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Agriculture Committee  
October 01, 2007

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[LR135]

SENATOR ERDMAN: Good morning, ladies and gentlemen. Welcome to the Agriculture Committee's hearing on LR135. I will give a few introductory remarks here and introduce the committee. I know that we've got a number of committee members in the building that will be joining us, so we will hold off a little bit on introductions. But I'm going to, first of all, introduce the staff of the committee. To my left is Rick Leonard; he's the research analyst. To my far right is Linda Dicken; she's the committee clerk. Those of you that will testify today, please have a sheet filled out, and you can hand that to her. And when you testify, state and spell your name please. That will assist us in the transcribing of this. Kara Johnson, from Lincoln, is our page this morning, and if you do have information to distribute to the committee, she is more than happy to assist us with that, and we appreciate her willingness to be here. If you have cell phones, please turn those off or set them so that they do not ring. That makes it easier on everyone that is here, as well as the transcribers. Again, before you begin your testimony, state your name and spell it for the record. That will make sure that when you go down in history that it's written appropriately. And if you, again, handout material, please give that to Kara. This is an interim hearing so you're not technically supporting or opposing anything. We're simply here to gather information, and so we probably won't have any cheering or booing, although we may, and if you feel compelled, you can step outside and do that in the hallway and come back in. We'll let you do that, but please try to refrain from doing that while you're here in the committee room. Relax; don't be nervous. We're nervous enough for you, so we'll take that on and you can tell us why it is that you're here. And I think this is an important area to discuss, and I look forward to what I believe to be a good discussion. I'll introduce the committee members who are here, and again recognize that others are here and may be joining us a little bit later. To my far left, Senator Norm Wallman. Norm is from Cortland. Next to him will be Senator Karpisek, here from Wilber. Next to him is the Vice Chair of the committee, Senator Dubas from Fullerton. Again, I already introduced Rick. I'm Phil Erdman from Bayard; I am the Chair of the committee. To my right, Senator Dierks; Senator Dierks is from

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Ewing. And Senator Preister is here in the building; I've seen him; Senator Preister is from Omaha. And Senator Chambers and Senator McDonald may be joining us. But we have a busy day as an Ag Committee, so I'm sure you'll see us all at some point today, if not during this hearing. Specifically, LR135 is a study of ag research and possible funding sources to determine the critical priorities for the state of Nebraska. And the study shall further examine ways to prioritize ag research investment in the state, as well as potential funding sources to match unmet ag research needs. This is an interim study that I've introduced with Senator Harms. We have a bill, I believe, that's on General File, that provides for funding for ag research in an independent and focused effort, I think for the first time, and so we're interested to hear some of the perspectives that you may have on what the priorities needs to be for Nebraska, for agricultural research; how we can enhance the opportunities that agriculture has for Nebraska in a number of areas. And we're especially grateful for the university being here because they are the leader in our state on ag research in the front that that is, and so we appreciate your willingness to be here and know that you have come prepared, and so we welcome you to this discussion and we'll go ahead and ask you come forward and lead off our hearing this morning. [LR135]

GARY CUNNINGHAM: (Exhibit 1) My name is Gary Cunningham, C-u-n-n-i-n-g-h-a-m, and I am the dean of the Agricultural Research Division, and director of the Agricultural Experiment Station at the University of Nebraska-Lincoln. What's being passed out to you now is actually some written information that I will have to go over very, very quickly, so I want you to have a copy of what I have sort of intended to say, if not what I said. I want to try to do a number of things here in a very short period of time, particularly in responding to questions that I've received from the committee: things that you have said that you would like to know about. The first one will be with regard to the funding for agricultural research: Where does the money come from? Second, what are the restrictions on how that money can be used? And that is really determined by the source. Then a little bit about how we spend the money; and then a little bit about how we decide what research should be funded, for at least those funds over which we have

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some discretion about making decisions about the kind of research that it funds. After that, I think that answers most of your questions, and I'll take a few more minutes to talk about why the state support for agricultural research is important; it has been important in the past; and then particularly why it's likely to be more important in the future even than it has been in the past. Okay? So what I'd like for you to do, first of all, is to take a look at this large piece of paper here that sort of addresses the questions that the committee asked. And each one of those is sort of defined by the large Roman numerals, and then the supporting information or, if you will, the direct answers to that are in the material that follows each of those major headings. Now, one of the things that I want to spend some time on is where the money comes from. And that is Number II in that list, but at the far back of your packet there should be another list that looks something like this, and that's the one I want to talk from because this is the actual numbers of expenditures from various sources for the past fiscal year. The one that you have in the larger packet is what is in the annual report for the previous fiscal year, and if you have lost your copy of that, I brought some extras. Okay? The first source of funding that's listed there are federal formula funds. These are funds that are appropriated by Congress the U.S. Department of Agriculture's Cooperative State Research, Education, and Extension Service. And they are distributed to the state agricultural experiment stations by a formula. The formula is based on the number of farms and ranches in the state, the percentage of the total national number of farms and ranches that are in the state, and on the basis of the percent of the rural population that is nonmetropolitan population of the United States that's in that particular state. Those funds are used for, the Hatch Formula funds are used for direct support of individual research projects. Those projects are approved by peer review of proposals from the faculty, and then have to approved by the USDA's Cooperative State Research, Education, and Extension Service. They really just look at them to see if they meet the criteria for the Hatch Act, which has to do with they have to be spent on agriculture or natural resources research, essentially. There is another component for that for Multi State Research. That is the amount of that money that has to be spent on cooperative research with other states. So we work with other states, particularly the states in the

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north-central region of the United States, to come up with multistate projects, and they are approved in the same way. The McIntire-Stennis funds is another formula. Those are funds that are primarily used for forestry. And surprisingly enough, Nebraska gets a fair chunk of that. We have a fairly robust forestry program in this state. And the last one there is Animal Health; again formula funds that are distributed. The McIntire-Stennis formula and the Animal Health formula are based more on the number of trees and the amount of forest products that's produced in the state, and the Animal Health is allocated on the basis of the number of animals. And the reason that number is so low even though Nebraska has a lot of agricultural animals, a lot of food animals, is that there is really only \$5 million there that's spread out across the entire...I'm sorry, not \$5 million; \$500,000. So we really get a fairly big chunk of that. Okay, then those add up to the total federal funds. And I think a lot of people believe that federal funds are primarily what supports the agricultural research across the nation, but it's not. As a matter of fact for Nebraska, if you take a look at...there should be a...oh, in the back of the pieces that are paper-clipped together, there are two charts that look like this. If you look at the one with the most pies on it, that's the percentage distribution of the various sources of funding that I have been talking about, so it might be worthwhile to keep an eye on that as we talk. And you can see that the federal dollars, those federal formula dollars, amounts to 3 percent of the total expenditure on agricultural research in Nebraska. So it's a very small percentage. Although it becomes a very important part because it really does determine a lot of what we do because the projects that are funded by those federal dollars are related to the topics that the faculty work with other kinds of funding, for example, from competitive grants and things like that. Our largest single source of funds are state-appropriated dollars: almost \$34 million. We do get a fair amount of the money from the Nebraska Research Initiative, which is also university funds that are awarded as competitive grants. We get some money from the U.S. Department of Agriculture through cooperative agreements, primarily with the Agricultural Research Service; sometimes with the Natural Resources Conservation Service, as well. That amounts to about \$1.5 million. We also get a fair amount of competitive grant dollars from the U.S. Department of Agriculture. This is primarily through the National Research

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Initiative. These are competitive grants. That a little over \$5 million that we get, is out of about \$170 million total in that competitive grant program. Interestingly enough, if you look across the states, with a combination of competitive grants from USDA and the formula funds that we get, we rank number 7 amount the states in terms of USDA dollars that come back to Nebraska to support agriculture. I think that's pretty good when you think for a moment, with the population size that we've got, that we're certainly not the seventh in terms of federal tax dollars that we send to Washington. So we get back more than our fair share in the agricultural research area, largely because of a good faculty who are very competitive and very effective at getting these competitive grants. We also get competitive grants from other federal agencies: the National Science Foundation, the National Institutes of Health, the Environmental Protection Agency, the Agency for International Development, the Department of Energy, and others--NASA, for example. And that turns out to be a fairly large chunk of the funding that we get. We also get nonfederal grants and contracts. These are grants from commodity organizations. They are gifts from industry--industry gifts. They are grants from foundations. In the last fiscal year that amounted to a little over \$11 million, for a total then of grants and contract funding of over \$26 million. We also generate a fair amount of money from product sales: over \$12.5 million. Those are monies that we get from crops that grow and animals that we raise in the course of doing our experiments. We don't just dispose of the products that we produced in the research process. We actually sell those and put the money back into, mainly into the research infrastructure. What we do with that money is, for example, if we've sold cattle in a research project, if we're going to do another research project we have to buy new cattle. So we have a revolving account that this money goes into. The same way when we're doing crop research. When we plant a crop and harvest it, if we're going to do the next experiment we still have to plant it, and we have to maintain all the equipment and facilities for carrying those out. So this supports our agricultural infrastructure: farm machinery, feedlots, cattle herds, and so on. And we've got really good people managing this so that all works fairly work. So those are the sources of the funds. Let's talk a little bit about how we spend them. Next, this chart, this graph with three pies on

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it. We have three major themes that we operate from in both research and extension, in their plan of work that they submit to the U.S. Department of Agriculture. That plan of work is broken down into three main research and extension areas. One is a quality environment and effective natural resource managements; one is sustainable and economically viable food and biomass systems; and the third is viable communities and appropriate quality of life for individuals and families. Then we have underneath of those in our overall plan of work--and there's a copy of that in the material that I gave you--there are outcomes that we expect: that is actual goals that we're trying to achieve in each of those areas. When you break down how we spend the funds, we spend a little over 60 percent of them on sustainable and economically viable food and biomass systems. That is most of what you would easily recognize as directly agriculture and agriculturally related research. About 26 percent goes into a quality environment and effective natural resource management. Now, as you might imagine, sometimes it's very hard on any particular project, right, that we're looking at, and making a distinction about whether it fits into food and biomass systems or whether it fits into natural resources, because there is a great deal of overlap there, particularly when you are talking about things like water quantity or water quality, soils, air quality, things like that. They are all very much interrelated, so we have to make a kind of an arbitrary decision sometimes about where we classify some of these things. And then a smaller amount then on viable communities and quality of life issues, but still a very important piece, I think, of our agricultural research program. And all of those areas then fit under what are allowable under terms of the Hatch Act, in terms of how we spend the funds. Now, how do we decide on just exactly...? How did we come up with those particular three theme areas and the outcomes underneath those? We do that primarily,...those come from the Institute for Natural Resources' strategic plan. We work towards that and under that. That plan is developed by input from stakeholders, from listening sessions around the country; by each of our departments, those 15 departments that are listed on the front page there. Each of those has an advisory committee that talks about what their desires are and what their needs are in terms of knowledge, generation and knowledge delivery. So we consult with them. We have the public listening sessions that I talked

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about. All that information then comes back into the individual departments, and then back into the overall IANR. We use that to construct a strategic plan. That strategic plan then informs each individual researcher, each individual faculty member. I mentioned in there that we have about 300 faculty members or about almost 150 full-time equivalent who are doing research. Each of them in their annual plan of work--they submit a plan for what they are going to do, what kind of research they're going to do. They show where their work fits into this overall strategic plan and which one of the outcomes that we want from that strategic plan their work is going to help us accomplish. And it's actually from their annual reports, right, that we put together this pie chart that says how we're spending things, all right? We let them decide where...well, they, along with their department head, decide which category their work falls under. So every one of our research projects is contributing to some part of this strategic plan that's been developed by public input. So that's pretty much how we decide on how the money ought to be spent, where it comes from, and what topics we end up with. What I'd like to do now is take just a few minutes to talk about why state support for agricultural research has been so important in the past. I think the first thing I ought to mention is to remind you what a large proportion of the overall budget for the agricultural research comes from state-appropriated dollars. Now those state dollars is the total appropriation to the university, so it involves both general fund appropriations and tuition dollars that come to the Institute of Ag and Natural Resources. I lost my train of thought. We were talking about...money...why that money has been important in the past. If you look at the economy of Nebraska, the economy of Nebraska is really built on agriculture, and agriculture is really the utilization of the natural resources of the state. About a third of the jobs and about a third of the income in the state of Nebraska is directly related to agriculture. So it's big business. And if you look at where the possibilities for growth of the economy in Nebraska are in the future, they are utilizing those natural resources to continue the growth in the agricultural sector, and I'll talk a little bit more about that in a minute. The other thing I want to say about that is that investment in agricultural research and extension programs is an extremely good investment for the state. We've had an independent study done that's looked at what the economic return is for the

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investment in the research and extension activities in the state. And it turns out to be about \$15 for every \$1 invested. So if you're talking about an enterprise that represents one-third of the economy of the state, and that investing in the research and the delivery of the knowledge from that research to the citizens of the state, it generates back \$15 for every \$1 invested, you've got a very good generator and a very good, I think, justification for public support of the agricultural research enterprise. And I think that's sort of the history in what's been going on, and that's why it's been important in the past. I think in the future it's going to become even more important. I don't think any of us is unaware of what's going on, for example, in ethanol production and renewable fuels and the impact that's having on agriculture and natural resource utilization in the state of Nebraska. I think a lot of this, though, particularly have not sat back and thought about what this means in terms of the overall economy. We are really moving in this country, and I think around the world, to much more of a renewable resource-based economy. That is, we're going to have more products that are produced from biological products, and that's going on very rapidly. I think it's going to develop, first, in the fuels, but we're already talking about developing other kinds of products from renewable agricultural resources. We've always done a good job, I think, of adding value to agricultural products in Nebraska, particularly by using cattle and swine, and poultry to some extent, but using animals really as a tool for adding value to our agricultural crops. We're now seeing other opportunities in the industrial areas for doing that. That's going to be a huge area of research for the future. It's going to expand, by the way, the interaction of the agricultural research division with research programs in the rest of the university, as well; not only at UNL, but around the state, because we're going to be talking more about chemical and engineering problems, and things like that, that are going to allow us to take advantage of some of these things in a developing bio-based economy. And Nebraska is, I think, positioned very well to take advantage of this now, and we need to do that, and that's going to require additional investments for the future. I think another thing that we need to do as we do this, it's very...in the agricultural research arena, we have always worked very closely with the private sector; always worked with people in agriculture in determining what needs to be done, what knowledge needs they have,

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and really to improve their business. We're going to be doing more of that now in the bio-based economy sector, and begin to look more and more at ways of adding value. We've been adding value to the agronomic plants through animal agriculture. We've also been adding value through food science and technology that is developing food products, and so on. We need to do more of that and we are, but we need to move into some other areas, as well. And rather than working just simply with the agricultural producers, we need to be working with the processors and the end users much more. And we need to be working more of the private sector that's involved in agriculture and agricultural products. We need to have more industry interactions, much like the interactions that we have now with the food processing center where we're actually going now, rather than just producing wheat and beans, for example, so that they increase production and things like that. We're now working with the processors, with the millers and the people that are producing the products, asking them, what sorts of qualities do you want in the products that you're using; and how can we then get that information back to the people who are doing the plant breeding, and develop crops for specific kinds of markets and particular processes. So I think there is a lot of opportunity here for working more closely with industry. We've put together a group of people from the food processing industry now, to work with us specifically on wheat and beans in terms of trying to develop higher-quality products that will sell more, sell for more. We are doing the same sort of thing now, beginning to look at some of the newer companies that are beginning to get into the bio-based economy. They have been approaching us, asking if we could somehow work with them; if they could move and colocate with our researchers. This has particularly been important for people who are looking at developing biologically modified crops, genetically modified crops, to produce particular industrial products. They want to be able to come and work with us because we have the scientists that can help them in terms of the transformation process to develop the genetically modified crops, but we can also then help them learn how to teach people how to grow those things so that they get the product out of them that they want. So we've got the agronomic end, as well; that's generating a lot of interest. And we've actually got companies coming to us now saying, can we put a laboratory on your

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campus and work with your scientists in developing some of these products? I think that's the wave of the future. I think you're going to see more and more of what we do being in partnership with industry. They're going to become more funders of the basic research that we do, and we're going to be cooperators in developing the applications of these things, even with companies like Syngenta, for example, with their drought-tolerant corn. They've developed the genetics, but they don't know how to grow it or how to teach the farmers to grow it. So we're working with them to develop the agronomic practices that will allow their genetics to become more effective. So it's going to be much more cooperation with industry in the future, and we're going to have to be willing to do things a little differently. And I see in that pie chart, where the funding is coming from, we're going to see more and more of it coming from industry and other grants, just because that's the nature of where we're headed. Okay, I've told you everything I want you to know, so if there is anything I didn't tell you that you want to know, I'd be happy to answer any questions. [LR135]

SENATOR ERDMAN: The world as you see it. Fantastic. Thank you, Gary. Senator Wallman. [LR135]

SENATOR WALLMAN: Thank you, Gary. Is the Southeast, is that in Lincoln? Do you consider that in Lincoln, the research center here? On this paper here? [LR135]

GARY CUNNINGHAM: Oh, yes. Yes. [LR135]

SENATOR WALLMAN: Okay. [LR135]

GARY CUNNINGHAM: Now, it's not all in Lincoln. It's sort of centered in Lincoln, but the southeast section serves Omaha and down to Nebraska City, and then we've still got the Southeast Research Farm that's down by Clay Center, as well. [LR135]

SENATOR WALLMAN: And then you have, what is it, about 800 acres of prairie land by

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Virginia? The university? Or is that state-owned? The university? The farmers around there would like to see that managed better, that's why I brought that up. What do you use that...? It used to be you put it up for prairie hay, didn't you, I think? [LR135]

SENATOR ERDMAN: Alan, if you want to...why don't you get a chair and come forward. [LR135]

SENATOR WALLMAN: Oh, I can ask Gary, or try to...? Do you know about it or not? [LR135]

GARY CUNNINGHAM: Yeah. Animal science has used it, has used it just for grazing. But right now...in fact, we have a number of pieces of property at present that we are beginning to look at and say, you know, which of these do we really need; what does the future look like? And beginning to look at managing them as a system rather than as individual. As Alan mentioned, this is the animal science (inaudible). We've got an animal science ranch down here and there are others. So we're trying to take all those properties and look at what's the highest and best use for those in terms of generating the knowledge that we need. We're in the process of doing that right now, and even taking some of the properties that belong to the foundation that have just been sitting, and we're trying to incorporate those into some sort of productive outcome for us. [LR135]

SENATOR WALLMAN: Well, I'm not against research; don't get me wrong there. And also have you ever looked or has the university looked into, like renewable like wind technology for generation of electricity on any of your sites? [LR135]

GARY CUNNINGHAM: Yes. We've thought about it. Back...you probably remember... [LR135]

SENATOR WALLMAN: I remember the solar thing with irrigation. [LR135]

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GARY CUNNINGHAM: Right. And we were just way ahead of the times. And actually that all went away when the federal funding went away, and so. But right now we've got, on our farm east of Lincoln, the one furthest east of Lincoln, we're setting up a wind generator that's actually going to be, going to look at accumulating hydrogen. Right? So using the wind generator and the electricity generated from that, to concentrate hydrogen, and move hydrogen from the air. So that's one we're doing in cooperation with electrical engineering, the electrical and chemical engineering. [LR135]

SENATOR ERDMAN: All right, thank you, Senator Wallman. Further questions for Gary? Senator Dierks. [LR135]

SENATOR DIERKS: Gary, for some time I've had an interest in what I think is properly termed "intellectual property rights." [LR135]

GARY CUNNINGHAM: Yes. [LR135]

SENATOR DIERKS: How does the university capture some of those rights from research they've done from some corporation, for instance, you said Syngenta. When you provide them with a patent, are you able to share in some of those property rights, or how does that work? [LR135]

GARY CUNNINGHAM: Yes. We never give them anything. If it's our intellectual property and we developed it, then what we do is shop it around to see who might be interested in licensing it from us. And sometimes those are exclusive licenses, and sometimes not. It depends on what the product is and what we think will generate the most income back. But there's really two criteria that we use. One of them is what money will flow back to the university as a result of the licensing, and the other is how will it help Nebraska's economy; that is, is it a product that will be used. So sometimes we would give up income back to the university if we got it so that there was a discount

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on the product, say, to Nebraska farmers or something like that. So we make a deal is what it amounts to. And when we work cooperatively and collaboratively with industry, then we make agreements on sharing of the intellectual property up-front before we start the work. So that's part of the initial contract. [LR135]

SENATOR DIERKS: What amount of your income would you say would fall into the intellectual property rights? Is that a large part, or...? [LR135]

GARY CUNNINGHAM: No. No, it's very small; it's very small. [LR135]

SENATOR DIERKS: What's the potential for growth? [LR135]

GARY CUNNINGHAM: I think there is a fair potential for growth. One of the things...most...as you probably realized, most of the intellectual property that we develop are plant varieties, by a huge margin. And like other publicly funded universities, the intellectual property that have tied up in new crop varieties are usually ones that don't have huge markets because the large seed companies have taken over those large markets. But they won't do the kinds of things you need, where you need specific varieties at particular locations for particular products. So, for example, wheat, dry beans, things like that, we don't generate a lot of money off of those, and those usually go through the crop improvement association. We get a little bit back on royalties on those, but not a lot. The big moneymakers are things that are coming from the major seed companies, because there's just a bigger market. But the smaller market things that we do are very important for Nebraska's agriculture. [LR135]

SENATOR DIERKS: Thank you. [LR135]

SENATOR ERDMAN: Thank you, Senator Dierks. The billion- or million-dollar question, I guess, is that as you look at this process in ag research, obviously there's always a changing dynamic that you have to take into consideration. I read through your, I think

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it's your '05-06 report, and saw some of the projects that we're working on--and for the committee members that's behind the briefing that Rick distributed or Linda included in our books. There's a number of areas here. Obviously there's probably some things here that couldn't have been envisioned the last time you did strategic planning in '99 or 2000, for the 2000-2008. And then as I look further, it talks about refining that: priority goals for '05 and '08. As you see it, not fitting into any category but just in general, where are the areas that you see the greatest demand or greatest need for ag research in Nebraska, say, for the next 5-10 years? Where are we going? Where do we need to be going? And how do we get there maybe more effectively than we already are?

[LR135]

GARY CUNNINGHAM: I would say that probably the most important issue that we have in agriculture for the immediate future that needs to be addressed, is the availability of water. And that involves not just making more water available, but getting the most product out of the water that we already have. And I think that's going to be key. So we are doing a lot of research on looking at different cropping systems and different ways of managing water to try to get an appropriate yield with a minimum amount of water. Another area where I think we're going to have to put a lot of stress, is there is going to be a great deal of demand for corn to produce ethanol. And that demand is going to put a lot of stress on the agricultural systems where corn is being produced. We need to make sure that we're doing the environmental things correctly to maintain the productivity. Things that begin to worry you, for example, are will people give up their normal crop rotations in order to keep producing more corn? Will they begin to put marginal lands into production? Will they begin to overwater and over fertilize in order to push yields? So we need to come up with systems that can maximize yields without putting additional stress on the environment. And I think another area where we need to work very hard is, if we're really going to take advantage of Nebraska's already distinct advantage, I think, in animal agriculture, we're going to have to come up with ways of mitigating the environmental impact of large feeding operations. If you've looked at milk prices lately, for example, you see where they're going. I think the dairy industry could

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be the next big thing in Nebraska. But in order for that to happen, we've got to be able to convince folks that we can put in a dairy that is neighbor-friendly and water-quality friendly. So I think those are big areas that we need to focus our research on. And I think the other areas are some of the things that I mentioned: the new products and new processes that are going to be the focus of the bio-economy, and really beginning to look at optimizing the crops for those kinds of things, and begin to work more with the engineering folks on how you process those and get the products out that you want.

[LR135]

SENATOR ERDMAN: One of the things that I had a chance to sit in on, about a little over a week ago I guess now, is at the Panhandle Research Center they had a project come in from Idaho, called the METRIC program. And what they did in Idaho was they used a Landsat satellite and they took pictures of Idaho every, I think it was every 16 days. And what that did was give them a base to be able to determine evaporation and water usage. And essentially what they did is they mapped out the entire state of Idaho. And as you move further east it's a little harder because of the cloud patterns, and they explained all this. But in western Nebraska, it was kind of unique because we don't quite have the clouds and the types of weather patterns that you see in eastern Nebraska, and so there were some opportunities there. It's not as ideal as Idaho, but they're beginning to do the same type of projects through the Panhandle Research Center there with, I think it's Gary Hergert and Gary Stone, or some...anyways. And they were going through this process and explaining how that might work. And what was interesting to me was that at the same presentation you had the three natural resources districts from the central and southern Panhandle sitting there, talking about how they plan to utilize that information to be able to get back to what LB962 and the water management laws of this state would require them to do, and how they manage water, how they deal with crop rotations, how they empower their producers to take the information to make their own decisions, but ultimately get to the same goal, and I guess it was interesting to me. But the thing that kind of stuck out, and I look at your funding of \$33 million from the state, what was pointed out to me was that most of their

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funding for those types of projects do come from grants, though. It doesn't come from the state appropriations, as they were explaining to us And so I guess my question back to you then is, how do we maximize...or what can we do? Obviously water is the key area. I think the further west you go, the bigger issue it becomes because of the shortage of precipitation. But in specific programs like that, how do we capitalize or maximize the focus where we have such a unique state with such unique differences? Instead of simply putting people in campuses and castles, how do we make sure that we're focusing...? How do you do that in the ag research, make sure that extension centers and programs have funding to do that type of cutting-edge informational research that we need to help us manage water? That's just an example of... Because I can also ask about funding the livestock specialists in Scottsbluff, but I've already sent that letter. So go ahead. [LR135]

GARY CUNNINGHAM: Just a minute. I'm interviewing the candidate at noon today. [LR135]

SENATOR ERDMAN: It's not the feedlot specialist. It would be the replacement for Dr. Rush. But anyways. [LR135]

GARY CUNNINGHAM: Okay, there are two questions there. One related to...if you look at all of our state funding and all of our federal funding--that is everything except the grants and contracts--86 percent of that goes for salaries. That only leaves 14 percent of that total for actual on-the-ground operations. So we are very dependent upon grants and contracts and other kinds of funding to do specific projects. Now, on the basis of how we decide where...who we decide to hire, we really go back to the long-term, to the strategic plan, and as the strategic plan is built up. What we ask every...because really the only decisions we can make for very long-term is who you hire. You can't really train people who are almost as old as I am to do new things. You really have to hire people. And so as times change, what you've really got to do is you've got to be able to look 20, 30, or 40 years down the road, because that's how long you're likely to have somebody

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that you hire. What kinds of skills and knowledge does that person have to have in order to...? So you're guessing what you need out into the future. And we continually do that, and that's really the major tool that you have to change the direction of your research, because that's where the major part of your investment is. If you look at what we've been doing over the last...how long have I been here: two years...we had some very tough funding situations. And we really did...I do think in the agricultural research division we're a little out of balance in terms of how much of the appropriated dollars and formula dollars we actually have in salaries. It's a little too high. I would be much happier with 25 percent left over for operations rather than 14 percent. But anyway, as we have lost people and people have retired or moved on to other jobs, we take a look at the long-term needs of the whole operation and where we think we're going to be 20 or 25 years from now in making those decisions to hire. We have hired a lot of people at the off-campus centers, and that's where most of our hiring has happened over the last two years, and that's where...except for the veterinary science program, and that's kind of a separate program. But that's where most of it has been and that's where it will continue to be as long as that is where we need people to meet the needs that we've got. We've got really a lot of responsibilities in the research area, because once you say you want a particular outcome, you've got to ask the question: In order to get that outcome, what knowledge do we need to get to people; and where is the state of the science in the development of that knowledge? And it might be that the science is pretty well-developed, and all we need to do is to deliver it. Or we may have to do a little bit of adaptational research. But sometimes the state of the knowledge is pretty primitive and we have to go back and do some fairly fundamental research before we can actually get to the point where we've got something where we can adapt it or modify it so that it can actually be put into practice. So we've got to be able to work across that whole spectrum. And that's why we have to keep some basic sciences, as well as some applied scientists, and I think we've got a pretty good mix of both actually, at most of our off-campus centers. We don't have everybody we want, but we'll never have everybody we want. [LR135]

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SENATOR ERDMAN: The...my Bayard High math quickly working through, complimenting my university education, shows that you're about \$12 million to \$14 million a year for operations, and of that, depending upon where the \$80 million comes in which is what you have available totally if 86 percent of that goes to salaries, if you had the funds available in operations, would they be...? Let me back up. As I mentioned earlier, we have a bill...and I don't know what's going to happen with it. It would dedicate a million dollars a year, not specifically to any project, but for ag research. And some of those details are yet to be worked out. Just from a quick math figure here, that would be a 12 percent increase of all million dollars went to the university from just the state appropriations, because there is approximately \$6 million or so of the state appropriations that could be allocated to operations. A small investment like that could go a long ways in some of these projects, like water and other...the METRIC programs, or maybe it's a livestock program, maybe it's the odor program of how do you deal with odor to make those dairy projects more available, more acceptable, or livestock projects in general. If you had funds like that available in operations, would again it simply fall into the way that the goals are, or would it be specialized projects? I'm just trying to understand, because these are the questions I get as, well, why can't we do this project; or how does this happen; what do we need to do to get people's attention? If we put money available, would you go back into the system? If you had free funds that suddenly became available, would those be treated differently than what you have outlined in your core projects, or is it your goal then to incorporate all of those into the same process as you're working towards a coordinated effort? [LR135]

GARY CUNNINGHAM: Well, now remember, the core projects, as you referred to, are fairly big, and each of those really consists of individual projects. And the funding actually goes to individual projects, whether it's competitive grants or whether it's formula dollars. Remember, the federal formula dollars that we get, we have to match those with nonfederal dollars. So we use state funds to do that. And those funds are allocated to specific projects that have been peer reviewed that fit into the overall goals and objectives that we've got, in one of our three themes, but they are on specific

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projects and they are projects that have a time limit on them. They are five years; they can be less than five, but they can be no more than five. And the funds are allocated to those, and then they're up for review again. So any new money that comes in, we would use to fund those kinds of projects. They would be short-term goal-oriented research projects. [LR135]

SENATOR ERDMAN: And again, as new ideas come up, I read through here about the weekly meetings that are held, and then there's quarterly meeting in addition to the strategic meetings. Is there a process in place now with ag research that those plans are updated during that time frame as far as within those goals, or what are those meetings that you have quarterly and weekly and annually, how do those help direct it? Is it refining in the major goals, or is it actually helping to redefine the major goals? [LR135]

GARY CUNNINGHAM: It's more within those major goals. The major goals we try to do that as a five-year strategic plan. And we're right in the process now of...we had one for '03 through '08, and now we're in the process of developing a new strategic plan that will carry us on for another five years. So I don't suspect that some of the outcomes that we've (inaudible) and some of the fine detail in that strategic plan will probably change, but the overall themes will probably be very much the same. [LR135]

SENATOR ERDMAN: Other questions for Gary? I don't see any. Thank you, sir. Appreciate your information. [LR135]

GARY CUNNINGHAM: Okay, thank you. [LR135]

SENATOR ERDMAN: I'm sure we'll see you again soon. Are there other testifiers that would like to speak on LR135? Is there anybody that would like me to call them up here because they don't want to testify but really do? I notice we have at least a couple ag organizations and some other interested parties here, and I guess one of the questions I

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would have, and again you don't feel obligated to testify, but in conversation with your membership are there areas specifically, in addition to the ones that maybe Gary has brought up, that you may want to share with us as giving us a better understanding as a committee of some of the issues that we may be focused on in the area of ag research or ag, in general, that may be benefited by research? Great. So we're doing it all well. There's nothing that... That evidently was a more effective way to convince people to testify than what I did at the last one where I just called people forward, and half the room cleared out. [LR135]

JAY REMPE: All right, you've got the hook in my. I took the bait. For the record, my name is Jay Rempe, R-e-m-p-e. I am state director of governmental relations for Nebraska Farm Bureau Federation. Let me say a couple things from a couple different perspectives. One, Farm Bureau has always enjoyed a very good relationship with the university, particularly IANR. And I think over the years, the last few years anyway, that relationship has just grown stronger and stronger. And we really appreciate their efforts of outreach and touching base with us on where they need to go on research and teaching and those kinds of things. We really appreciate that. I guess in the way of comments, I think the issues that Dr. Cunningham laid out in terms of water, the issues surrounding ethanol, and the by-products usage, and those kind of things, and then animal livestock, are the three that we as an organization are spending a tremendous amount of our resources and time on, as well. So I think they've laid it out very well. On the water side of things, I've been very involved in a lot of discussions there. And there are two really basic needs as I see them in the water arena. One is we've made tremendous strides in the last few years, both the Legislature, the NRDs, the Department of Natural Resources, and irrigators as well, in learning a lot more about this wonderful resources that we have. But we've also learned that there's a tremendous amount that we don't know in terms of the basic understanding of the relationship between ground and surface water, and the various impacts that activities can have on our stream flows and water systems. And so I continue to believe there's a tremendous amount of effort and research and understanding that needs to go towards just a basic

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data gathering and understanding of how groundwater and surface water interact so we can make sound management decisions. And we've had those conversations with the university, and I think they're reacting. We've had a group that's called the Water Resources Advisory Panel, I believe, which I have the pleasure to serve on. It's about a dozen of us that represent various perspectives in the water arena. And we went through a priority-setting process of looking at these kind of research questions. And we identified four or five priorities for the university, and the university has responded. They have gathered together professors, the experts in these, and said how can we work with this? And we're in the process now of trying to arrange some funding to undertake some of this research. But that's one area. I think the other area within water is, as Dr. Cunningham has already touched on, what tools do we need to give irrigators and farmers out there, so they can make the best use of our natural resource, and produce the most they can out of that with a given amount of resource. And again, I think the university has responded well. Maybe where there is a breakdown a little bit, is getting that information. I was surprised; I was really amazed at the amount of research that the university has already done in (inaudible) irrigation is one example of producing a crop with less water. I'm not sure all that information was getting out to the producers though, and that might be an area where we need to focus a little bit of attention on, as well. So from our standpoint, that water area continues to be one that I think it's one of promise. And we continue, within our organization, to look at various alternative ways and means of trying to get more money into those kind of efforts, too, as well. But I think the other two areas that Dr. Cunningham laid out are just vitally important. Particularly one area I didn't quite hear him say but I think this committee talked about a little bit last week in the biofuels area, is alternative crops, and the different oil seeds that are out there that might help us in terms of both our water issues, because they use less water, but also provide as a stock or a resource to produce biofuel. I think there's a tremendous amount of opportunity in Nebraska in that area, and it's one that's largely untapped at this point, and we can focus some efforts there as well. so I guess from that standpoint I think to sum it up, I think the university is heading in the right direction. I think they've laid out the necessary priorities, and we'll continue to work them and this committee to see if we

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can move forward (inaudible). [LR135]

SENATOR ERDMAN: Okay. Thanks, Jay. Any questions? Senator Dubas. [LR135]

SENATOR DUBAS: Thank you, Senator Erdman. Thank you, Jay. And I'm not sure who maybe I should have directed this question earlier, but I know while we were out in Scottsbluff here a month or so ago, and had a presentation from the Panhandle Research talking about these other crops, but yet there's not a ready market always for these other crops. So we have farmers who are ready to plant, but we don't have market. And we have a market if you'll say, well, if you get farmers to plant we'll come. And so it seems like were in kind of a Catch-22 here. Any thoughts on that? [LR135]

JAY REMPE: That's a difficult one and it's one that is not a new problem. It's one we've struggled with for years. Somehow we've got to be able to...I think once we get farmers to the stage where they think this is something they can produce, they can manage it, then somehow...it's not a very good answer to your question, Senator, but somehow we've got to work with some folks on the other end then, and at least for a few years, try to make sure that there's market readily available with the hope then that that would take off and those dynamics would grow, and then the market would take care of itself, so to speak. But I think initially, for the first few years, you somehow have to have some kind of an arrangement where you'll try to...you'll get the producers to produce it, and then...almost on a pilot scale, pilot project-type of scale, well then you can get the markets established, because it does take time. But I've seen other times where all of the sudden the market will turn, and the market will demand something and we're not ready on the production side either. So it happens both ways too. [LR135]

SENATOR DUBAS: So do we maybe need to be...kind of have a marketing plant built in within this research component. [LR135]

JAY REMPE: I think that would be...yeah, that would be a very good way to approach it,

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because you have to look at that. You just can't focus. If there is anything we've learned over the years, we've been brilliant of producing things over the years, and not always have the market available on the other end. So we've got to take that into account.

[LR135]

SENATOR DUBAS: Thank you. [LR135]

SENATOR ERDMAN: Thank you, Senator Dubas. Some type of emerging markets program, right? We have emerging leaders programs. We have...Jay, you get on that, all right? The other...and to dovetail on that, and that was a very interesting presentation and there's a lot of great work being done in western Nebraska, you know, about what do you produce in the place of corn and some of these other products. The other side of that is being able to manage the risk and some of the limitations that we face, crop insurance, and others for emerging commodities in certain areas that they haven't been produced. We've done it in dry beans. In my family, we planted dry beans that there was no crop insurance violable because they'd never been planted in that county or that region, but so working through, you took a great risk that first year to establish that somebody had begun producing that commodity in that area for it to become eligible for some type of insurance coverage under risk management. So there are a lot of connected things somewhere or states. Some of it are market-driven and market-access; others are federal policies and programs that also have to be a part of this discussion, as well. And the interesting part about that whole discussing is that under the farm bill, if you eliminate the vegetable crop limitations, then you open up dry beans to anybody. and if you're in western Nebraska, which is one of the nation's leaders in dry bean production, and all of a sudden the vegetable acreage limitations go away. And anybody can plant then, then it changes your dynamic completely. And whether or not you are competitive or not, whether or not you're the low-cost producer, how do you access the market, all of those things become real and it makes even more important the availability of alternative drops. And so it's an interesting dynamics how this stores seems to hit all at once. And depending up what happens, whether it's

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through WTO or whether it's through our own negotiating in Congress about what the farm bills look like there's a lot of those policy decisions that may change our future very quickly, on what need to do get done to be promoting and preserving agriculture. So it's interesting. I appreciate you coming up and taking the hook. We'll cut the wire; you can go home. [LR135]

JOHN K. HANSEN: Chairman Erdman, members of the committee, for the record my name is John K. Hansen. I'm the president of Nebraska Farmers Union and I appear before you today as our president and lobbyist. The issue of agricultural research is a very complicated and all-encompassing one. I had the opportunity about ten years ago to participate on a national study committee sponsored by the Humphrey Institute about the future of land grant college research, generally, with private sector players and the variety of land grant colleges across the country. And a lot of the same issues that came out of that study committee in advance of the '96 farm bill are still in play today, and some of the concerns that members of organizations who represent agriculture, as well as the land grant college institution itself ten years ago, from my perspective, are playing out today. And that is, who are we in business to serve and how to we go about doing that in an appropriate kind of way and making sure that the research that land grant colleges do have the desire to impact and are providing the basic tools and resources that people who are involved in agricultural production are tied to the land want and need, and some of the conflicts that played out and were emerging then are even more so now, and that is increasingly more and more of the research that's being done is being done on a contractual basis, so at the end of the day the public tax dollars that are used to do research and generate intellectual property are increasingly contract work products that are not owned by the land grant college, as a trend. And so the public investment ends up not yielding a product that resides in the public domain and is not widely usable by the public. It ends up being in the hands of a particular company who partnered with the public entity to do that research. And so that is a sticky issue and it's one my members ponder and cuss and discuss about research, generally, and at the end of the day, who owns it and is our research actually coming back to us as

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producers, or is it going to companies who already had a substantial economic advantage over us. In the last recent, the last five years, there's an increasing amount of economic concentration in the ag supply sector, in the seed sector, and the whole ag supply sector, generally now looks more like the sector that we usually sell into, whether it's hog markets or cattle markets or whatever. The amount of concentration on both sides of the equation for agriculture is getting worse. And so a lot of the research that used to be owned, the genetic material for plant varieties, for example, that used to be owned by the public sector, seems to be going down. So the reservoir of genetic material that you can even do research on or have access to continues to be owned increasingly by private sector players. And so our folks, when you ask them do we want to increase funding for research, come around to, well, is it going to be research that's going to be owned by us to be used in the public domain; more so, is it going to more clearly come down to the benefits of agriculture; or will it be helping line the pockets of one more agribusiness company? And there is frustration that a lot of the really good research that we do, that we help finance, ends up being remarkably in the hands of what we've been told are our competitors in other countries in a remarkably short period of time. And so some of the questions that comes up at our meetings when we discuss this, is, well, if Brazil and Argentina and Australia and everybody else in the world is going to own the benefits of our research, maybe they ought to help pay for more of it, because they seem to have it almost as quickly as we do. And so the argument that the university research was providing a huge economic benefit for our producers over producers in other countries, I think has not stood up. I think that information and technology flows a lot more quickly than we have assumed. So we're doing research that may help a particular entity, but it's not clear that a clear economic advantage goes to our producers. So when the university does do things in a very public way to address issues, which we agree that they need to do, there's also great risk in that. For example, the university, in my view as a local public official, was altogether much too handy in the business of helping promote irrigation development in marginally suited areas--Sandhills development. They were not viewed as a source of objective third-party information; in that case they were viewed as part of the push to develop marginal areas across the

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state of Nebraska. And then after the water quantity and quality problems happened, the university stood back and said, you know, what were you guys thinking--(laugh)--that you used our expertise and our guidance in that issue? So sometimes it is a double-edged sword, the business of being actively involved. And yet there is an enormous need, in our view, to do research that really does help rural Nebraska and agricultural areas that our guys, I think, for the most part are supportive of. In the case of dairy, for example, what our dairy guys say is we need a better pricing mechanism and we need more viable markets. We need more cheese processing, we need more utilization here in Nebraska; we're at a disadvantage with other states. We have all the resources to do dairy development but we keep losing dairy producers at an alarming rate. In a lot of cases, the primary reason is not regulation from planning and zoning or complaints with neighbors; it's complaints with bankers, and they just didn't cash-flow. So a new processing focus would help create some opportunities and certainly in the case of a growing and obvious need relative to about three of the problem areas is the more full development and utilization of cellulosic ethanol and the potential that that provides in our judgment in western Nebraska and southwestern Nebraska to help retool an irrigated corn-based economy with crops, whether it's sweet sorghum, which we got included in the House ag bill, as a cellulosic source, or so that we can grow alternative crops that use less water and still provide a viable community. The university has done a lot of research but I would say at this point the state does not have a viable plan for cellulosic ethanol development. We are letting other states move forward on that issue. So there's an economic issue but it's also a water-based issue, and it's one that the university has historically done a lot of research on. So sometimes we get stuff started and then the tools aren't in place, both at the state and the national level. We don't utilize them. So I think that sometimes the university gets unfairly criticized because, well, you've done all this research but nothing came of it. Well, if we had had better tools in place at the state and the federal level to utilize that research, we would haven't more...we would be a lot further down the track. So I don't know that I've added anything at all, Mr. Chairman, to this discussion, but those are just some of the thoughts that come up at our meetings when we talk about agricultural research.

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[LR135]

SENATOR ERDMAN: Thank you, John. You can be the commentary. You know, when you have a football game you have the person that tells you what happens and the other person that tells you nothing but talks a lot, so we can...I'm just teasing you.

[LR135]

JOHN K. HANSEN: I could be the color analyst. [LR135]

SENATOR ERDMAN: You've contributed greatly. I think one of the things that's interesting about when you get into topics like this, is that everybody agrees that it should be done. There's a great deal of disagreement or discussion about how to do that, and I think the key part that I got from your comments were that's it's as much the how as the what, and I think that's something to keep in consideration is that we need to make sure that we're not only doing the right things, but doing things right. And I think that's a good perspective for us to have. [LR135]

JOHN K. HANSEN: Well, and thank you, Mr. Chairman. And I just...when the university plays...when they do private and public partnerships in advocacy in particular areas, they also risk credibility. And for example,...you know,...and I've been around so long that I remember when the university had a contract, the extension service had a contract to help promote soybean development, and they were promoting soybean development in northeast Nebraska in Class III hills. It presented a very substantial erosion problem. In their presentations they didn't talk about the erosion problems at all. And when you really got down to the numbers that they used, these were numbers that were not average yields based on University of Nebraska research farms' data of the area, and it wasn't research based on actual market values of soybeans as farmers marketed them. It was so pro-soybean development and planting that their credibility was impaired. And so folks were...you know, left these workshops, shaking their head, going, uh-huh. That was not partial information. So while you partner with private folks

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to do research, I think it's also important to keep in mind that your credibility is worth a lot. [LR135]

SENATOR ERDMAN: Agreed. Any questions for John? I don't see any. [LR135]

JOHN K. HANSEN: Thank you, Mr. Chairman and members of the committee. [LR135]

SENATOR ERDMAN: Appreciate you coming forward. Anyone else wishing to testify on LR135? I see none. And even though our hearing is over, that will not complete our work. So we appreciate your involvement and we look forward to a continued discussion, and the committee will reconvene here at 1:30 p.m for a small presentation. [LR135]