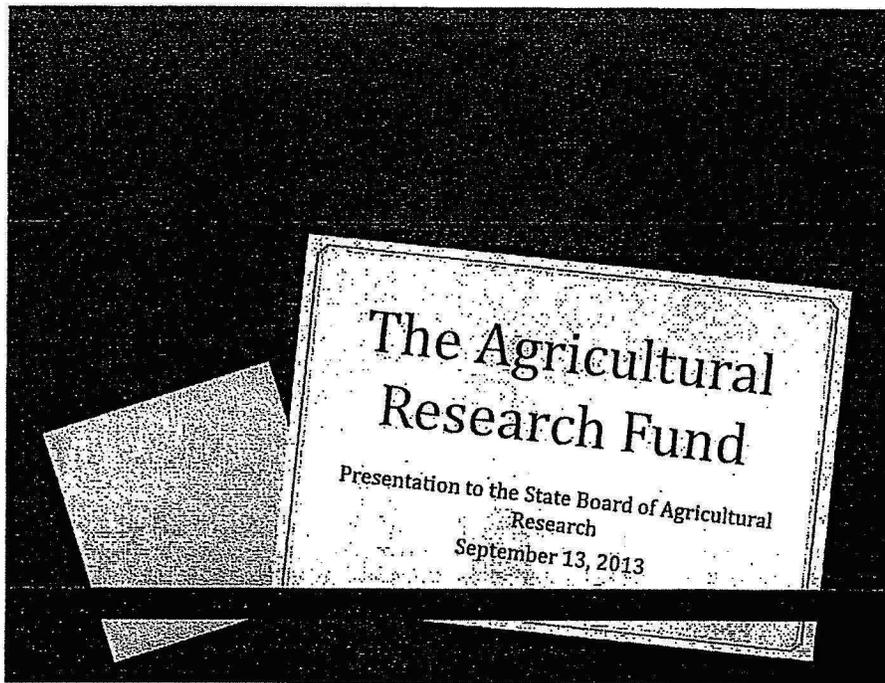
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SB 2175

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## Purpose of the fund

- o The purpose of the grant program is to fund agricultural research that is responsive to identified needs in the state. The research should:
  - o Have a positive economic impact for producers of crops and livestock in North Dakota
  - o Improve the quantity and /or quality of agricultural productivity
  - o Lead to efficiencies in, or sustainability of agricultural productivity

## **The statute**

- o Created in 1997 by the State legislature at the same time the State Board of Agriculture Research was formed.
- o SBARE is responsible for administering the fund
- o Initially, revenue was derived from a gas tax refund (off-road vehicles) of \$0.04/gallon. Since then, general fund revenues have been added, as well as additional funds from the gas tax refund.

## **SBARE'S Responsibility**

- o Track the balance in the special fund available to the Ag Research Fund each fiscal year
- o Appointing granting committees
- o Apportioning the funds to the committees (based on cash receipts from farm marketing the previous fiscal year)
- o Issuing a call for proposals
- o Receiving full proposals
- o Receiving annual progress reports for continuing projects

## **SBARE's Responsibility** (Continued)

- o Forwarding proposals and annual reports to the granting committees
- o Insuring commodity granting committees meet and award grants expeditiously
- o Insuring successful proposals are in compliance with federal and state regulations that govern the conduct of research.
- o Maintaining records on all ARF grant awards and lists of research requests for accounting purposes.

## **Who's eligible to apply**

- o Eligible applicants are individuals, groups or institutions from either the public or the private sector.

## **Eligible Uses**

- o* Generally, for salaries (other than faculty salaries), equipment, supplies, travel, publication, data analysis and fees.
- o* Indirect costs are not allowed.

## **Matching funds**

- o* 25% for major crop projects
- o* 50% for out-of-state projects that have an in-state collaborator
- o* No match required for new & emerging crops and animal agriculture
- o* Can be in the form of cash, in-kind services and or fair market value of equipment, land or other resource.

## Granting committees

- o A majority must consist of producers
- o Each committee will include the director of the ND Ag Experiment Station and an individual who has a background in agricultural research and experience in the contemplated area, including major crops.
- o The producers serve as the voting members
- o Appointments are for two year terms
- o For the animal category: one each from
  - o ND Beef Commission
  - o ND Pork Producers
  - o ND Lamb & Wool Producers
  - o ND Bison Producers
- o For the new & emerging crops committee – a minimum of four producers
- o There is no per diem for serving on a committee

## How the committees operate

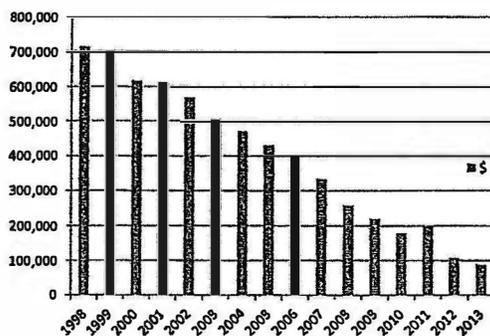
- o Have the authority to each establish its own operating procedures.
- o To save money, try to collaborate with the commodity groups as much as possible.
- o One call for proposals is issued in late September of each year, providing proposal due dates and dollars available for each committee.
- o A public meeting notice is filed.

## Evaluation process

- o Each committee member is provided a copy of the program guidelines prior to each meeting.
- o Evaluation criteria:
  - o Importance of the problem to the commodity/state
  - o Impact of the proposed outcome
  - o Innovation by generating new information
  - o Feasibility
  - o Matching funds

## Annual collections deposited into the Agricultural Research Fund

o 1998	\$714,787
o 1999	\$666,252
o 2000	\$617,585
o 2001	\$612,415
o 2002	\$568,231
o 2003	\$505,763
o 2004	\$470,999
o 2005	\$431,112
o 2006	\$389,528
o 2007	\$334,153
o 2008	\$259,118
o 2009	\$219,864
o 2010	\$179,573
o 2011	\$201,801
o 2012	\$107,850
o 2013	\$ 88,727



## Distribution of funds

- o A commodity receives an allocation if they have 2% or more of the cash receipts from farm marketings from the previous fiscal year
- o 70% to major crops; 18% to Animal Agriculture; 12% to New & Emerging Crops
- o Major crops is defined as those that have two percent or more of the cash receipts from farm marketings from the previous fiscal year:
- o The call for proposals is sent out in September of each year and is currently issued to universities in ND, SD, MT & MN

## 2013-2014 Allocations – Agricultural Research Fund

(Figures based on data from the ND Agricultural Statistics Service for 2012)

Commodity	Cash Receipts*	% of Cash Receipts (total)	% of Cash Receipts (major crops)	Allocations
Wheat	\$2,088,108	24%	28.3%	\$42,633
Soybean	1,740,627	20.0	23.9	36,005
Corn	1,543,696	17.7	21.2	31,937
Canola	421,411	4.8	5.8	8,737
Sugarbeet	366,016	4.2	5.1	7,683
Dry bean	313,027	3.6	4.5	6,779
Barley	307,311	3.5	4.3	6,479
Sunflower	300,184	3.4	4.4	6,629
Potato	180,366	2.0	2.5	3,767
<b>Subtotal</b>	<b>\$7,260,746</b>	<b>83.2</b>	<b>100.00</b>	<b>\$150,649</b>
Livestock	\$1,128,593	12.9%		
Flax	54,538	.6		
Hay	100,543	1.1		
Other	139,801	4.4		
<b>Subtotal</b>	<b>\$1,423,475</b>			
<b>Total</b>	<b>\$8,684,221</b>	<b>100.00</b>		

\*In thousands

Total Revenue:	\$88,726.52	(from ND Tax Dept as of 6/30/13)
Interest earned FY '12	\$397.95	(Per Dave Ruhland – 9-2013)
General Funds	\$150,000.00	
Returned funds	\$0.00	
<u>Less set aside for admin.</u>	<u>(\$23,912.00)</u>	
Available for grants	\$215,212.47	
Major crops (70%)	\$150,649.14	
Livestock (18%)	\$ 38,738.23	
New & Em. Crops (12%)	\$ <u>25,825.10</u>	
<b>Total:</b>	<b>\$215,212.47</b>	

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SB 2115  
2-9-15

**STATE BOARD OF  
AGRICULTURAL RESEARCH &  
EDUCATION**

AGRICULTURAL RESEARCH FUND

**2015**

**LEGISLATIVE  
REPORT**

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# The Agricultural Research Fund

## Overview

The Agricultural Research Fund (ARF) was created in 1997 by the North Dakota Legislature and is administered by the State Board of Agricultural Research and Education (SBARE). ARF is a special fund in the state treasury derived from check-offs indicated on the oil tax refund of \$0.04 per gallon of gasoline. In addition, the program has received \$150,000 of general fund dollars per fiscal year since July 1, 2008. The monies in this fund are expended for agricultural research. Annually, SBARE apportions the funds as follows:

- 70 percent to research activities affecting North Dakota agricultural commodities that account for a least two percent of the gross sales of all agricultural commodities grown or produced in the state. This category currently includes: barley, canola, corn, dry bean, potato, soybean, sugarbeet, sunflower and wheat.
- 18 percent to research activities affecting animal agriculture.
- 12 percent to research activities affecting new and emerging crops.

Funds from ARF encourage agricultural research responsive to identified needs in the state. Projects supported are those that exhibit potential to have a positive economic impact for producers of crops and livestock in North Dakota; improve the quality and/or quantity of agricultural commodities; and lead to efficiencies in, or sustainability of, agricultural productivity. Projects may be submitted by individuals, groups, or institutions of either the public or private sector. Matching funds are required for projects relating to the agricultural commodities category.

SBARE appoints granting committees for each of the areas designated above, biennially. In all of the committees, the majority of the membership consists of producers. The producer-members are the voting members. Each of the committees also includes the director of the North Dakota Agricultural Experiment Station and an individual who has a background in agricultural research in the contemplated area, including major crops. These members are non-voting members.

Since 1997, the ARF has allocated \$6,596,513 to 690 research projects. The following is an accounting of funds available for grants per year and the number of projects funded:

- 1998-1999 \$556,790.30 to 45 projects
- 1999-2000 \$679,786.76 to 66 projects
- 2000-2001 \$616,252.76 to 59 projects
- 2001-2002 \$567,585.00 to 66 projects
- 2002-2003 \$530,731.00 to 54 projects
- 2003-2004 \$468,027.00 to 55 projects
- 2004-2005 \$425,617.00 to 47 projects
- 2005-2006 \$405,072.00 to 47 projects
- 2006-2007 \$367,508.00 to 42 projects
- 2007-2008 \$464,347.00 to 42 projects
- 2008-2009 \$384,784.00 to 34 projects
- 2009-2010 \$338,498.00 to 35 projects
- 2010-2011 \$306,041.00 to 34 projects

- 2011-2012 \$323,642.00 to 35 projects
- 2012-2013 \$161,831.00 to 29 projects

Further information on ARF and the application forms can be found on the Internet at [www.ndsu.nodak.edu/sbare/](http://www.ndsu.nodak.edu/sbare/).

# ***Animal Agriculture***

## **Project Name**

Influence of rate of temperature and pH decline on intramuscular beef tenderness variation in muscles in the round

## **Researcher**

Dr. Kasey Maddock-Carlin

## **Project Summary**

This project will evaluate differences in the rate of temperature and pH decline during chilling in a single muscle located in the beef round in order to understand differences in tenderness that occur within single muscles of the round. Additionally, an early fabrication intervention will be conducted in order to equilibrate the differences in temperature within the beef round muscle during chilling and attempt to improve the variation in tenderness.

## **Amount Awarded**

\$7,495

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## **Project Name**

Electrolysis and nanotechnology treatment to mitigate pollutant gases and chemical oxygen demand (COD) from dairy and swine manure

## **Researcher**

Dr. Shafiqur Rahman

## **Project Summary**

In this research, ozone treatment and electrolysis will be carried out in swine lagoon wastewater to reduce ammonia, hydrogen sulfide, and COD. In addition, effects of these treatments on greenhouse gases will also be evaluated. The short term objective of this study is to provide science-based information of different technologies to mitigate environmental concerns from swine production facilities. The long term objectives are to adapt best management practices to minimize environmental concerns resulting from livestock operations for sustainable growth of this important industry.

## **Amount Awarded**

\$8,460

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## **Project Name**

The effects of maternal nutrition during gestation on objective behavioral measures of lamb vitality

## **Researcher**

Dr. Sarah Wagner

# *Animal Agriculture*

## **Project Summary**

Vitality, the ability of young animals to survive and grow, is critical to the success of any livestock enterprise. Decreased vitality of young animals is a threat to animal wellbeing and farm profitability, yet objective methods of determining which young animals are at risk of decreased vitality have not been well-described. By comparing lamb behavior between lambs from undernourished and well nourished ewes, we will identify clear, objective ways to detect decreased lamb vitality. This information will enable producers to identify at-risk animals and target interventions, decreasing lamb mortality. Moreover, this research may translate to cattle health. As ranchers in Western North Dakota and elsewhere are struggling to provide beef cows with necessary nutrients, many calves will be born to undernourished dams. Measures of decreased vitality in lambs may also be applicable to calves, enabling ranchers to accurately assess their calf crop and focus interventions on animals that are at risk due to decreased vitality. This research is novel, important and at the forefront of the growing fields of animal welfare and livestock behavior.

## **Amount Awarded**

\$4,896

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## **Project Name**

Livestock water quality: pilot survey

## **Researcher**

Dr. Michelle Mostrom

## **Project Summary**

This cost-match project proposes to provide 30 livestock producers from 6 counties in North Dakota the opportunity to have one surface or ground water source tested for livestock water potability by county Extension agents in April – May 2013. Water containers, sampling, and testing of one water sample are supported by the grant. If the livestock producer wants additional water sources tested, the agents can sample the additional source(s) but the owner must pay for additional tests. The samples will be shipped to the ND Veterinary Diagnostic Laboratory for testing and results will be returned to the owner and agent. The data will provide information to the livestock owner and Extension agent as to the potability of the water for livestock use, which may be very important in areas where drought continues. If water parameters are in the toxic range, alternative water sources will need to be anticipated for and provided to livestock.

## **Amount Awarded**

\$5,790

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## **Project Name**

Evaluation of glycated hemoglobin as a metabolic marker for marbling in commercial feeder cattle

# *Animal Agriculture*

## Researcher

Dr. Eric Berg

## Project Summary

The hypotheses of the proposed research project are 1) that as cattle reach "chemical maturity" and growth associated with muscle deposition slows or ceases, fat deposition accelerates, 2) prolonged consumption of corn-based diets ultimately result in hyperglycemia, 3) hyperglycemia results in production of advanced glycation end-products; the most common being glycated hemoglobin (Hb-A1C), and Hb-A1C is related to accumulation of intramuscular fat. Therefore, the objective of the proposed research is to determine if Hb-A1C change over time on feed is related to USDA marbling score.

## Amount Awarded

\$7,256

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## Project Name

Effects of monensin and diet particle size on feedlot performance, carcass traits, nutrient digestibility and incidence of coccidiosis in feedlot lambs

## Researcher

Dr. Christopher Schauer

## Project Summary

Monensin has been shown to decrease incidence of acidosis and coccidiosis while increasing feed efficacy in feedlot lambs. Profitability per animal and in the lamb feeding industry could potentially be increased with its use. Particle size of corn has also been shown to effect nutrient digestion. This trial will attempt to determine monensin as a safe, beneficial additive for feedlot lambs along with providing more research on the effects of corn particle size.

## Amount Awarded

\$8,007

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## Project Name

Impact of nutrition on ovarian function in sheep

## Researcher

Dr. Anna T. Grazul-Bilska

## Project Summary

A critical aspect of reducing the high input costs of livestock production is to improve reproductive efficiency since reproductive failure remains one of the most costly factors in livestock production. One of the major regulators of reproductive function is nutrition. Modern technologies are being developed for the

## *Animal Agriculture*

enhancement of reproductive efficiency and the improvement and preservation of livestock genetics. For

example, modern methods in assisted reproductive technologies (ART) will enable the efficient transfer of embryos, single genes or entire genomes from desirable individuals or embryos, for screening of embryos for genetic defects, and for long-term storage. However, successful application of these technologies depends on the health of donor animals, which is highly affected by diet. This proposal addresses the growing need to determine the effects of nutrition on ovarian function which is a source of oocyte (egg), and to optimize animal diet in order to obtain healthy offspring.

### **Amount Awarded**

\$3,574

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### **Project Name**

Phenotype and Genotype Epidemiology of Infectious Bovine Keratoconjunctivitis (Pink eye) due to *Moraxella bovis* and *M. bovovuli* across North Dakota

### **Researcher**

Dr. Penelope S. Gibbs

### **Project Summary**

Infectious Bovine Keraatoconjunctivitis is a devastating disease in both dairy and beef cattle in North Dakota, across the US, and globally. The costs to producers of cattle are significant. In North Dakota, IBK incidence is increasing, and diagnosis due to *Moraxella* spp. has risen by approximately 80% since 2011. This trend has been observed nationwide. This project will explore the epidemiology of *Moraxella bovis* and *M. bovovuli* involved in IBK (pink eye) in the state of North Dakota. The aim is to determine spread and relatedness of various *M. bovis* and *M. bovovuli* across the state. This will provide data and information for the development of protective vaccines against IBK for the state of North Dakota and perhaps the entire US.

### **Amount Awarded**

\$10,333

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### **Project Name**

The effects of growth promotant technologies on tenderness variation within a beef retail cut

### **Researcher**

Dr. Kasey Maddock-Carlin

### **Project Summary**

The project will evaluate the variation of the activity of the calpain system, which drives the increase in meat tenderness during aging, within a single beef strip steak. Steaks will be obtained from cattle that either were not provided any growth promotant technologies, or provided a growth implant prior to finishing, or provided a growth implant prior to finishing and fed a beta-agonist for the last 20 days prior to slaughter. Results from this study will provide information on the variation of tenderness within a single beef steak and determine if growth promoting technologies contribute more variation of tenderness.

## *Animal Agriculture*

### **Amount Awarded**

\$3,292

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### **Project Name**

Rapid serological test for porcine epidemic diarrhea virus

### **Researcher**

Dr. Sheela Ramamoorthy

### **Project Summary**

The porcine epidemic diarrhea virus (PEDV) emerged as a new swine pathogen in the U.S. in May 2013. PEDV causes acute diarrhea and vomiting in up to 100% of the exposed herd with mortality rates as high as 50% in young piglets. There are currently no available PEDV vaccines. Laboratory detection and diagnosis of PEDV is limited to histopathology in dead pigs and PCR on fecal matter. However, PCRs can only detect PEDV in acutely infected animals. The American Association of Swine Veterinarian's guidelines recommend a combination of PCR and serology for viral detection and diagnosis because only serological tests can detect past or subclinical exposure to the virus. The only serological test that is now available is an immunofluorescence assay which requires culture of the virus, is of variable sensitivity and is laborious to perform. There are no tests available to measure protective antibody responses in exposed pigs or pigs subjected to feedback exposure. The goal of this project is to develop a rapid, cost-effective serological assay to detect PEDV using computational methodology. The need for virus culture will be circumvented by direct chemical synthesis of diagnostic targets. While no PEDV cases have been recorded in North Dakota, so far all of the surrounding states are endemic for PEDV. Therefore, the proposed test will have particular value in North Dakota to screen negative replacement or breeding stock prior to sale or transportation.

### **Amount Awarded**

\$6,300

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### **Project Name**

The role of vitamin A and E deficiency in perinatal calf mortality in ND cattle herds: cost match study with NDSU-VLD

### **Researcher**

Dr. Brett Webb

### **Project Summary**

Loss of calves from abortion, stillbirth and death within the first 24 hours of life are a major source of economic loss to North Dakota cow-calf producers. Unfortunately the cause of death can only be determined in approximately 40% of cases. Diagnostic investigation in cases of perinatal mortality is currently concentrated on testing for infectious agents, which comprise only one category of potential causes. Nutritional aspects, particularly vitamin deficiencies, have been long associated with perinatal mortality but have received considerable less attention. The goal of this project is to determine whether vitamin deficiencies are a significant cause of perinatal calf mortality in North Dakota herds and if so provide

## ***Animal Agriculture/Barley***

immediately useful information back to producers and veterinarians so that supplementation programs

initiated to curtail further losses.

**Amount Awarded**

\$6,065

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**Project Name**

Influence of dried distillers grains with soluble on ram lamb growth and reproductive traits

**Researcher**

Dr. Christopher S. Schauer

**Project Summary**

Ram lambs will be placed in the feedlot and fed one of four rations containing increasing levels of dried distillers grains with soluble (DDGS). The effects of DDGS on ram lamb feedlot performance will be monitored throughout the study. Throughout the feeding phase, both semen and blood samples will be collected from a subsample of ram lambs to evaluate the effects of DDGS on semen quality and testosterone.

**Amount Awarded**

\$9,174

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**Barley**

**Project Name**

Utilizing Genotype-by-sequencing for Genome Wide Selection of Net Blotch Resistance loci in Barley

**Researcher**

Dr. Robert S. Brueggeman

**Project Summary**

The objective of the project is to deploy durable resistance against the net form and spot forms of net blotch of barley. This project will utilize the latest generation sequencing technologies and genomic selection methods to accomplish this goal.

**Amount Awarded**

\$6,479

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*Canola/Corn*

**Canola**

## **Project Name**

Evaluation of potential conventional canola breeding lines developed from winter x spring crosses in North Dakota

## **Researcher**

Dr. Mukhleseur Rahman

## **Project Summary**

Increased seed yield is the most important and attractive traits for canola growers. Winter type canola produces over two-fold seed yield compared to spring type canola. Because of severe winter hardiness, winter type canola is not possible to grow in North Dakota. Therefore, this project has been taken to develop spring type canola by introgression of favorable yield contributing characters from the winter types to create new high seed yield spring canola germplasm. The potential breeding lines already tested in Prosper and Langdon under preliminary yield trial. In this proposed project, the selected breeding lines will be tested in wider location in replicated yield trail to find out the best breeding line adapted in North Dakota. In this project, a winter nursery facility will be used which will reduce the time of reaching practical homozygosis by one half, and will allow to obtain enough amounts of bulked seed per family for early generation testing and selfed seed for generation advancement.

## **Amount Awarded**

\$8,737

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# ***Corn***

## **Project Name**

Nitrogen recalibration for corn in North Dakota

## **Researcher**

Dr. David Franzen

## **Project Summary**

The research in year one will represent enough N-rate studies on corn so that over the past 4 years about 100 site-years of data from across the state will be collected. Nitrogen recommendations for corn will be revised using this modern data set. In addition, algorithms will be developed to enable corn growers to utilize active-optical light sensors on a nitrogen fertilizer applicator to determine whether their corn requires in-season N applications and at what rate.

# ***Corn***

## **Amount Awarded**

\$5,090

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**Project Name**

Corn DDGs – A novel functional material for wood composites

**Researcher**

Dr. Dilpreet Bajwa

**Project Summary**

The project aims at using corn-DDGS in the development of wood fiber composites (particle boards). The chemical composition of DDGS will be exploited to function as a natural lubricant, release agent and a binder in wood composites. These properties will help to minimize or eliminate use of petroleum based wax in the wood composites without compromising physical and mechanical properties of the composite boards.

**Amount Awarded**

\$4,000

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**Project Name**

Fungicide application strategies for corn yield enhancement in North Dakota

**Researcher**

Dr. Mike Ostlie

**Project Summary**

This study involves the collaboration of three NDSU departments in the investigation on the effects of corn fungicides and fungicide application timing for improving corn yields in the absence of disease pressure. The goal will be achieved by identifying optimum fungicide product and application timing combinations for different corn hybrid maturities, while also identifying suboptimal combinations.

**Amount Awarded**

\$7,967

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**Project Name**

Corn stover removal effects on soil properties in North Dakota

**Researcher**

Dr. Larry Cihacek

**Project Summary**

*Corn*

This research will evaluate the impacts of variable stover removal rates on SOM as well as related physical properties such as resistance to penetration (hardening), soil aggregate stability and water infiltration.

**Amount Awarded**

\$2,625

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**Project Name**

Applied corn breeding for sustainable North Dakota corn production

**Researcher**

Dr. Marcelo Carena

**Project Summary**

The Minnesota Corn Research and Promotion Council has joined forces with the ND Corn Utilization Council to support the ND corn breeding efforts for developing short-season drought and cold tolerant unique products not available in industry for northern and western environments. The ND corn breeding program will conduct breeding research that covers all ND and surrounding state regions and maturities serving all farmers in both desirable and marginal state corn production regions independent from industry investment. As a consequence, NDSU will not only increase the genetic diversity of northern U.S. hybrids but will also develop the next generation of short-season corn products for a sustainable North Dakota corn production.

**Amount Awarded**

\$9,814

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**Project Name**

Breeding the next generation of short-season corn products

**Researcher**

Dr. Marcelo Carena

**Project Summary**

The short-term goal of this project is to develop, in cooperation with industry, unique corn products for commercial production. The long-term goals are to create a common and diverse short-season gene pool for the development of the next generation of northern U.S. hybrids with reduced risk and added value to farmers and ranchers.

**Amount Awarded**

\$14,187

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**Project Name**

Potassium recalibration for corn in North Dakota

*Corn/Dry Bean/New & Emerging Crops*

**Researcher**

Dr. David Franzen

**Project Summary**

Soil potassium levels in the state have dropped due to transition from a wheat-based rotation to one of corn and soybean production. Our current corn potassium recommendations are over thirty years old and need to be updated for current hybrids and grower practices.

**Amount Awarded**

\$17,750

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## ***Dry Bean***

**Project Name**

Dry edible bean disease research

**Researcher**

Dr. Julie Pasche

**Project Summary**

This proposal includes requests for funding for four main areas of research: The first objective is to evaluate the biology and detection of the dry bean Anthracnose pathogen *Colletotrichum lindemuthianum* using molecular techniques. The second objective aims to evaluate seed treatment fungicides for the control of root rot pathogens in dry edible beans. The third objective involves the development of resistance to common bacterial blight in NDSU breeding material. The fourth objective is to evaluate the interaction of host plant resistance and foliar fungicides for control of bean rust.

**Amount Awarded**

\$6,779

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## ***New & Emerging Crops***

**Project Name**

Enhancing production of uncommon fruits

**Researcher**

Ms. Kathleen M. Wiederholt

**Project Summary**

### ***New & Emerging Crops***

The Northern Hardy Fruit Evaluation Project evaluates the suitability of selected cultivars of northern-hardy fruits for production by both home gardeners and commercial enterprises in North Dakota. It is the only known fruit research project in the upper Great Plains collecting long-term data so that local fruit production may be encouraged. The plants in the study are hardy, adapted to prairie climate and soils, easy to grow and produce fruits high in phytonutrients. Information gained from this research can greatly reduce the economic risk of new enterprises for current and potential growers. Cultivars that produce acceptable yield and high

fruit quality are promoted in outreach activities. New fruits may create new marketing opportunities as consumers seek the new products generated.

**Amount Awarded**

\$4,000

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**Project Name**

Developing natural herbicide tolerance and resistance in lentil

**Researcher**

Dr. Kevin McPhee

**Project Summary**

Individual breeding lines of lentil will be selected for tolerance and resistance to herbicides targeting broad leaf weed species. As lentils are broadleaf plants they are susceptible to many of the most effective chemicals available. Genetic resistance to these chemicals will allow the lentil breeding program to develop varieties that are resistant to these chemicals making them available for application during the lentil growing season.

**Amount Awarded**

\$6,190

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**Project Name**

Seeding date determination for selected new pulses in North Dakota

**Researcher**

Dr. Burton Johnson

**Project Summary**

This research will identify optimum seeding date for selected pulses, adzuki, faba bean, lupine, and mung not commercially grown for production in North Dakota. Determination of proper seeding date for new crops introduced into a growing region is essential for optimizing crop performance and sustainability.

**Amount Awarded**

\$4,500

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*New & Emerging Crops*

**Project Name**

Field evaluation of X-disease resistant chokecherry lines for small fruit production in North Dakota

**Researcher**

Dr. Wenhao Dai

## **Project Summary**

In this project, we will select 20 X-disease resistant chokecherry hybrids for field test to confirm the X-disease resistance and to evaluate yield and fruit quality under the field condition. We are expecting to release 3-5 new chokecherry cultivars in 3-5 years. Overall, this project has a great potential to increase production of small fruit trees and conserve natural resources, which will benefit all North Dakotans and enhance the quality of life in communities and family farms.

### **Amount Awarded**

\$4,000

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### **Project Name**

Forage brassicas as new crops for North Dakota

### **Researcher**

Dr. Marisol Berti

## **Project Summary**

The project will be conducted in two environments in North Dakota state (Carrington and Prosper). The main objectives will be to identify the best cultivars (in biomass production) of different brassicas species used as forage full crop and cover crop. In addition, this project will determine the forage quality of this forage brassicas species.

### **Amount Awarded**

\$4,146

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### **Project Name**

Selecting superior juneberry cultivars from North Dakota

### **Researcher**

Dr. Harlene Hatterman-Valenti

## **Project Summary**

This project will compare the growth and production of three blackberry cultivars when subjected to an annual production procedure. Grant funds will be used to offset costs associated with the proposed research.

## *New & Emerging Crops/Potato*

### **Amount Awarded**

\$5,388

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### **Project Name**

Introduction of raspberry cultivars for small fruit production in North Dakota

**Researcher**

Dr. Wenhao Dai

**Project Summary**

In this project, we will introduce raspberry cultivars that are not only winter hardy, but also produce high quality and yield for both small fruit production and home grown in North Dakota and surrounding areas. This project has a great potential to increase production of small fruits, which will benefit all North Dakotans and enhance the quality of life in communities and family farms.

**Amount Awarded**

\$10,482

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**Project Name**

Selection and breeding of vegetable crops for local production

**Researcher**

Dr. Chiwon Lee

**Project Summary**

North Dakota has a short growing season. Vegetable growers in the state often suffer poor harvest due to early frost. Vegetables and other specialty crops that mature early are needed for local growers. This project will initiate a vegetable selection and breeding program at NDSU with special attention on early maturing tomato, pepper, eggplants as well as squash and pumpkin. Genetic improvement for nutritional quality such as increasing pigmentation and antioxidant levels will be emphasized. New cultivars developed from this project will be used by the growers of farmer's market vegetables as well as home growers.

**Amount Awarded**

\$9,854

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# ***Potato***

**Project Name**

Support of irrigated potato research

*Potato/Soybean*

**Researcher**

Dr. Gary Secor

**Project Summary**

To conduct irrigated potato research at a site typical of commercial production, to facilitate cultivar identification, production guidelines, best management practices and disease control strategies specific for irrigated potato production in North Dakota and the surrounding region.

2

**Amount Awarded**

\$3,767

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## ***Soybean***

**Project Name**

Increasing awareness and management of nematodes in North Dakota

**Researcher**

Dr. Samuel Markell

**Project Summary**

The goal of this project is to create SCN research/demonstration plots at three locations in North Dakota; that ND soybean growers will be able to observe during associated field days. This project addresses one of the North Dakota Soybean Councils top priorities, SCN, in the 2013 RFP. The objective is to allow growers to observe fungicide and nematicide seed treatment plots during three field days in 2013, and generate local data on nematicide and fungicide efficacy that can be presented at winter meetings and other venues.

**Amount Awarded**

\$3,611

**Project Name**

Virulent types of soybean cyst nematode in North Dakota

**Researcher**

Dr. Berlin Nelson

**Project Summary**

Soybean diseases can seriously reduce yield and quality of soybean. This project examines the diversity of virulent forms of soybean cyst nematode in North Dakota. The information generated will have practical value in understanding management techniques for this important soybean disease.

## ***Soybean/Sugarbeet***

**Amount Awarded**

\$28,650

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**Project Name**

Impact of tillage systems and previous crop on root rots and soybean production

**Researcher**

Dr. Ezra Aberle

### **Project Summary**

The objectives of this study are to 1) compare tillage systems, crop rotations, and previous nitrogen fert treatments on soybean production with an economic analysis of the treatments; 2) quantify the build-up or loss of nitrates supplied by soil organic matter and composted manure resulting from differences in nitrogen fertility and tillage management; 3) determine the impact of these nitrogen credits (residual nitrates) on growth and nitrogen fixation in soybean; 4) determine the effectiveness of rhizobia inoculants on N fixation and yield; and 5) determine what if any impact crop rotations, N fertility and tillage have on indigenous rhizobia and the persistence of rhizobia inoculant.

### **Amount Awarded**

\$7,355

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## ***Sugarbeet***

### **Project Name**

Conduct greenhouse research to evaluate penthiopyrad for controlling Rhizoctonia damping off and root rot of sugarbeet

### **Researcher**

Dr. Mohamed Khan

### **Project Summary**

The purpose of this research is to evaluate Vertisan applications in mixtures with other pesticides to determine fungicide efficacy and safety of mixtures on the plants. This research will address the safety of mixing Vertisan with commonly used insecticides at planting; Vertisan with starter fertilizer at planting; Vertisan with insecticides, and Vertisan with glyphosate at the 4-leaf stage; Vertisan with insecticides and glyphosate at the 4-leaf stage.

### **Amount Awarded**

\$8,963

## ***Sugarbeet/Sunflower***

### **Project Name**

Greenhouse Research

### **Researcher**

Dr. Mohamed Khan

### **Project Summary**

This research will evaluate the effectiveness of Serenade and Sonata (biological control agents) at controlling *R. solani* on sugarbeet under greenhouse conditions. It will be useful to have an effective biological control agent

agent that can control *R. solani* to reduce our dependence of fungicides and help in prolonging the effectiveness of available fungicides.

**Amount Awarded**  
\$7,683

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## ***Sunflower***

### **Project Name**

Evaluation of pericarp hardness traits for resistance to seed-feeding by the sunflower moth

### **Researcher**

Dr. Jarrad Prasifka & Dr. Deirdre Prischmann-Voldseth

### **Project Summary**

This research will: 1) Determine whether known differences in pericarp strength are associated with differences in thickness of the phytomelanin layer of thickness of the pericarp; 1b) If greater total pericarp thickness is detected in lines with stronger pericarps, test whether the increased thickness also has an effect on oil content or other qualities (e.g., shelling ability); 2) Examine the responses of late-instar sunflower moth larvae to increasing pericarp hardness for lines with and without phytomelanin; 3) Estimate the benefit of hard pericarps and phytomelanin using field infestations of sunflower moth larvae and damage ratings of mature seed

**Amount Awarded**  
\$7,659

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### **Project Name**

Downey mildew: Establishment of baseline sensitivity to two fungicides and monitoring for the Development of fungicide resistance and pathogen race changes

## ***Sunflower/Wheat***

### **Researcher**

Dr. Samuel Markell

### **Project Summary**

The objectives of this research are to: 1) Determine fungicide dosages to assess sensitivity (baseline) to Dynasty and Zorbec; 2) Assess historic and current pathogen isolates for sensitivity to both fungicides; 3) Determine if any isolates exist with resistance to either fungicide; 4) Identify pathogen physiological races from across Midwest to monitor development of new virulent races; 5) Educate another graduate student in sunflower pathology

## Amount Awarded

\$6,629

---

# Wheat

## Project Name

Characterization of genetic & cellular mechanisms involved in durable and non-race specific resistance to rust pathogens for development of longer-lasting rust resistant wheat varieties

## Researcher

Dr. Maricelis Acevedo

## Project Summary

Use of resistance genes combination or stacking has been proposed as a tool to provide more durable rust resistance since deployment of cultivars carrying single genes has proved to be short lived. Gene stacking has been supported as a disease control management strategy to increase disease resistance and prolong the use of specific resistance genes. However, to effectively stack genetic resistance knowledge of the resistant genes present in a specific wheat line needs to be known. Use of genetic markers tightly associated with the resistance genes makes the process of gene stacking and selection of individuals carrying multiple genes more efficient. In practice, use of gene combinations, especially those including genes for adult plant resistant (APR) or slow rusting it is complicated by the difficulty of selecting for the gene combination based solely on disease reaction. The central goal of this project is to develop a *resistance gene mode-of-action catalog* for the rust resistance genes. We proposed to develop a set of techniques, based on microscopy fungal quantification in infected plant tissue, that when used in combination can provide a better "picture" of pathogen development and disease progress during infection process that will provide insight about how the different resistant genes respond to pathogen "attack". Additionally, the data from this project will serve as the foundation for future research projects that may provide a new strategy to improve the utilization of gene combinations to manage cereal rust diseases.

## Amount Awarded

\$29,862

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# Wheat

## Project Name

Survey root rot diseases in North Dakota & identify resistance sources in spring wheat

## Researcher

Dr. Shaobin Zhong

## Project Summary

Root diseases are among the most common disease problems of wheat in North Dakota. They occur in every growing season and can cause as much as 3-5% crop losses in an average year. Losses may be greater in years with drought and hot weather conditions. However, information about the causal agents and the reactions of wheat cultivars to the diseases is very limited and no research has been done in the past five

years. The objectives of this project are to 1) Survey root disease incidence and severity in North Dakota. 2) Identify the fungal pathogens causing the root rot diseases. 3) Screen hard red spring wheat lines for resistance to the root rot disease. We will collect root disease samples in fields across North Dakota, isolate the fungal species associated with the diseases, and test the pathogenicity of the fungal species associated with the diseases, and test the pathogenicity of the fungal species in the greenhouse. The reactions of advanced breeding lines and commercially grown cultivars to the root rot pathogens will also be evaluated by greenhouse inoculation experiments. The information and results gained from this research project will be used to formulate effective disease management methods to reduce the impact of root diseases on wheat production in North Dakota.

**Amount Awarded**

\$10,000

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**Project Name**

Evaluation of whole wheat bread quality from hard spring wheat

**Researcher**

Dr. Senay Simsek

**Project Summary**

Whole wheat bread is a standardized bread product in the U.S. Popularity of whole wheat breads may be due to their appeal as sources of good nutritional value or their perception by the consumer as healthful products. Incorporation of wheat bran into food matrices poses technical challenges for food manufactures. This study will investigate the whole wheat bread quality of HRS wheat grown in ND. Additionally, researcher will try to develop the strategies to improve the baking quality of whole wheat flour produced from ND wheat.

**Amount Awarded**

\$7,500

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*Wheat*

**Project Name**

Characterization of the current race structure of *Pyrenophora tritici-repentis*, the causal agent of wheat tan spot in North Dakota

**Researcher**

Dr. Zhaohui Liu

**Project Summary**

Pathogen populations are in a constant change due to several reasons, including selection pressure from the host, nature mutation and so on. Therefore, it is necessary to examine the pathogen population on a regular basis for its race structure, and more importantly to learn if a new virulent type is present. *Pyrenophora tritici-repentis* is the causal agent of wheat tan spot, a devastating disease in North Dakota. This fungus is

capable of and also has a history of changing in virulence and genetic structure. The race structure of this pathogen population in ND was analyzed more than a decade ago with isolates that were collected from limited geographic areas, which was not comprehensive and is now outdated. We propose to conduct a comprehensive investigation of *P. tritici-repentis* population in North Dakota by systematic sampling of wheat plants in commercial fields across the state, followed by characterization of the race structure and evaluation of wheat lines and cultivars for their resistance to current virulent races. This research will not only provide vital information for developing and employment of resistant cultivars for tan spot resistance, but also have potential to identify sources of tan spot resistance for breeding programs.

### **Amount Awarded**

\$12,082

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### **Project Name**

Characterization of leaf and stem rust resistance in durum wheat germplasm

### **Researcher**

Dr. Maricelis Acevedo

### **Project Summary**

The objectives of this project are to: 1) determine the inheritance of resistance to leaf rust races from Mexico and Southern US identified in durum wheat breeding and landraces from the USDA National Small Grains Collection. 2) Evaluate the leaf resistance lines for stem rust resistance to East Africa races. If stem rust resistance is identified, the inheritance of the resistance will be determined and characterized. Based on the preliminary results obtained from a project funded by SBARE in 2010-2011, we have identified sources of resistance to these races in Mexico and to US races from AZ and CA. We have developed bi-parental populations to study the inheritance of the resistance identified. The leaf rust resistant lines and parental lines used in the crosses will be tested for resistance to stem rust races from East Africa. Providing new sources of resistance that can broaden the genetic basis of rust resistance in adapted elite durum materials may reduce the chances of widespread rust epidemics in the future. Additionally, better understanding of the resistance genes in durum will provide a better utilization of resistance genes in all wheat market classes.

## *Wheat*

### **Amount Awarded**

\$11,500

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### **Project Name**

Developing *Sm1* resistance in wheat to the orange wheat blossom midge

### **Researcher**

Dr. Marion Harris

### **Project Summary**

Every year North Dakota's valuable wheat crop is under attack from an array of insect pests. The orange wheat blossom midge has been one of the more significant pests in North Dakota wheat fields in the last

years. The sporadic nature of wheat midge outbreaks and their localized occurrence makes the wheat midge difficult to manage. Insecticides can be effective but determining if and when to apply an insecticide can be problematic. Because of these management difficulties we feel that North Dakota wheat growers would benefit from wheat varieties that are genetically resistant to insect attack. By collaborating with the NDSU Plant Sciences Department we hope to use the *Sm1* gene to develop wheat cultivars that provide a convenient low cost technology for managing the wheat midge.

**Amount Awarded**

\$7,000

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**Project Name**

Assessing North Dakota wheat varieties and germplasm for waterlogging tolerance

**Researcher**

Dr. Xinhua Jia

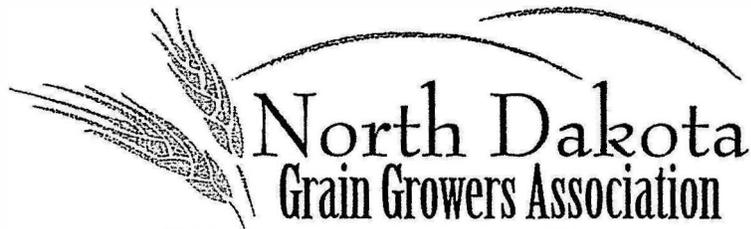
**Project Summary**

The main goal of this study is to identify wheat varieties that have good tolerance to excessive water conditions, and to help develop methods to test for new breeding lines possessing tolerance to excess water for incorporating into NDSU wheat breeding programs.

**Amount Awarded**

\$4,551

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# 3

Your voice for wheat and barley. [www.ndgga.com](http://www.ndgga.com)

**North Dakota Grain Growers Association  
Testimony on SB 2175  
Senate Appropriations Committee  
February 9, 2015**

Chairman Holmberg, members of the Senate Appropriations Committee, for the record my name is Dan Wogsland, Executive Director of the North Dakota Grain Growers Association. NDGGA is in support of SB 2175 as amended.

Committee members, you are very aware that funding through the fuel tax refunds for ag research has fallen precipitously especially in light of the fact North Dakota agriculture uses diesel fuel for its operations. This decrease has hurt ag research funding especially in cases where projects needed a boost to aid in the completion in the research initiative. Ag research is the lifeblood of North Dakota agriculture; it is our ag research efforts in our state that helps to make North Dakota agriculture number one not only domestically but on a global scale. The modest funding request you find in SB 2015 will pay huge dividends for the state's agriculture and the state's economic future.

Chairman Holmberg, members of the Senate Appropriations Committee, the NDGGA representative to the Wheat Granting Committee, Mike Martin, has commented time and again to our Board of Directors on the need to address this research funding. His concern is the lack of funds due to the collapse of the funding source. SB 2175 seeks to correct that problem.

Therefore the North Dakota Grain Growers Association is in full support of SB 2175 and respectfully requests the Senate Appropriations Committee give the measure a Do Pass recommendation.

*NDGGA provides a voice for wheat and barley producers on domestic policy issues – such as crop insurance, disaster assistance and the Farm Bill – while serving as a source for agronomic and crop marketing education for its members.*

3-1

15.0257.02001  
Title.

Prepared by the Legislative Council staff for  
Senator Wanzek

February 9, 2015

# /

PROPOSED AMENDMENTS TO ENGROSSED SENATE BILL NO. 2175

Page 1, line 10, replace "Two percent of the taxes" with "Taxes"

Page 1, line 11, replace "one million dollars in a state fiscal year" with "two million dollars in a  
biennium"

Renumber accordingly

SB 2175  
3-18-15  
#1 p.1

# STATE BOARD OF AGRICULTURAL RESEARCH & EDUCATION

AGRICULTURAL RESEARCH FUND

**2015**

# LEGISLATIVE REPORT

#1 p.2

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## The Agricultural Research Fund

### Overview

The Agricultural Research Fund (ARF) was created in 1997 by the North Dakota Legislature and is administered by the State Board of Agricultural Research and Education (SBARE). ARF is a special fund in the state treasury derived from check-offs indicated on the oil tax refund of \$0.04 per gallon of gasoline. In addition, the program has received \$150,000 of general fund dollars per fiscal year since July 1, 2008. The monies in this fund are expended for agricultural research. Annually, SBARE apportions the funds as follows:

- 70 percent to research activities affecting North Dakota agricultural commodities that account for a least two percent of the gross sales of all agricultural commodities grown or produced in the state. This category currently includes: barley, canola, corn, dry bean, potato, soybean, sugarbeet, sunflower and wheat.
- 18 percent to research activities affecting animal agriculture.
- 12 percent to research activities affecting new and emerging crops.

Funds from ARF encourage agricultural research responsive to identified needs in the state. Projects supported are those that exhibit potential to have a positive economic impact for producers of crops and livestock in North Dakota; improve the quality and/or quantity of agricultural commodities; and lead to efficiencies in, or sustainability of, agricultural productivity. Projects may be submitted by individuals, groups, or institutions of either the public or private sector. Matching funds are required for projects relating to the agricultural commodities category.

SBARE appoints granting committees for each of the areas designated above, biennially. In all of the committees, the majority of the membership consists of producers. The producer-members are the voting members. Each of the committees also includes the director of the North Dakota Agricultural Experiment Station and an individual who has a background in agricultural research in the contemplated area, including major crops. These members are non-voting members.

Since 1997, the ARF has allocated \$6,596,513 to 690 research projects. The following is an accounting of funds available for grants per year and the number of projects funded:

- 1998-1999 \$556,790.30 to 45 projects
- 1999-2000 \$679,786.76 to 66 projects
- 2000-2001 \$616,252.76 to 59 projects
- 2001-2002 \$567,585.00 to 66 projects
- 2002-2003 \$530,731.00 to 54 projects
- 2003-2004 \$468,027.00 to 55 projects
- 2004-2005 \$425,617.00 to 47 projects
- 2005-2006 \$405,072.00 to 47 projects
- 2006-2007 \$367,508.00 to 42 projects
- 2007-2008 \$464,347.00 to 42 projects
- 2008-2009 \$384,784.00 to 34 projects
- 2009-2010 \$338,498.00 to 35 projects
- 2010-2011 \$306,041.00 to 34 projects
- 2011-2012 \$323,642.00 to 35 projects
- 2012-2013 \$161,831.00 to 29 projects

Further information on ARF and the application forms can be found on the Internet at [www.ndsu.nodak.edu/sbare/](http://www.ndsu.nodak.edu/sbare/).

# ***Animal Agriculture***

## **Project Name**

Influence of rate of temperature and pH decline on intramuscular beef tenderness variation in muscles in the round

## **Researcher**

Dr. Kasey Maddock-Carlin

## **Project Summary**

This project will evaluate differences in the rate of temperature and pH decline during chilling in a single muscle located in the beef round in order to understand differences in tenderness that occur within single muscles of the round. Additionally, an early fabrication intervention will be conducted in order to equilibrate the differences in temperature within the beef round muscle during chilling and attempt to improve the variation in tenderness.

## **Amount Awarded**

\$7,495

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## **Project Name**

Electrolysis and nanotechnology treatment to mitigate pollutant gases and chemical oxygen demand (COD) from dairy and swine manure

## **Researcher**

Dr. Shafiqur Rahman

## **Project Summary**

In this research, ozone treatment and electrolysis will be carried out in swine lagoon wastewater to reduce ammonia, hydrogen sulfide, and COD. In addition, effects of these treatments on greenhouse gases will also be evaluated. The short term objective of this study is to provide science-based information of different technologies to mitigate environmental concerns from swine production facilities. The long term objectives are to adapt best management practices to minimize environmental concerns resulting from livestock operations for sustainable growth of this important industry.

## **Amount Awarded**

\$8,460

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## **Project Name**

The effects of maternal nutrition during gestation on objective behavioral measures of lamb vitality

## **Researcher**

Dr. Sarah Wagner

#1 p.6

## *Animal Agriculture*

### **Project Summary**

Vitality, the ability of young animals to survive and grow, is critical to the success of any livestock enterprise. Decreased vitality of young animals is a threat to animal wellbeing and farm profitability, yet objective methods of determining which young animals are at risk of decreased vitality have not been well-described. By comparing lamb behavior between lambs from undernourished and well nourished ewes, we will identify clear, objective ways to detect decreased lamb vitality. This information will enable producers to identify at-risk animals and target interventions, decreasing lamb mortality. Moreover, this research may translate to cattle health. As ranchers in Western North Dakota and elsewhere are struggling to provide beef cows with necessary nutrients, many calves will be born to undernourished dams. Measures of decreased vitality in lambs may also be applicable to calves, enabling ranchers to accurately assess their calf crop and focus interventions on animals that are at risk due to decreased vitality. This research is novel, important and at the forefront of the growing fields of animal welfare and livestock behavior.

### **Amount Awarded**

\$4,896

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### **Project Name**

Livestock water quality: pilot survey

### **Researcher**

Dr. Michelle Mostrom

### **Project Summary**

This cost-match project proposes to provide 30 livestock producers from 6 counties in North Dakota the opportunity to have one surface or ground water source tested for livestock water potability by county Extension agents in April – May 2013. Water containers, sampling, and testing of one water sample are supported by the grant. If the livestock producer wants additional water sources tested, the agents can sample the additional source(s) but the owner must pay for additional tests. The samples will be shipped to the ND Veterinary Diagnostic Laboratory for testing and results will be returned to the owner and agent. The data will provide information to the livestock owner and Extension agent as to the potability of the water for livestock use, which may be very important in areas where drought continues. If water parameters are in the toxic range, alternative water sources will need to be anticipated for and provided to livestock.

### **Amount Awarded**

\$5,790

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### **Project Name**

Evaluation of glycated hemoglobin as a metabolic marker for marbling in commercial feeder cattle

## *Animal Agriculture*

### **Researcher**

Dr. Eric Berg

### **Project Summary**

The hypotheses of the proposed research project are 1) that as cattle reach “chemical maturity” and growth associated with muscle deposition slows or ceases, fat deposition accelerates, 2) prolonged consumption of corn-based diets ultimately result in hyperglycemia, 3) hyperglycemia results in production of advanced glycation end-products; the most common being glycated hemoglobin (Hb-A1C), and Hb-A1C is related to accumulation of intramuscular fat. Therefore, the objective of the proposed research is to determine if Hb-A1C change over time on feed is related to USDA marbling score.

### **Amount Awarded**

\$7,256

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### **Project Name**

Effects of monensin and diet particle size on feedlot performance, carcass traits, nutrient digestibility and incidence of coccidiosis in feedlot lambs

### **Researcher**

Dr. Christopher Schauer

### **Project Summary**

Monensin has been shown to decrease incidence of acidosis and coccidiosis while increasing feed efficiency in feedlot lambs. Profitability per animal and in the lamb feeding industry could potentially be increased with its use. Particle size of corn has also been shown to effect nutrient digestion. This trial will attempt to determine monensin as a safe, beneficial additive for feedlot lambs along with providing more research on the effects of corn particle size.

### **Amount Awarded**

\$8,007

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### **Project Name**

Impact of nutrition on ovarian function in sheep

### **Researcher**

Dr. Anna T. Grazul-Bilska

### **Project Summary**

A critical aspect of reducing the high input costs of livestock production is to improve reproductive efficiency since reproductive failure remains one of the most costly factors in livestock production. One of the major regulators of reproductive function is nutrition.

#1 p.8

## Animal Agriculture

Modern technologies are being developed for the enhancement of reproductive efficiency and the improvement and preservation of livestock genetics. For example, modern methods in assisted reproductive technologies (ART) will enable the efficient transfer of embryos, single genes or entire genomes from desirable individuals or embryos, for screening of embryos for genetic defects, and for long-term storage. However, successful application of these technologies depends on the health of donor animals, which is highly affected by diet. This proposal addresses the growing need to determine the effects of nutrition on ovarian function which is a source of oocyte (egg), and to optimize animal diet in order to obtain healthy offspring.

### Amount Awarded

\$3,574

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### Project Name

Phenotype and Genotype Epidemiology of Infectious Bovine Keratoconjunctivitis (Pink eye) due to *Moraxella bovis* and *M. bovovuli* across North Dakota

### Researcher

Dr. Penelope S. Gibbs

### Project Summary

Infectious Bovine Keratoconjunctivitis is a devastating disease in both dairy and beef cattle in North Dakota, across the US, and globally. The costs to producers of cattle are significant. In North Dakota, IBK incidence is increasing, and diagnosis due to *Moraxella* spp. has risen by approximately 80% since 2011. This trend has been observed nationwide. This project will explore the epidemiology of *Moraxella bovis* and *M. bovovuli* involved in IBK (pink eye) in the state of North Dakota. The aim is to determine spread and relatedness of various *M. bovis* and *M. bovovuli* across the state. This will provide data and information for the development of protective vaccines against IBK for the state of North Dakota and perhaps the entire US.

### Amount Awarded

\$10,333

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### Project Name

The effects of growth promotant technologies on tenderness variation within a beef retail cut

### Researcher

Dr. Kasey Maddock-Carlin

### Project Summary

The project will evaluate the variation of the activity of the calpain system, which drives the increase in meat tenderness during aging, within a single beef strip steak. Steaks will be obtained from cattle that either were not provided any growth promotant technologies, or provided a growth implant prior to finishing, or provided a growth implant prior to finishing and fed a beta-agonist for the last 20 days prior to slaughter. Results from this study will provide

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## *Animal Agriculture*

information on the variation of tenderness within a single beef steak and determine if growth promoting technologies contribute more variation of tenderness.

### **Amount Awarded**

\$3,292

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### **Project Name**

Rapid serological test for porcine epidemic diarrhea virus

### **Researcher**

Dr. Sheela Ramamoorthy

### **Project Summary**

The porcine epidemic diarrhea virus (PEDV) emerged as a new swine pathogen in the U.S. in May 2013. PEDV causes acute diarrhea and vomiting in up to 100% of the exposed herd with mortality rates as high as 50% in young piglets. There are currently no available PEDV vaccines. Laboratory detection and diagnosis of PEDV is limited to histopathology in dead pigs and PCR on fecal matter. However, PCRs can only detect PEDV in acutely infected animals. The American Association of Swine Veterinarian's guidelines recommend a combination of PCR and serology for viral detection and diagnosis because only serological tests can detect past or subclinical exposure to the virus. The only serological test that is now available is an immunofluorescence assay which requires culture of the virus, is of variable sensitivity and is laborious to perform. There are no tests available to measure protective antibody responses in exposed pigs or pigs subjected to feedback exposure. The goal of this project is to develop a rapid, cost-effective serological assay to detect PEDV using computational methodology. The need for virus culture will be circumvented by direct chemical synthesis of diagnostic targets. While no PEDV cases have been recorded in North Dakota, so far all of the surrounding states are endemic for PEDV. Therefore, the proposed test will have particular value in North Dakota to screen negative replacement or breeding stock prior to sale or transportation.

### **Amount Awarded**

\$6,300

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### **Project Name**

The role of vitamin A and E deficiency in perinatal calf mortality in ND cattle herds: cost match study with NDSU-VLD

### **Researcher**

Dr. Brett Webb

### **Project Summary**

Loss of calves from abortion, stillbirth and death within the first 24 hours of life are a major source of economic loss to North Dakota cow-calf producers. Unfortunately the cause of death can only be

## *Animal Agriculture/Barley*

determined in approximately 40% of cases. Diagnostic investigation in cases of perinatal mortality is currently concentrated on testing for infectious agents, which comprise only one category of potential causes. Nutritional aspects, particularly vitamin deficiencies, have been long associated with perinatal mortality but have received considerable less attention. The goal of this project is to determine whether vitamin deficiencies are a significant cause of perinatal calf mortality in North Dakota herds and if so provide immediately useful information back to producers and veterinarians so that supplementation programs can be initiated to curtail further losses.

### **Amount Awarded**

\$6,065

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### **Project Name**

Influence of dried distillers grains with soluble on ram lamb growth and reproductive traits

### **Researcher**

Dr. Christopher S. Schauer

### **Project Summary**

Ram lambs will be placed in the feedlot and fed one of four rations containing increasing levels of dried distillers grains with soluble (DDGS). The effects of DDGS on ram lamb feedlot performance will be monitored throughout the study. Throughout the feeding phase, both semen and blood samples will be collected from a subsample of ram lambs to evaluate the effects of DDGS on semen quality and testosterone.

### **Amount Awarded**

\$9,174

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## ***Barley***

### **Project Name**

Utilizing Genotype-by-sequencing for Genome Wide Selection of Net Blotch Resistance loci in Barley

### **Researcher**

Dr. Robert S. Brueggeman

### **Project Summary**

The objective of the project is to deploy durable resistance against the net form and spot forms of net blotch of barley. This project will utilize the latest generation sequencing technologies and genomic selection methods to accomplish this goal.

### **Amount Awarded**

\$6,479

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## Canola

### Project Name

Evaluation of potential conventional canola breeding lines developed from winter x spring crosses in North Dakota

### Researcher

Dr. Mukhlesur Rahman

### Project Summary

Increased seed yield is the most important and attractive traits for canola growers. Winter type canola produces over two-fold seed yield compared to spring type canola. Because of severe winter hardiness, winter type canola is not possible to grow in North Dakota. Therefore, this project has been taken to develop spring type canola by introgression of favorable yield contributing characters from the winter types to create new high seed yield spring canola germplasm. The potential breeding lines already tested in Prosper and Langdon under preliminary yield trial. In this proposed project, the selected breeding lines will be tested in wider location in replicated yield trail to find out the best breeding line adapted in North Dakota. In this project, a winter nursery facility will be used which will reduce the time of reaching practical homozygosis by one half, and will allow to obtain enough amounts of bulked seed per family for early generation testing and selfed seed for generation advancement.

### Amount Awarded

\$8,737

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## Corn

### Project Name

Nitrogen recalibration for corn in North Dakota

### Researcher

Dr. David Franzen

### Project Summary

The research in year one will represent enough N-rate studies on corn so that over the past 4 years about 100 site-years of data from across the state will be collected. Nitrogen recommendations for corn will be revised using this modern data set. In addition, algorithms will be developed to enable corn growers to utilize active-optical light sensors on a nitrogen fertilizer applicator to determine whether their corn requires in-season N applications and at what rate.

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## Corn

### **Amount Awarded**

\$5,090

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### **Project Name**

Corn DDGs – A novel functional material for wood composites

### **Researcher**

Dr. Dilpreet Bajwa

### **Project Summary**

The project aims at using corn-DDGS in the development of wood fiber composites (particle boards). The chemical composition of DDGS will be exploited to function as a natural lubricant, release agent and a binder in wood composites. These properties will help to minimize or eliminate use of petroleum based wax in the wood composites without compromising physical and mechanical properties of the composite boards.

### **Amount Awarded**

\$4,000

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### **Project Name**

Fungicide application strategies for corn yield enhancement in North Dakota

### **Researcher**

Dr. Mike Ostlie

### **Project Summary**

This study involves the collaboration of three NDSU departments in the investigation on the effects of corn fungicides and fungicide application timing for improving corn yields in the absence of disease pressure. The goal will be achieved by identifying optimum fungicide product and application timing combinations for different corn hybrid maturities, while also identifying suboptimal combinations.

### **Amount Awarded**

\$7,967

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### **Project Name**

Corn stover removal effects on soil properties in North Dakota

### **Researcher**

Dr. Larry Cihacek

#1 p. 13

## Corn

### **Project Summary**

This research will evaluate the impacts of variable stover removal rates on SOM as well as related physical properties such as resistance to penetration (hardening), soil aggregate stability and water infiltration.

### **Amount Awarded**

\$2,625

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### **Project Name**

Applied corn breeding for sustainable North Dakota corn production

### **Researcher**

Dr. Marcelo Carena

### **Project Summary**

The Minnesota Corn Research and Promotion Council has joined forces with the ND Corn Utilization Council to support the ND corn breeding efforts for developing short-season drought and cold tolerant unique products not available in industry for northern and western environments. The ND corn breeding program will conduct breeding research that covers all ND and surrounding state regions and maturities serving all farmers in both desirable and marginal state corn production regions independent from industry investment. As a consequence, NDSU will not only increase the genetic diversity of northern U.S. hybrids but will also develop the next generation of short-season corn products for a sustainable North Dakota corn production.

### **Amount Awarded**

\$9,814

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### **Project Name**

Breeding the next generation of short-season corn products

### **Researcher**

Dr. Marcelo Carena

### **Project Summary**

The short-term goal of this project is to develop, in cooperation with industry, unique corn products for commercial production. The long-term goals are to create a common and diverse short-season gene pool for the development of the next generation of northern U.S. hybrids with reduced risk and added value to farmers and ranchers.

### **Amount Awarded**

\$14,187

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## Corn/Dry Bean/New & Emerging Crops

### **Project Name**

Potassium recalibration for corn in North Dakota

### **Researcher**

Dr. David Franzen

### **Project Summary**

Soil potassium levels in the state have dropped due to transition from a wheat-based rotation to one of corn and soybean production. Our current corn potassium recommendations are over thirty years old and need to be updated for current hybrids and grower practices.

### **Amount Awarded**

\$17,750

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## **Dry Bean**

### **Project Name**

Dry edible bean disease research

### **Researcher**

Dr. Julie Pasche

### **Project Summary**

This proposal includes requests for funding for four main areas of research: The first objective is to evaluate the biology and detection of the dry bean Anthracnose pathogen *Colletotrichum lindemuthianum* using molecular techniques. The second objective aims to evaluate seed treatment fungicides for the control of root rot pathogens in dry edible beans. The third objective involves the development of resistance to common bacterial blight in NDSU breeding material. The fourth objective is to evaluate the interaction of host plant resistance and foliar fungicides for control of bean rust.

### **Amount Awarded**

\$6,779

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## **New & Emerging Crops**

### **Project Name**

Enhancing production of uncommon fruits

### **Researcher**

Ms. Kathleen M. Wiederholt

## *New & Emerging Crops*

### **Project Summary**

The Northern Hardy Fruit Evaluation Project evaluates the suitability of selected cultivars of northern-hardy fruits for production by both home gardeners and commercial enterprises in North Dakota. It is the only known fruit research project in the upper Great Plains collecting long-term data so that local fruit production may be encouraged. The plants in the study are hardy, adapted to prairie climate and soils, easy to grow and produce fruits high in phytonutrients. Information gained from this research can greatly reduce the economic risk of new enterprises for current and potential growers. Cultivars that produce acceptable yield and high fruit quality are promoted in outreach activities. New fruits may create new marketing opportunities as consumers seek the new products generated.

### **Amount Awarded**

\$4,000

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### **Project Name**

Developing natural herbicide tolerance and resistance in lentil

### **Researcher**

Dr. Kevin McPhee

### **Project Summary**

Individual breeding lines of lentil will be selected for tolerance and resistance to herbicides targeting broad leaf weed species. As lentils are broadleaf plants they are susceptible to many of the most effective chemicals available. Genetic resistance to these chemicals will allow the lentil breeding program to develop varieties that are resistant to these chemicals making them available for application during the lentil growing season.

### **Amount Awarded**

\$6,190

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### **Project Name**

Seeding date determination for selected new pulses in North Dakota

### **Researcher**

Dr. Burton Johnson

### **Project Summary**

This research will identify optimum seeding date for selected pulses, adzuki, faba bean, lupine, and mung not commercially grown for production in North Dakota. Determination of proper seeding date for new crops introduced into a growing region is essential for optimizing crop performance and sustainability.

### **Amount Awarded**

\$4,500

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## *New & Emerging Crops*

### **Project Name**

Field evaluation of X-disease resistant chokecherry lines for small fruit production in North Dakota

### **Researcher**

Dr. Wenhao Dai

### **Project Summary**

In this project, we will select 20 X-disease resistant chokecherry hybrids for field test to confirm the X-disease resistance and to evaluate yield and fruit quality under the field condition. We are expecting to release 3-5 new chokecherry cultivars in 3-5 years. Overall, this project has a great potential to increase production of small fruit trees and conserve natural resources, which will benefit all North Dakotans and enhance the quality of life in communities and family farms.

### **Amount Awarded**

\$4,000

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### **Project Name**

Forage brassicas as new crops for North Dakota

### **Researcher**

Dr. Marisol Berti

### **Project Summary**

The project will be conducted in two environments in North Dakota state (Carrington and Prosper). The main objectives will be to identify the best cultivars (in biomass production) of different brassicas species used as forage full crop and cover crop. In addition, this project will determine the forage quality of this forage brassicas species.

### **Amount Awarded**

\$4,146

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### **Project Name**

Selecting superior juneberry cultivars from North Dakota

### **Researcher**

Dr. Harlene Hatterman-Valenti

### **Project Summary**

This project will compare the growth and production of three blackberry cultivars when subjected to an annual production procedure. Grant funds will be used to offset costs associated with the proposed research.

# 1 p. 17

## *New & Emerging Crops/Potato*

### **Amount Awarded**

\$5,388

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### **Project Name**

Introduction of raspberry cultivars for small fruit production in North Dakota

### **Researcher**

Dr. Wenhao Dai

### **Project Summary**

In this project, we will introduce raspberry cultivars that are not only winter hardy, but also produce high quality and yield for both small fruit production and home grown in North Dakota and surrounding areas. This project has a great potential to increase production of small fruits, which will benefit all North Dakotans and enhance the quality of life in communities and family farms.

### **Amount Awarded**

\$10,482

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### **Project Name**

Selection and breeding of vegetable crops for local production

### **Researcher**

Dr. Chiwon Lee

### **Project Summary**

North Dakota has a short growing season. Vegetable growers in the state often suffer poor harvest due to early frost. Vegetables and other specialty crops that mature early are needed for local growers. This project will initiate a vegetable selection and breeding program at NDSU with special attention on early maturing tomato, pepper, eggplants as well as squash and pumpkin. Genetic improvement for nutritional quality such as increasing pigmentation and antioxidant levels will be emphasized. New cultivars developed from this project will be used by the growers of farmer's market vegetables as well as home growers.

### **Amount Awarded**

\$9,854

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## **Potato**

### **Project Name**

Support of irrigated potato research

## *Potato/Soybean*

### **Researcher**

Dr. Gary Secor

### **Project Summary**

To conduct irrigated potato research at a site typical of commercial production, to facilitate cultivar identification, production guidelines, best management practices and disease control strategies specific for irrigated potato production in North Dakota and the surrounding region.

### **Amount Awarded**

\$3,767

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## **Soybean**

### **Project Name**

Increasing awareness and management of nematodes in North Dakota

### **Researcher**

Dr. Samuel Markell

### **Project Summary**

The goal of this project is to create SCN research/demonstration plots at three locations in North Dakota; that ND soybean growers will be able to observe during associated field days. This project addresses one of the North Dakota Soybean Councils top priorities, SCN, in the 2013 RFP. The objective is to allow growers to observe fungicide and nematicide seed treatment plots during three field days in 2013, and generate local data on nematicide and fungicide efficacy that can be presented at winter meetings and other venues.

### **Amount Awarded**

\$3,611

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### **Project Name**

Virulent types of soybean cyst nematode in North Dakota

### **Researcher**

Dr. Berlin Nelson

### **Project Summary**

Soybean diseases can seriously reduce yield and quality of soybean. This project examines the diversity of virulent forms of soybean cyst nematode in North Dakota. The information generated will have practical value in understanding management techniques for this important soybean disease.

#1 p. 19

## *Soybean/Sugarbeet*

### **Amount Awarded**

\$28,650

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### **Project Name**

Impact of tillage systems and previous crop on root rots and soybean production

### **Researcher**

Dr. Ezra Aberle

### **Project Summary**

The objectives of this study are to 1) compare tillage systems, crop rotations, and previous nitrogen fertility treatments on soybean production with an economic analysis of the treatments; 2) quantify the build-up or loss of nitrates supplied by soil organic matter and composted manure resulting from differences in nitrogen fertility and tillage management; 3) determine the impact of these nitrogen credits (residual nitrates) on growth and nitrogen fixation in soybean; 4) determine the effectiveness of rhizobia inoculants on N fixation and yield; and 5) determine what if any impact crop rotations, N fertility and tillage have on indigenous rhizobia and the persistence of rhizobia inoculant.

### **Amount Awarded**

\$7,355

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## ***Sugarbeet***

### **Project Name**

Conduct greenhouse research to evaluate penthiopyrad for controlling Rhizoctonia damping off and root rot of sugarbeet

### **Researcher**

Dr. Mohamed Khan

### **Project Summary**

The purpose of this research is to evaluate Vertisan applications in mixtures with other pesticides to determine fungicide efficacy and safety of mixtures on the plants. This research will address the safety of mixing Vertisan with commonly used insecticides at planting; Vertisan with starter fertilizer at planting; Vertisan with insecticides, and Vertisan with glyphosate at the 4-leaf stage; Vertisan with insecticides and glyphosate at the 4-leaf stage.

### **Amount Awarded**

\$8,963

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## *Sugarbeet/Sunflower*

### **Project Name**

Greenhouse Research

### **Researcher**

Dr. Mohamed Khan

### **Project Summary**

This research will evaluate the effectiveness of Serenade and Sonata (biological control agents) at controlling *R. solani* on sugarbeet under greenhouse conditions. It will be useful to have an effective biological control agent that can control *R. solani* to reduce our dependence of fungicides and help in prolonging the effectiveness of available fungicides.

### **Amount Awarded**

\$7,683

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## ***Sunflower***

### **Project Name**

Evaluation of pericarp hardness traits for resistance to seed-feeding by the sunflower moth

### **Researcher**

Dr. Jarrad Prasifka & Dr. Deirdre Prischmann-Voldseth

### **Project Summary**

This research will: 1) Determine whether known differences in pericarp strength are associated with differences in thickness of the phytomelanin layer of thickness of the pericarp; 1b) If greater total pericarp thickness is detected in lines with stronger pericarps, test whether the increased thickness also has an effect on oil content or other qualities (e.g., shelling ability); 2) Examine the responses of late-instar sunflower moth larvae to increasing pericarp hardness for lines with and without phytomelanin; 3) Estimate the benefit of hard pericarps and phytomelanin using field infestations of sunflower moth larvae and damage ratings of mature seed

### **Amount Awarded**

\$7,659

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### **Project Name**

Downey mildew: Establishment of baseline sensitivity to two fungicides and monitoring for the Development of fungicide resistance and pathogen race changes

## Sunflower/Wheat

#1p21

### Researcher

Dr. Samuel Markell

### Project Summary

The objectives of this research are to: 1) Determine fungicide dosages to assess sensitivity (baseline) to Dynasty and Zorbec; 2) Assess historic and current pathogen isolates for sensitivity to both fungicides; 3) Determine if any isolates exist with resistance to either fungicide; 4) Identify pathogen physiological races from across Midwest to monitor development of new virulent races; 5) Educate another graduate student in sunflower pathology.

### Amount Awarded

\$6,629

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## Wheat

### Project Name

Characterization of genetic & cellular mechanisms involved in durable and non-race specific resistance to rust pathogens for development of longer-lasting rust resistant wheat varieties

### Researcher

Dr. Maricelis Acevedo

### Project Summary

Use of resistance genes combination or stacking has been proposed as a tool to provide more durable rust resistance since deployment of cultivars carrying single genes has proved to be short lived. Gene stacking has been supported as a disease control management strategy to increase disease resistance and prolong the use of specific resistance genes. However, to effectively stack genetic resistance knowledge of the resistant genes present in a specific wheat line needs to be known. Use of genetic markers tightly associated with the resistance genes makes the process of gene stacking and selection of individuals carrying multiple genes more efficient. In practice, use of gene combinations, especially those including genes for adult plant resistant (APR) or slow rusting it is complicated by the difficulty of selecting for the gene combination based solely on disease reaction. The central goal of this project is to develop a *resistance gene mode-of-action catalog* for the rust resistance genes. We proposed to develop a set of techniques, based on microscopy and fungal quantification in infected plant tissue, that when used in combination can provide a better “picture” of pathogen development and disease progress during infection process that will provide insight about how the different resistant genes respond to pathogen “attack”. Additionally, the data from this project will serve as the foundation for future research projects that may provide a new strategy to improve the utilization of gene combinations to manage cereal rust diseases.

### Amount Awarded

\$29,862

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## Wheat

### **Project Name**

Survey root rot diseases in North Dakota & identify resistance sources in spring wheat

### **Researcher**

Dr. Shaobin Zhong

### **Project Summary**

Root diseases are among the most common disease problems of wheat in North Dakota. They occur in every growing season and can cause as much as 3-5% crop losses in an average year. Losses may be greater in years with drought and hot weather conditions. However, information about the causal agents and the reactions of wheat cultivars to the diseases is very limited and no research has been done in the past five years. The objectives of this project are to 1) Survey root disease incidence and severity in North Dakota. 2) Identify the fungal pathogens causing the root rot diseases. 3) Screen hard red spring wheat lines for resistance to the root rot disease. We will collect root disease samples in fields across North Dakota, isolate the fungal species associated with the diseases, and test the pathogenicity of the fungal species associated with the diseases, and test the pathogenicity of the fungal species in the greenhouse. The reactions of advanced breeding lines and commercially grown cultivars to the root rot pathogens will also be evaluated by greenhouse inoculation experiments. The information and results gained from this research project will be used to formulate effective disease management methods to reduce the impact of root diseases on wheat production in North Dakota.

### **Amount Awarded**

\$10,000

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### **Project Name**

Evaluation of whole wheat bread quality from hard spring wheat

### **Researcher**

Dr. Senay Simsek

### **Project Summary**

Whole wheat bread is a standardized bread product in the U.S. Popularity of whole wheat breads may be due to their appeal as sources of good nutritional value or their perception by the consumer as healthful products. Incorporation of wheat bran into food matrices poses technical challenges for food manufactures. This study will investigate the whole wheat bread quality of HRS wheat grown in ND. Additionally, researcher will try to develop the strategies to improve the baking quality of whole wheat flour produced from ND wheat.

### **Amount Awarded**

\$7,500

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# Wheat

# 1p. 23

## Project Name

Characterization of the current race structure of *Pyrenophora tritici-repentis*, the causal agent of wheat tan spot in North Dakota

## Researcher

Dr. Zhaohui Liu

## Project Summary

Pathogen populations are in a constant change due to several reasons, including selection pressure from the host, nature mutation and so on. Therefore, it is necessary to examine the pathogen population on a regular basis for its race structure, and more importantly to learn if a new virulent type is present. *Pyrenophora tritici-repentis* is the causal agent of wheat tan spot, a devastating disease in North Dakota. This fungus is capable of and also has a history of changing in virulence and genetic structure. The race structure of this pathogen population in ND was analyzed more than a decade ago with isolates that were collected from limited geographic areas, which was not comprehensive and is now outdated. We propose to conduct a comprehensive investigation of *P. tritici-repentis* population in North Dakota by systematic sampling of wheat plants in commercial fields across the state, followed by characterization of the race structure and evaluation of wheat lines and cultivars for their resistance to current virulent races. This research will not only provide vital information for developing and employment of resistant cultivars for tan spot resistance, but also have potential to identify sources of tan spot resistance for breeding programs.

## Amount Awarded

\$12,082

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## Project Name

Characterization of leaf and stem rust resistance in durum wheat germplasm

## Researcher

Dr. Maricelis Acevedo

## Project Summary

The objectives of this project are to: 1) determine the inheritance of resistance to leaf rust races from Mexico and Southern US identified in durum wheat breeding and landraces from the USDA National Small Grains Collection. 2) Evaluate the leaf resistance lines for stem rust resistance to East Africa races. If stem rust resistance is identified, the inheritance of the resistance will be determined and characterized. Based on the preliminary results obtained from a project funded by SBARE in 2010-2011, we have identified sources of resistance to these races in Mexico and to US races from AZ and CA. We have developed bi-parental populations to study the inheritance of the resistance identified. The leaf rust resistant lines and parental lines used in the crosses will be tested for resistance to stem rust races from East Africa. Providing new sources of resistance that can broaden the genetic basis of rust resistance in adapted elite durum materials may reduce the chances of widespread rust epidemics in the future. Additionally, better understanding of the resistance genes in durum will provide a better utilization of resistance genes in all wheat market classes.

## Wheat

### Amount Awarded

\$11,500

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### Project Name

Developing *Sm1* resistance in wheat to the orange wheat blossom midge

### Researcher

Dr. Marion Harris

### Project Summary

Every year North Dakota's valuable wheat crop is under attack from an array of insect pests. The orange wheat blossom midge has been one of the more significant pests in North Dakota wheat fields in the last 20 years. The sporadic nature of wheat midge outbreaks and their localized occurrence makes the wheat midge difficult to manage. Insecticides can be effective but determining if and when to apply an insecticide can be problematic. Because of these management difficulties we feel that North Dakota wheat growers would benefit from wheat varieties that are genetically resistant to insect attack. By collaborating with the NDSU Plant Sciences Department we hope to use the *Sm1* gene to develop wheat cultivars that provide a convenient low cost technology for managing the wheat midge.

### Amount Awarded

\$7,000

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### Project Name

Assessing North Dakota wheat varieties and germplasm for waterlogging tolerance

### Researcher

Dr. Xinhua Jia

### Project Summary

The main goal of this study is to identify wheat varieties that have good tolerance to excessive water conditions, and to help develop methods to test for new breeding lines possessing tolerance to excess water for incorporating into NDSU wheat breeding programs.

### Amount Awarded

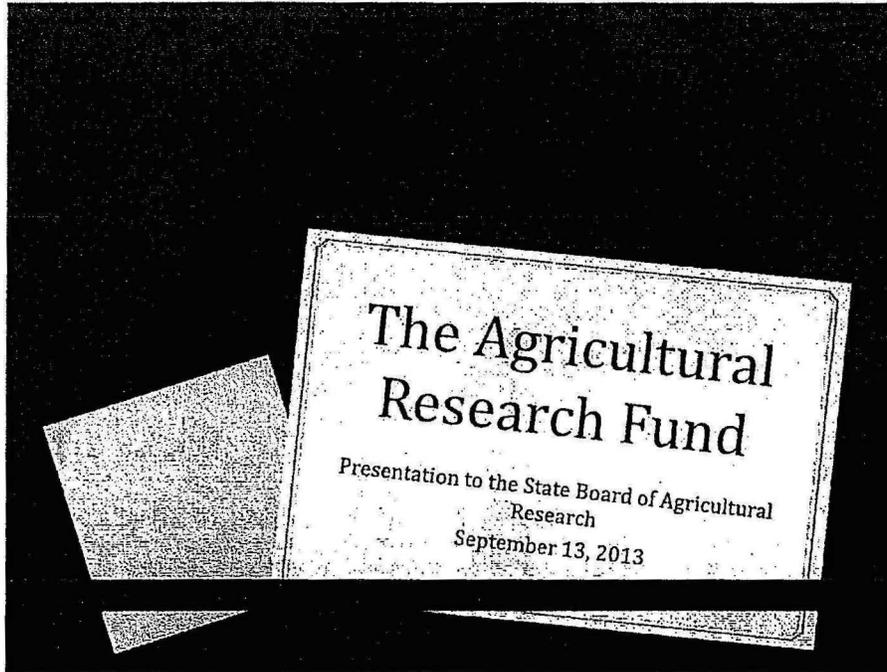
\$4,551

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SB 2175

3-18-15

#2p.1 9/12/2013



## Purpose of the fund

- o The purpose of the grant program is to fund agricultural research that is responsive to identified needs in the state. The research should:
  - o Have a positive economic impact for producers of crops and livestock in North Dakota
  - o Improve the quantity and /or quality of agricultural productivity
  - o Lead to efficiencies in, or sustainability of agricultural productivity

## The statute

- o Created in 1997 by the State legislature at the same time the State Board of Agriculture Research was formed.
- o SBARE is responsible for administering the fund
- o Initially, revenue was derived from a gas tax refund (off-road vehicles) of \$0.04/gallon. Since then, general fund revenues have been added, as well as additional funds from the gas tax refund.

## SBARE'S Responsibility

- o Track the balance in the special fund available to the Ag Research Fund each fiscal year
- o Appointing granting committees
- o Apportioning the funds to the committees (based on cash receipts from farm marketing the previous fiscal year)
- o Issuing a call for proposals
- o Receiving full proposals
- o Receiving annual progress reports for continuing projects

## **SBARE's Responsibility** (Continued)

- o Forwarding proposals and annual reports to the granting committees
- o Insuring commodity granting committees meet and award grants expeditiously
- o Insuring successful proposals are in compliance with federal and state regulations that govern the conduct of research.
- o Maintaining records on all ARF grant awards and lists of research requests for accounting purposes.

## **Who's eligible to apply**

- o Eligible applicants are individuals, groups or institutions from either the public or the private sector.

## Eligible Uses

- o Generally, for salaries (other than faculty salaries), equipment, supplies, travel, publication, data analysis and fees.
- o Indirect costs are not allowed.

## Matching funds

- o 25% for major crop projects
- o 50% for out-of-state projects that have an in-state collaborator
- o No match required for new & emerging crops and animal agriculture
- o Can be in the form of cash, in-kind services and or fair market value of equipment, land or other resource.

## Granting committees

- o A majority must consist of producers
- o Each committee will include the director of the ND Ag Experiment Station and an individual who has a background in agricultural research and experience in the contemplated area, including major crops.
- o The producers serve as the voting members
- o Appointments are for two year terms
- o For the animal category: one each from
  - o ND Beef Commission
  - o ND Pork Producers
  - o ND Lamb & Wool Producers
  - o ND Bison Producers
- o For the new & emerging crops committee – a minimum of four producers
- o There is no per diem for serving on a committee

## How the committees operate

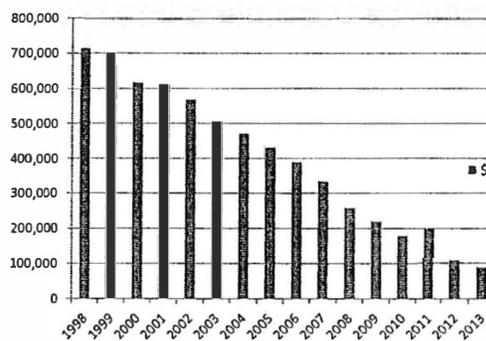
- o Have the authority to each establish its own operating procedures.
- o To save money, try to collaborate with the commodity groups as much as possible.
- o One call for proposals is issued in late September of each year, providing proposal due dates and dollars available for each committee.
- o A public meeting notice is filed.

## Evaluation process

- o Each committee member is provided a copy of the program guidelines prior to each meeting.
- o Evaluation criteria:
  - o Importance of the problem to the commodity/state
  - o Impact of the proposed outcome
  - o Innovation by generating new information
  - o Feasibility
  - o Matching funds

## Annual collections deposited into the Agricultural Research Fund

o 1998	\$714,787
o 1999	\$666,252
o 2000	\$617,585
o 2001	\$612,415
o 2002	\$568,231
o 2003	\$505,763
o 2004	\$470,999
o 2005	\$431,112
o 2006	\$389,528
o 2007	\$334,153
o 2008	\$259,118
o 2009	\$219,864
o 2010	\$179,573
o 2011	\$201,801
o 2012	\$107,850
o 2013	\$ 88,727



## Distribution of funds

- o A commodity receives an allocation if they have 2% or more of the cash receipts from farm marketings from the previous fiscal year
- o 70% to major crops; 18% to Animal Agriculture; 12% to New & Emerging Crops
- o Major crops is defined as those that have two percent or more of the cash receipts from farm marketings from the previous fiscal year.
- o The call for proposals is sent out in September of each year and is currently issued to universities in ND, SD, MT & MN

## 2013-2014 Allocations – Agricultural Research Fund

(Figures based on data from the ND Agricultural Statistics Service for 2012)

Commodity	Cash Receipts*	% of Cash Receipts (total)	% of Cash Receipts (major crops)	Allocations
Wheat	\$2,088,108	24%	28.3%	\$42,633
Soybean	1,740,627	20.0	23.9	36,005
Corn	1,543,696	17.7	21.2	31,937
Canola	421,411	4.8	5.8	8,737
Sugarbeet	366,016	4.2	5.1	7,683
Dry bean	313,027	3.6	4.5	6,779
Barley	307,311	3.5	4.3	6,479
Sunflower	300,184	3.4	4.4	6,629
Potato	180,366	2.0	2.5	3,767
Subtotal	\$7,260,746	83.2	100.00	\$150,649
Livestock	\$1,128,593	12.9%		
Flax	54,538	.6		
Hay	100,543	1.1		
Other	139,801	4.4		
Subtotal	\$1,423,475			
Total	\$8,684,221	100.00		

\*In thousands

Total Revenue:	\$88,726.52	(from ND Tax Dept as of 6/30/13)
Interest earned FY '12	\$397.95	(Per Dave Ruhland – 9-2013)
General Funds	\$150,000.00	
Returned funds	\$0.00	
Less set aside for admin.	(\$23,912.00)	
Available for grants	\$215,212.47	
Major crops (70%)	\$150,649.14	
Livestock (18%)	\$ 38,738.23	
New & Em. Crops (12%)	\$ 25,825.10	
Total:	\$215,212.47	



SB 2175  
3-18-15  
#3

Your voice for wheat and barley. [www.ndgga.com](http://www.ndgga.com)

North Dakota Grain Growers Association  
Testimony on SB 2175  
House Finance and Tax Committee  
March 18, 2015

Chairman Headland, members of the House Finance and Tax Committee, for the record my name is Dan Wogsland, Executive Director of the North Dakota Grain Growers Association. NDGGA appears here today in support of SB 2175.

Committee members, you are very aware that funding through the fuel tax refunds and special fuels excise tax for ag research has fallen precipitously especially in light of the fact North Dakota agriculture uses diesel fuel for its operations. This decrease has hurt ag research funding especially in cases where projects needed a boost to aid in the completion in the research initiative. Ag research is the lifeblood of North Dakota agriculture; it is our ag research efforts in our state that helps to make North Dakota agriculture number 1 not only domestically but on a global scale. The modest funding request you find in SB 2175 will pay huge dividends for the state's agriculture and the state's economic future.

Chairman Headland, members of the House Finance and Tax Committee, the NDGGA representative to the Wheat Granting Committee, Mike Martin, has commented time and again on the need to address this research funding. His concern is the lack of funds due to the collapse of the funding source. SB 2175 seeks to correct that problem; therefore the North Dakota Grain Growers Association appears before you today in support of SB 2175 and respectfully requests the House Finance and Tax Committee give the measure a Do Pass recommendation.

## SB 2175 Testimony

Mar 18 2015

Good morning Chairman Headland and members of the House Finance & Tax Committee. I am Scott Rising, representing the ND Soybean Growers Association.

SB2175 revitalizes the Agricultural Research Fund. We are respectfully asking that you join us in supporting SB 2175.

The history of the fund and its administration extends back to 1997. HB1427, sponsored by Representatives Dalrymple, Aarsvold, Nicholas and Senators Heitkamp, Solberg and Wanzek, proposed an Agricultural Consultation Board to administer research grants to commodity groups. It prevailed in the House but was defeated in the Senate.

The basic concept of HB1427 was rolled into SB2064, an appropriations bill that passed both Chambers. Section 21 of the bill created a new entity called the State Board of Research that administered the new Agricultural Research Fund. The fund balances from 1998 to 2014 are displayed below:

1998	\$606,790	2003	\$505,763	2008	\$259,118	2013	\$ 88,727
1999	\$714,787	2004	\$470,999	2009	\$235,540	2014	\$114,913
2000	\$666,253	2005	\$431,112	2010	\$190,377		
2001	\$612,415	2006	\$389,528	2011	\$201,801		
2002	\$598,231	2007	\$334,153	2012	\$107,850		

Legend: Green = Gain Red = Reduction

Reductions in the Agricultural Fuel Tax refund process basically chronicle North Dakota's conversion of agricultural production from gas-powered equipment to diesel-powered equipment in the last decade and a half. SB2175 replaces the current funding source with a mechanism that captures 2% of the farm machinery gross receipts tax applied to farm equipment sales up to a maximum of \$1 million per year.

Funds from the ARF encourage agricultural research responsive to identified needs in the state. ARF supports research projects that:

- Have a positive economic impact for producers of crops and livestock in North Dakota;
- Improve the quantity and/or quality of agricultural commodities;
- Lead to efficiencies in, or sustainability of agricultural productivity;
- Are submitted by individuals, groups, or institutions from either the public or the private sector;

- Are selected through a competitive process that includes review of written proposals;
- Include funding from other sources, public or private; and
- Include a framework for timely progress toward stated objectives.

All farmers potentially pay into the fund by purchasing new machinery. So the Agricultural Research Fund is allocated across all commodities.

- 12% is allocated to research activities for new and emerging crops. No matching funds are required for this category.
- 18% is allocated to research activities affecting animal agriculture. No matching funds are required for this category.
- 70% is allocated to research activities affecting commodities that account for at least 2% of the gross sales of all commodities grown or produced in ND. Matching funds are required for this category (a minimum of 25% is required of ND submissions and a 1 to 1 match for projects outside ND).

Grant applications are reviewed by Grant Committees with a majority of members being producers. Each committee will include the director of the ND Agricultural Experiment Station or the director's designee, and an individual who has a background in agricultural research and experience in the contemplated area including major crops. Member appointments are for two-year terms.

We respectfully request that you join us in our support of SB 2175.

Thank You,  
Scott rising  
NDSGA Legislative Director

PROPOSED AMENDMENTS TO REENGROSSED SENATE BILL NO. 2175

Page 1, line 1, replace "57-39.5-02" with "4-05.1-20"

Page 1, line 2, after "to" insert "the agricultural research fund and"

Page 1, line 2, remove "the farm machinery gross"

Page 1, line 3, remove "receipts tax and"

Page 1, after line 4, insert:

**"SECTION 1. AMENDMENT.** Section 4-05.1-20 of the North Dakota Century Code is amended and reenacted as follows:

**4-05.1-20. Agricultural research fund - Continuing appropriation.**

The agricultural research fund is a special fund in the state treasury. The state board of agriculture research and education may receive and accept in the name of the state any funds that are offered or become available from any federal grant or appropriation, private gift, bequest, or donation. Any grants, appropriations, private gifts, bequests, or donations to the fund must be paid to the state treasurer who shall credit that amount to the agricultural research fund. The moneys in the fund must be expended for purposes of agricultural research. Any interest earned by the fund is appropriated to the state board of agricultural research and education."

Page 1, remove lines 5 through 24

Page 2, line 10, replace "This" with "Section 2 of this"

Renumber accordingly

PROPOSED AMENDMENTS TO REENGROSSED SENATE BILL NO. 2175

Page 1, line 1, replace "57-39.5-02" with "4-05.1-20"

Page 1, line 2, after "to" insert "the agricultural research fund, the creation of the supplemental extension and research fund and"

Page 1, line 2, remove "the farm machinery gross receipts tax and"

Page 1, after line 4, insert:

**"SECTION 1. AMENDMENT.** Section 4-05.1-20 of the North Dakota Century Code is amended and reenacted as follows:

**4-05.1-20. Agricultural research fund - Supplemental extension and research fund - Continuing appropriation.**

The agricultural research fund is a special fund in the state treasury. The state board of agriculture research and education may receive and accept in the name of the state any funds that are offered or become available from any federal grant or appropriation, private gift, bequest, or donation. Any grants, appropriations, private gifts, bequests, or donations to the fund must be paid to the state treasurer who shall credit that amount to the agricultural research fund. The moneys in the fund must be expended for purposes of agricultural research. Any interest earned by the fund is appropriated to the state board of agricultural research and education. The fund balance may not exceed two million dollars and any excess amount must be transferred to the supplemental extension and research fund.

The supplemental extension and research fund is a special fund in the state treasury. The moneys in the fund may be expended for purposes of extension service functions or research subject to legislative appropriation."

Page 1, remove lines 5 through 24

Page 2, line 10, replace "This" with "Section 2 of this"

Renumber accordingly

#1  
4/7/15

15.0257.03000

SECOND ENGROSSMENT *FN*

Sixty-fourth  
Legislative Assembly  
of North Dakota

REENGROSSED SENATE BILL NO. 2175

Introduced by

Senators Klein, O'Connell, Wanzek

Representatives Boe, D. Johnson, Pollert

1 A BILL for an Act to amend and reenact sections 57-39.5-02 and 57-43.1-03.1 of the North  
2 Dakota Century Code, relating to the transfer of revenue from the farm machinery gross  
3 receipts tax and fuel tax refunds; and to provide an effective date.

4 **BE IT ENACTED BY THE LEGISLATIVE ASSEMBLY OF NORTH DAKOTA:**

5 **SECTION 1. AMENDMENT.** Section 57-39.5-02 of the North Dakota Century Code is  
6 amended and reenacted as follows:

7 **57-39.5-02. Imposition - Transfer of funds - Exemptions.**

8 There is imposed a tax of three percent upon the gross receipts of retailers from all sales at  
9 retail, including the leasing or renting, of farm machinery or irrigation equipment used

10 exclusively for agricultural purposes. Taxes collected under this chapter, but not exceeding two

11 million dollars in a biennium, must be transferred to the state treasurer who shall deposit the

12 moneys in the agricultural research fund. Gross receipts from sales at retail of farm machinery

13 or irrigation equipment are exempted from the tax imposed by this chapter when the sale, lease,

14 or rental is made to a purchaser or lessor who is entitled to a sales and use tax exemption

15 under subsection 6 or 12 of section 57-39.2-04 on otherwise taxable sales at retail. There are

16 specifically exempted from the tax imposed by this chapter the gross receipts from the sale,

17 lease, or rental of used farm machinery, farm machinery repair parts, used irrigation equipment,

18 or irrigation equipment repair parts used exclusively for agricultural purposes. For purposes of

19 this section, "used" means:

20 1. Tax under this chapter or chapter 57-39.2 or 57-40.2 has been paid on a previous  
21 sale;

22 2. Tax under section 57-39.5-06 has been paid under a previous lease;

23 3. Originally purchased outside this state and previously owned by a farmer; or

24 4. Has been under rental for three years or more.

*change to  
\$1.75M*

1       **SECTION 2. AMENDMENT.** Section 57-43.1-03.1 of the North Dakota Century Code is  
2 amended and reenacted as follows:

3       **57-43.1-03.1. Refund of tax for fuel used for agricultural purposes - Reductions.**

4       Any consumer who buys or uses any motor vehicle fuel for an agricultural purpose on which  
5 the motor vehicle fuel tax has been paid may file a claim with the commissioner for a refund  
6 under this chapter. ~~The amount of the tax refund under this section must be reduced by seven-~~  
7 ~~cents per gallon [3.79 liters] except for those fuels used in aircraft or with respect to refunds-~~  
8 ~~claimed by aircraft fuel users. The amount per gallon [3.79 liters] withheld from the refund must-~~  
9 ~~be deposited in the agricultural research fund.~~

10       **SECTION 3. EFFECTIVE DATE.** This Act is effective for taxable events occurring after  
11 June 30, 2015.

#2  
4/7/15

15.0257.04000

**SECOND ENGROSSMENT FN**  
**with House Amendments**  
**REENGROSSED SENATE BILL NO. 2175**

Sixty-fourth  
Legislative Assembly  
of North Dakota

Introduced by

Senators Klein, O'Connell, Wanzek

Representatives Boe, D. Johnson, Pollert

1 A BILL for an Act to amend and reenact sections 4-05.1-20 and 57-43.1-03.1 of the North  
2 Dakota Century Code, relating to the agricultural research fund, the creation of the  
3 supplemental extension and research fund, and the transfer of revenue from fuel tax refunds;  
4 and to provide an effective date.

5 **BE IT ENACTED BY THE LEGISLATIVE ASSEMBLY OF NORTH DAKOTA:**

6 **SECTION 1. AMENDMENT.** Section 4-05.1-20 of the North Dakota Century Code is  
7 amended and reenacted as follows:

*add section  
1 as an amendm  
to version  
15.0257.  
03000*

8 **4-05.1-20. Agricultural research fund - Supplemental extension and research fund -**  
9 **Continuing appropriation.**

10 1. The agricultural research fund is a special fund in the state treasury. The state board  
11 of agriculture research and education may receive and accept in the name of the state  
12 any funds that are offered or become available from any federal grant or appropriation,  
13 private gift, bequest, or donation. Any grants, appropriations, private gifts, bequests, or  
14 donations to the fund must be paid to the state treasurer who shall credit that amount  
15 to the agricultural research fund. The moneys in the fund must be expended for  
16 purposes of agricultural research. Any interest earned by the fund is appropriated to  
17 the state board of agricultural research and education. The fund balance may not  
18 exceed two million dollars and any excess amount must be transferred to the  
19 supplemental extension and research fund.

*Change  
to \$1.5M*

20 2. The supplemental extension and research fund is a special fund in the state treasury.  
21 The moneys in the fund may be expended for purposes of extension service functions  
22 or research subject to legislative appropriation.

23 **SECTION 2. AMENDMENT.** Section 57-43.1-03.1 of the North Dakota Century Code is  
24 amended and reenacted as follows:

1       **57-43.1-03.1. Refund of tax for fuel used for agricultural purposes - Reductions.**

2       Any consumer who buys or uses any motor vehicle fuel for an agricultural purpose on which  
3       the motor vehicle fuel tax has been paid may file a claim with the commissioner for a refund  
4       under this chapter. ~~The amount of the tax refund under this section must be reduced by seven-~~  
5       ~~cents per gallon [3.79 liters] except for those fuels used in aircraft or with respect to refunds-~~  
6       ~~claimed by aircraft fuel users. The amount per gallon [3.79 liters] withheld from the refund must~~  
7       ~~be deposited in the agricultural research fund.~~

8       **SECTION 3. EFFECTIVE DATE.** Section 2 of this Act is effective for taxable events  
9       occurring after June 30, 2015.