

NORTH DAKOTA LEGISLATIVE COUNCIL

Minutes of the

AGRICULTURE COMMITTEE

Tuesday, March 12, 2002
Roughrider Room, State Capitol
Bismarck, North Dakota

Senator Terry M. Wanzek, Chairman, called the meeting to order at 9:00 a.m.

Members present: Senators Terry M. Wanzek, Bill Bowman; Representatives James Boehm, Thomas T. Brusegaard, April Fairfield, Rod Froelich, Phillip Mueller, Jon O. Nelson, Dennis J. Renner, Earl Rennerfeldt, Ray H. Wikenheiser

Members absent: Senators Duane Mutch, Ronald Nichols, Harvey Tallackson; Representatives Michael Brandenburg, C. B. Haas, Joyce Kingsbury, Edward H. Lloyd, Eugene Nicholas, Arlo E. Schmidt

Others present: See Appendix A

Chairman Wanzek recognized Mr. John Olson, Olson & Cichy, PC. Mr. Olson presented testimony regarding the field of biotechnology and Monsanto's efforts to bring new technologies to the marketplace. A copy of his testimony is attached as Appendix B. He said Monsanto has indicated to its customers and to the general public that it has a desire and a willingness to be as open as possible in an effort to establish a rational, cooperative dialogue. He said Monsanto has also officially announced it will not commercialize Roundup Ready wheat in 2003 because more work remains to be done.

In response to a question from Representative Fairfield, Mr. Olson said Monsanto has a great interest in ensuring that institutions in North Dakota and elsewhere are able to conduct research. He said when moratoria are threatened, Monsanto's ability to conduct research at North Dakota State University and at other institutions is affected. He said during the last legislative session Monsanto expressed its concern that it must be able to conduct the necessary research.

Chairman Wanzek recognized Mr. Patrick Kelly, Director, State Government Relations, Biotechnology Industry Organization, Washington, D.C. Mr. Kelly presented testimony regarding the field of biotechnology. A copy of his testimony is attached as Appendix C. He said Biotechnology Industry Organization is the national trade organization for the biotechnology industry. He said Biotechnology Industry Organization has over 1,000 members in 50 states and 34 countries. He said members are involved in research and development of novel products using cellular and molecular processes. He said Biotechnology Industry Organization also serves as a

resource for state and national entities that are developing policies or discussing biotechnology.

Mr. Kelly said biotechnology involves advances in health care, in industry, in environmental sectors, and in agriculture. He said biotechnology as it is being considered today is a relatively new science. He said it is only 20 to 25 years old. However, he said, its roots can be traced back thousands of years. He said any manipulation of the best species, the best animals, the best food products, or the best seeds is biotechnology.

Mr. Kelly said the human genome project is driving incredible advances in health care. He said there are a number of ongoing research projects that show promise and these include gene therapy, cell regeneration, customized drugs, and veterinary applications. He said most of Biotechnology Industry Organization's member companies do not yet have their products on the market.

Mr. Kelly said industrial and environmental biotechnology is being used to develop innovative manufacturing processes that will reduce dependence on fossil fuels and reduce development expenditures. He said some of the biotechnology research is converging in this area. He said health care is going into agriculture, which is going into industrial applications. He said biotechnology has been used to develop plant-made pharmaceuticals, plant-made polymers, methods for the environmental remediation of waste sites, and a host of defense applications. He said biotechnology is improving agronomic performance by reducing dependence on pesticides, improving efficiency and yield, and by providing farmers with more options.

Mr. Kelly said products on the market have characteristics such as disease and pest resistance and herbicide tolerance. He said the characteristics enable farmers to reduce use of chemicals and labor and to improve efficiency. He said disease-resistant crops on the market include squash, papaya, sweet potatoes, rice, corn, and casava. He said these crops are enhanced with the plant equivalent of a vaccine that guards against diseases and eliminates the need for insecticides. He said corn, cotton, and potatoes are among the insect-resistant crops. He said *bacillus thuringensis*, which is widely used in a topical form in organic farming, can now be genetically

engineered into crops. He said yields from biotech crops have increased by up to 15 percent over nonbiotech crops. He said in the case of cotton, pesticide use has been reduced by over 50 percent. He said soybeans, corn, and cotton are also herbicide-tolerant crops. He said these are commonly known as the "Roundup Ready" products. He said these products have been enhanced to allow for herbicide applications without damage to the plants. He said use of these products promotes no-till conservation farming, also reduces soil erosion, and reduces farm runoff.

Mr. Kelly said industrial biotechnology involves the use of biological systems such as enzymes to improve industry efficiencies, reduce environmental impact, reduce dependence on fossil fuels, and reduce the effects of global warming. He said industrial biotechnology has spawned products such as spider silk. He said spider silk comes from goats that have been genetically engineered to produce an enzyme in their milk. He said the product can then be synthesized out of the milk and spun into a silk-like fabric which, when woven together, has characteristics that are much more substantial than kevlar. He said kevlar is used extensively in bulletproof vests. He said spider silk is more effective at stopping bullets.

Mr. Kelly said through biotechnology corn can be used to create plastics. He said such products are known as "green plastics." He said these products provide another market for farmers and at the same time help reduce petrochemical usage. He said ethanol is an example of a biotech product.

Mr. Kelly said biotech food benefits are being studied. He said biotechnology will provide consumers with food that has better flavor, color, and texture, a longer shelf life, better processing characteristics, and enhanced nutritional profiles.

Mr. Kelly said there are concerns about the impact of biotechnology. He said the concerns include environmental safety and consumer safety. He said there is concern about corporate concentration and specifically whether the biotech corporations will be the only ones making money and will consequently subjugate farmers to the technology. He said there is also concern about international trade. He said there are some serious issues at the international level. He said some of these issues amount to nothing short of trade barriers that are erected not to keep biotech products out of foreign markets but rather to keep American products out of foreign markets.

Mr. Kelly said the biotechnology industry is committed to standing behind its products. He said biotech products need to be safe. He said if the products are not safe for either consumption or for the environment, the products will not sell. He said the industry that is developing the products will then be out of business. He said the biotech industry is trying to bring to the marketplace products that will be helpful and beneficial to consumers.

Mr. Kelly said with respect to agricultural products, there are safety concerns regarding nutrition and allergenicity, as well as outcrossing, which is the ability of pollen to spread from a genetically engineered product to one that has not been genetically engineered. He said there is concern that with the development of weed resistance and insect resistance, the potential might exist for the creation of super weeds and super bugs that would not be susceptible to control.

Mr. Kelly said there are many new applications for biotechnology, particularly for agriculture. He said at this point there are very few companies that have products on the market. However, he said, many small biotech companies are finding that the development of new technologies is leading to different and expanding markets. He said one of Biotechnology Industry Organization's utmost priorities is the preservation of international markets for American products. He said Biotechnology Industry Organization is attempting to work with a variety of entities to ensure that artificial trade barriers are not erected. He said if there are legitimate issues with regard to safety and consumption, they will be addressed. He said sound scientific-based policies will drive public policy. He said on the other hand there are still issues of cultural acceptance, particularly in the Asian and European markets, and tariffs, moratoria, and embargoes on biotech products.

Mr. Kelly said opposition overseas is a trade-based issue that comes from a distrust of regulatory agencies. He said Europe recently dealt with the outbreak of mad cow disease. He said there is not one central regulatory agency in the European Union that has earned any degree of consumer confidence. He said people in the United States place a great deal of faith and trust in the regulatory programs of the Food and Drug Administration, the United States Department of Agriculture, and the Environmental Protection Agency. He said people in the United States can be quite confident that if a product is purchased in a grocery store, that product will not have unintended consequences. He said there are concerns based on a mistrust of corporate agendas. He said there is a perception that the large companies are trying to enslave the world through technology. He said that is simply not true. He said there has been a coordinated and very well-funded misinformation campaign designed to spread such concerns.

Mr. Kelly said countries are adopting biotechnology in record numbers because they have seen that it works and because they have seen the issues accompanying the technology have been or are being addressed. He said these countries include Argentina, Australia, Canada, China, Egypt, India, Japan, Kenya, the entire African continent, New Zealand, South Africa, and the former Soviet Union. He said the Ukraine, which is the wheat basket of the

former Soviet Union, is particularly interested in the technology.

Mr. Kelly said some people believe biotechnology is advancing too quickly. He said the biotech industry has a vested interest in a transparent regulatory structure that can evaluate safety, improve understanding, and build acceptance in all aspects of product development. He said this is true not just in agriculture but across all product lines.

Mr. Kelly said the biotech industry is regulated by the Environmental Protection Agency, the United States Department of Agriculture, and the Food and Drug Administration. He said the Environmental Protection Agency regulates environmental exposure to insect-protected crops. He said it is the Environmental Protection Agency's role to guard against harm to the environment, to beneficial insects, and to other living things. He said the United States Department of Agriculture's role is to govern field testing of crops improved through biotechnology. He said the United States Department of Agriculture uses current statutes as a way to address new technologies. He said the United States Department of Agriculture must grant approval prior to the commercial growth and sale of a biotech crop.

Mr. Kelly said the Food and Drug Administration's role is to safeguard all foods in the marketplace and to evaluate the nutrition and safety of each product at every stage. He said the Food and Drug Administration examines the source of the gene, its history of use, its toxicity, its nutritional profile, its chemical composition, and its allergenic potential. He said if the food product does contain a potential allergy-causing agent, the product has to bear an appropriate label.

Mr. Kelly said the National Academy of Science has stated the United States Department of Agriculture has reviewed and granted over 30,000 field permits that to date have resulted in no incidences of injury to human health or the environment. He said the American Medical Association has stated that federal regulatory oversight of agricultural biotechnology should continue to be science-based and guided by the characteristics of the plant, its intended use, and the environment into which it is introduced, and not by the method used to produce it, in order to facilitate a comprehensive and efficient regulatory review of new genetically modified crops and foods. He said the American Medical Association has also stated that there is no scientific justification for the special labeling of genetically modified foods. He said the American Medical Association does not support a moratorium on the planting of genetically modified crops. He said the association encourages ongoing research and development in biotechnology.

Mr. Kelly said a report issued by the European Commission in October 2001, addressing crops and plants improved through biotechnology, provides that the use of more precise technology and the imposition

of greater regulatory scrutiny probably makes them even safer than conventional plants and foods. He said Europe has been the hotbed of the debate regarding biotech concerns and the unintended consequences of biotechnology. He said a number of the European regulators and government officials took note of the concerns that had been raised and were hesitant to adopt the technology. He said the Europeans reacted very slowly to the development of benefits through biotechnology. He said the Europeans are now realizing there is great potential in biotechnology. He said they are also realizing they have to ensure the people understand the potential and that a transparent regulatory process is in place. He said Europe is trying to model its regulatory process on that of the United States.

Mr. Kelly said biotechnology is expedient for the farmer and environmentally friendly. He said biotechnology does not displace traditional farming methods. He said farmers have the option of using chemicals, of growing organic crops, or of growing genetically modified crops. He said today each American farmer feeds 140 people. He said 60 years ago each American farmer fed 19 people.

Mr. Kelly said in 1928 the American farmer produced 26 bushels per acre. He said today the American farmer produces 136 bushels per acre. He said the challenge is to produce more food using less land, water, and chemicals. He said by 2050 the world population is estimated to be 9 billion people. He said the land necessary to feed that many people is not available. He said the alternative is to obtain higher levels of productivity from the land that is being farmed. He said biotechnology allows the raising of crops that have increased resistance to pests, disease, acidity, drought, flooding, and salinity. He said biotechnology results in increased yields, reduced inputs, increased efficiency, and improved grower choices. He said biotechnology promotes conservation tillage, water quality protection, and soil conservation.

Mr. Kelly said before biotechnology can move forward, it has to work and it has to be safe. He said there have to be markets for biotech products in the United States and abroad and the public has to understand the promise of biotechnology. He said the United States Trade Representative is working diligently to ensure there is an Asian market and a European market for American-grown crops.

In response to a question from Representative Mueller, Mr. Kelly said of companies that constitute Biotechnology Industry Organization, 20 to 25 percent are focusing on agriculture and industrial applications for biotechnology. He said the other 75 to 80 percent are focused on human health care and the development of drugs for the treatment of disease. He said with respect to agriculture, genetic modification and manipulation are the wave of the future and the focus of the Biotechnology Industry Organization's member

companies. He said biotechnology involves looking at the base of any organism and finding a way to improve or develop the organism in a way that has a consumer benefit. He said put another way, biotechnology is the genetic modification of cell-based products.

In response to a question from Senator Bowman, Mr. Kelly said biotechnology is going to be a part of the evolution of agriculture, whether desired or not. He said there will be a significant growth in the world's population. He said whether that will make an individual a more profitable farmer is debatable. He said the companies would like to be able to sell to farmers products that will make money for the farmers. He said the agricultural community is part of the future of biotechnology. He said if the biotech companies are not able to help agriculture by building a better product and by creating the potential for success, the companies will be out of business.

In response to a question from Senator Wanzek, Mr. Kelly said the growth of specialty crops for human health care will be heavily regulated. He said there is more of a market in industrial applications. He said as new products are being developed, so are new markets for agricultural crops.

Chairman Wanzek recognized Ms. Lisa Katic, RD, food policy advisor to the food industry. Ms. Katic presented testimony regarding the Food and Drug Administration regulatory framework, labeling requirements, and consumer attitudes regarding labeling. She said she previously held a position with the Grocery Manufacturers of America. She said the Grocery Manufacturers of America is the world's largest association of food, beverage, and consumer products companies. She said the Grocery Manufacturers of America's members include the manufacturers of brand name products such as Campbell Foods, Kraft, General Mills, Del Monte, Unilever, etc. She said the Grocery Manufacturers of America represents approximately 140 major food manufacturers.

Ms. Katic said the food industry came into the biotechnology game later than most of the other players. She said the food industry came with hundred-year-old brands that had to be protected. She said the brands had to be protected because the brands are what consumers recognize. She said consumers are loyal to brands. She said the food industry had to assure that every ingredient going into its brand name products was safe and wholesome. She said the food industry did a very comprehensive review of biotechnology and of the regulatory framework. She said the food industry is waiting for the further development of the health and nutritional benefits of biotech foods. She said that is the area in which the food industry sees itself taking advantage of biotechnology. She said the consumer population is primed and ready for foods that will provide added health benefits. She said there has been a lot of research done in this

area. She said although the technology is not quite ready, the food industry believes the technology will provide the kinds of health benefits consumers want.

Ms. Katic said biotech foods have been assessed by very prominent and credible organizations around the world. She said the World Health Organization has published statements about the safety of biotech foods. She said the Organization for Economic Cooperation and Development continues to look at the issue, as does the National Academy of Science.

Ms. Katic said biotech food products are regulated by three major agencies--the Food and Drug Administration, the United States Department of Agriculture, and the Environmental Protection Agency. She said the Food and Drug Administration specifically regulates the introduction of new foods and new food additives. She said the Food and Drug Administration also controls animal feed and live animals intended for human consumption. She said the Food and Drug Administration has oversight responsibilities for anything that is ingested by humans.

Ms. Katic said some people asked the Food and Drug Administration to regulate biotech foods like new foods or food additives. She said that is a particular Food and Drug Administration category pertaining to products that have never before been in the food supply. She said products in this category often undergo a 10- to 20-year review and generate a great deal of scientific data. She said when the proposers realized this was the way new foods and food additives were handled, they indicated it was not what they wanted.

Ms. Katic said when a company seeks clearance from the Food and Drug Administration, the Food and Drug Administration goes through a very comprehensive checklist so it can be assured that the company has evaluated the source of the gene or protein. She said the Food and Drug Administration wants to know if the protein has been in the food supply before or if it is something that is new. She said the Food and Drug Administration wants to know the history of the protein's use. She said if the protein is new, as opposed to something that has been in the food chain before, it is put through a wholly different review process. She said the Food and Drug Administration will look at the protein's toxicity, its nutritional profile, its chemical composition, its allergenic potential, and its antibiotic resistance.

Ms. Katic said the Food, Drug, and Cosmetic Act has been in place since 1906. She said the Act contains a general adulteration standard that allows the Food and Drug Administration to remove food products from the market if the products are misbranded, unsafe, or mislabeled in any way.

Ms. Katic said in 1992 the Food and Drug Administration developed a policy governing the evaluations that companies must conduct before seeking Food and Drug Administration approval. She said companies are expected to analyze the safety and the

nutritional value of the proteins being used, to identify the composition and nutritional value of any carbohydrates, fats, or oils to ensure that nothing has been changed, to analyze the concentration and viability of important nutrients, and the potential for food allergens to be transferred from one food source to another.

Ms. Katic said one company wanted to enhance a soybean for animal feed purposes. She said the company wanted to add an amino acid to the soybean so that it would have a more complete protein profile for animal feed. She said the Brazil nut had the amino acid the company wanted to isolate. She said the company transferred the amino acid into the soybean. She said the company, while going through the very detailed evaluations required by the Food and Drug Administration, determined that it had in fact transferred the allergen from the Brazil nut into the soybean. She said when the company found out this had happened, it stopped the approval process. She said the company did not move forward with the product. She said it was never commercialized and never used even in animal feed.

Ms. Katic said the Food and Drug Administration has determined that it needs to do more research with respect to the allergenicity of products. She said companies are not interested in commercializing a product that will create allergy problems.

Ms. Katic said a lot of people claim that the United States does not have labeling requirements. She said the United States does in fact have labeling and there are times when it is required. She said labeling is required by the Food and Drug Administration when a company changes the composition of a food in any way. She said under those circumstances, the label must state that there has been a change and further state what has been changed. She said if the nutritional profile is being changed, such as when Vitamin C is added through biotechnological means, the label must indicate the addition. Likewise, she said, if the nutritional profile is changed to remove something from the product, that too must be noted on the label. She said requirements already exist for reporting the introduction of an allergen on the label. She said those requirements apply to the eight known allergens and are separate and apart from anything having to do with biotechnology. She said labeling must also be used to indicate any toxins in the food that are beyond acceptable limits. She said people do not like to discuss toxicants in food. However, she said, people need to realize that toxicants occur naturally and that limits have been placed on all known toxicants in our foods.

Ms. Katic said the Food and Drug Administration has based its labeling policy on the notion that biotech products are no different from their traditional counterparts. She said there is no way to tell by looking at a food whether that food has been modified through biotechnology. She said labeling issues are more

complicated than they first appear. She said consumers have been asked whether there was any way a company could indicate on a food label that the food has been modified through biotechnology, without making the consumer think the food has been changed compositionally or that it is otherwise different. She said consumers have not indicated there is a statement that could be put on a label without misleading them into thinking the food is different from a nonmodified food placed next to it. She said this issue has been debated for some time. She said consumers do not understand the comprehensiveness of the technology and until they do, labeling will be an issue and will continue to be debated.

Ms. Katic said the Food and Drug Administration has realized that as different niches emerge in the marketplace, companies will begin making claims regarding the nonbiotech nature of their products to gain an advantage over competitors. She said in order that the Food and Drug Administration can ensure there will not be chaos in the marketplace, the Food and Drug Administration has introduced voluntary labeling guidelines. She said the guidelines have not yet been finalized. She said the Food and Drug Administration wants to ensure that nonbiotech claims are truthful and that such claims do not mislead consumers. She said the proposed guidelines set forth the criteria a company must meet before it can make a nonbiotech claim. She said no one should be allowed to make a claim without being able to support it.

Ms. Katic said some people believe the food industry does not want to label foods and that therefore consumers are not being given the whole picture. She said the industry believes consumers have a right to comprehensive information, not fragmented information. She said consumers get information from the media, from companies, and from web sites. She said companies are using all those sources to inform consumers about their products. She said the goal of the food companies is to inform consumers and to get both reason and science into the debate.

Ms. Katic said the International Food Information Council, Washington, D.C., is a scientific communications organization. She said the council has conducted research and also found that 81 percent of consumers agree it would benefit food manufacturers, health professionals, the government, and others if more detailed information were provided through toll-free numbers, which must be on the product labels, and through brochures and web sites.

Ms. Katic said 61 percent of Americans believe and can state how biotechnology will benefit them and their families in the next five years. She said a variety of groups have conducted research to determine consumers' attitudes with respect to biotechnology. She said the consumers' greatest expectations are for health and nutritional benefits.

Ms. Katic said the consumer attitude issue is an interesting one. She said the grocery manufacturers were very concerned about the StarLink corn episode and what it would mean for the future of biotechnology. She said people's levels of concern were heightened, but then it dropped after they had been told that the issue was a regulatory one and not one of food safety.

Ms. Katic said the Alliance for Better Foods is a new organization consisting of entities that want to provide credible information about biotechnology. She said the alliance will continue to conduct research, talk to the media, and talk to state and federal legislators about biotechnology. She said the alliance's web site is www.betterfoods.org. She said much of the information she presented today can be found on the web site. She said the information is frequently updated.

In response to a question from Representative Froelich, Ms. Katic said the food industry has advocated that more resources be directed toward the Food and Drug Administration so that the agency can hire more inspectors and do a better job of overseeing foods coming into this country. She said it looks like more money was put into the federal budget for this purpose.

In response to a question from Representative Froelich, Ms. Katic said the Codex Alimentarius Commission, an international standard-setting organization, recently met in Yokohama, Japan. She said the commission is looking at proposals for traceability. She said the problem is that some of the traceability proposals which were put on the table were completely onerous and unworkable. She said she believes some form of tracing will be implemented, but it will be designed to ensure the safety of all products, not just those that have been biotechnologically engineered. She said people want assurances that the source of a particular food or ingredient can be identified.

In response to a question from Senator Bowman, Ms. Katic said while labeling sounds like a way to trace the origin of a food product, the reality is labeling is not going to be able to identify the source of a product because products come from so many different areas. She said meat is easily traceable because it is a whole product. She said soy flour and products that come from soy and corn and other individual ingredients are a completely different issue. She said one does need to know from where products and individual ingredients come, but labels alone will not accomplish this. She said a system other than product labeling needs to be put in place to accomplish this. She said discussion is being had in the international arena. She said the discussion governs the safety of all foods, not just biotech foods.

In response to a question from Representative Nelson, Ms. Katic said if there is any concern at all about an ingredient that is going to go into a product,

that ingredient should not be allowed to be used in a food product. She said the Environmental Protection Agency works with tolerance levels for things such as pesticides. She said the Food and Drug Administration likewise does not support a reporting system because that agency too upholds the premise that once food has been approved through the United States regulatory system, the food is deemed safe.

In response to a question from Representative Fairfield, Ms. Katic said companies that are dealing with wheat and grain on an enormous scale have looked at genetically modified wheat very closely. She said from an industry perspective, the genetically modified wheat issue hit right after StarLink corn. She said at that time the industry wanted to know what else was coming its way. She said the companies that are dealing in wheat and grain are having direct dialogue with companies involved in the development of genetically modified wheat. She said there is an understanding that consumers need to be accepting of a product before it is marketed. She said the same is true of pharmaceuticals.

Representative Fairfield said at a recent spring wheat bakers' conference the president of the Grocery Manufacturers of America stated his opposition to genetically modified wheat. She said perhaps that was his personal position and not necessarily the position of the Grocery Manufacturers of America.

Ms. Katic said Mr. Bob Rich is the former chairman of the Grocery Manufacturers of America. She said Mr. Stephan W. Sanger, Chairman and Chief Executive Officer, General Mills, Inc., is the new chairman of the Grocery Manufacturers of America and he has had extensive conversations with the biotech industry to express what the food manufacturers want and what they need. She said it is not the Grocery Manufacturers of America's position to say that it does not want genetically modified wheat.

In response to a question from Senator Wanzek, Ms. Katic said there is a real distinction between raising crops through traditional agriculture and raising identity-preserved crops. She said producing something with identity preservation automatically sets in place a system that allows that product to be traced back to its source. She said in the United States traditional agriculture is conducted on a massive scale and that by its very nature presents a significant challenge to maintaining or preserving identity. She said identity-preserved crops are generally produced on a small scale and at a premium. She said tracing such a product through a specially designed system can be managed; whereas, given the scale of traditional agriculture, that might not be possible.

Ms. Ellen Huber, North Dakota Wheat Commission, distributed a document entitled *Biotech Impact on U.S. Hard Red Spring Wheat Exports*. A copy of the document is attached as Appendix D.

Chairman Wanzek recognized Mr. Leonard Gianessi, Senior Research Associate, National Center for Food and Agricultural Policy, Washington, D.C. Mr. Gianessi presented testimony regarding the potential for biotech crops to improve crop pest management in the United States. A copy of his testimony is attached as Appendix E.

Mr. Gianessi said research on this topic is being conducted by the National Center for Food and Agricultural Policy, which is a nonprofit, nonadvocacy research organization. He said the study being conducted concentrates on transgenic cultivars or cultivars that have been created through biotechnology. He said herbicide-tolerant crops are developed through genetic engineering by taking genetic materials out of a soil microorganism and putting them into a plant. He said the result is that a herbicide can be sprayed on the plant whereas doing so on a plant that has not been genetically engineered would kill the plant. He said for insecticidal crops, such as corn, soil bacteria such as *bacillus thuringensis* can be inserted into the plant. He said this allows the plant to kill insects that feed on it. He said both of those types of plants have been commercialized. He said fungal-resistant crops are being researched in North Dakota. He said this type of crop contains a foreign gene from another crop species that detoxifies fungal toxins.

Mr. Gianessi said 55 percent of the canola acreage in North Dakota is transgenic herbicide-tolerant. He said so is 49 percent of the soybeans and 10 percent of the corn. He said 18 percent of the corn planted in North Dakota is insecticidal.

Mr. Gianessi said canola acreage increased dramatically following introduction of the transgenic cultivar in 1999. He said canola acreage had been expanding, but there were certain limits on that expansion because of weed control problems. He said in the mid-1990s growers had to rely on the herbicide Sonalan. He said it did not control smartweed and neither did Treflan. He said Roundup Ready canola had been genetically engineered to allow the spraying of Roundup on the plant. He said this was a real breakthrough in weed control for canola growers and resulted in an expansion of the acreage. He said some new herbicides have been registered in the last four years and there are now effective alternatives to the use of Roundup. However, he said, to accomplish the same result as that obtained through Roundup Ready canola, growers would have to spend \$40 an acre to apply a combination of four different herbicides. He said Roundup Ready canola saves growers about \$16 an acre while maintaining effective weed control.

Mr. Gianessi said Roundup Ready soybeans have been genetically engineered to allow Roundup to be sprayed over the plants without harming the soybeans. He said growers could rely on four to five different herbicides to achieve the same end as

Roundup Ready soybeans. He said there are effective alternative herbicides, but they cost \$10 an acre more. He said a program to control weeds in North Dakota soybeans will cost more. He said extension scientists and farmers who have adopted the new technology say they have done so because it is less expensive, it is less complicated, there is less crop injury, there is more flexibility in timing treatment, and there are no rotation restrictions.

Mr. Gianessi said corn growers in the state similarly have had access to a variety of herbicides. However, he said, the ratings on the control of weeds such as cocklebur have been "fair" at best. He said there is no control of bindweed using the standard treatment. He said glyphosate has resulted in good to excellent control of tough perennial weeds. He said growers welcome the opportunity to reduce their costs while at the same time increasing their yields. He said alternative postemergence grass control herbicides would cost about \$15 an acre more than planting Roundup Ready corn.

Mr. Gianessi said the key pest for corn is the European corn borer, which tunnels into the corn plant and disrupts the plant's vascular system. He said *bacillus thuringensis* corn has a toxic protein engineered into it. He said the protein kills the corn borer and gives built-in resistance to the pest. He said if a farmer has one larva of the first generation of corn borers, the farmer loses about 5 percent of the yield. He said if there is a second generation of corn borers, there can be another 2 to 4 percent loss. He said the *bacillus thuringensis* technology costs about \$6 an acre more. However, he said, there is an average of a 6.5 bushel per acre return on the investment. He said at \$2 per bushel of corn, there is a \$13 return on a \$6 investment. He said farmers are seeing an economic advantage of about \$7 per acre from using this technology.

Mr. Gianessi said there are also biotech crops that have been commercialized but shelved in North Dakota. He said both herbicide-tolerant sugar beets and insecticidal potatoes have been developed and approved for use. However, he said, they are not being planted in North Dakota because of the genetically modified organism debate and the controversy regarding genetic engineering.

Mr. Gianessi said the herbicide applications used in growing sugar beets are the most intense in the country. He said there are three to four different herbicides and three to four different treatments of each throughout the year. He said that amounts to 12 to 14 different herbicide applications per acre. He said in addition, there are at least two cultivations per acre. He said this is very intense and very expensive weed control technology. He said if Roundup Ready sugar beets were planted, there would be less injury to plants, equivalent weed control, and equivalent yield. He said the cost-savings would be about \$50

an acre. He said that translates to about \$13 million in the state.

Mr. Gianessi said this technology has been available since 1999. However, he said, not a single acre of Roundup Ready sugar beets is planted anywhere in the United States. He said every sugar beet factory has an approved list of varieties that it will accept. He said the sugar beet processors have not yet approved Roundup Ready sugar beets. He said the sugar beet processors have been told that their finished product will not be accepted by the large sugar buyers and candy companies if they use Roundup Ready sugar beets.

Mr. Gianessi said the main insect pest for North Dakota potatoes is the Colorado potato beetle. He said insecticides are constantly used against this pest. He said only about 5 percent of the potato acres in North Dakota do not receive an insecticide application to combat the Colorado potato beetle. He said 65 percent of the acres have to be treated once and 30 percent of the acres have to be treated twice to control the beetle. He said alternative technology is available. He said potatoes that have been genetically engineered have a toxin from *bacillus thuringensis* engineered into them. He said the plants kill the beetles when the beetles try to feed on the plant. He said this technology was developed and commercialized by a company called Nature Mart. However, he said, despite all the regulatory approvals, no acreage was planted in 2001 and none is expected to be planted in 2002. He said when McDonald's announced that it would not accept transgenic potatoes, the potato growers did not want to take the risk of growing the potatoes and not having a market. He said growers in North Dakota who would like to try the product do not have the opportunity to do so.

Mr. Gianessi said biotech crops in research programs in North Dakota include herbicide-tolerant wheat, fungal-resistant sunflowers, and fungal-resistant barley. He said North Dakota spring wheat production exceeds 10 million acres. He said that amounts to \$900 million in annual value and 309 million bushels annually. He said there are excellent herbicides for use on North Dakota spring wheat. However, he said, there are some issues with respect to the cost of the herbicides. He said broadleaf herbicides are quite inexpensive and amount to roughly \$4 an acre. He said the grass herbicides cost about \$16 an acre. He said Canada thistle control costs another \$17 an acre. He said most growers are not making that expenditure. He said most growers have a program that costs approximately \$20 an acre and they are choosing to control either the grasses or Canada thistle. He said up to 33 percent of the spring wheat acreage has Canada thistle problems that are not being treated. He said because of this decision, growers are losing about four bushels per acre. He said Roundup Ready spring wheat would offer equivalent weed control to that of the current

herbicides and cost about \$20 an acre. He said if a farmer has both grasses and Canada thistle, use of Roundup Ready spring wheat would allow the farmer to get extra control.

Mr. Gianessi said sclerotinia control in sunflowers is a problem. He said the mushrooms emit fungal clouds and the spores from the fungus enter the sunflower plants, resulting in fungal growth, wilting, and consequently a dead sunflower. He said there are no chemical fungicides to control sclerotinia. He said genetic engineers at Pioneer Hi-Bred International, Inc., have identified one of the key toxins produced by the fungus. He said the toxin is called oxalate. He said some crops have a natural defense against oxalate. He said wheat and barley have an enzyme in them called oxalate-oxidase. He said the enzyme actually detoxifies oxalate. He said wheat and barley are not susceptible to sclerotinia because they have a built-in protection mechanism. He said the engineers took the oxalate-oxidase gene and inserted it into sunflowers. He said they took a protein that was already out there performing its function in wheat and barley and found that it worked very well in sunflowers. He said the losses to sclerotinia in North Dakota are about 140 million pounds a year. He said that equates to a value of \$10 million.

Mr. Gianessi said 30 percent of the malting barley production in the United States comes from North Dakota. He said scab in barley has resulted in a \$100 million loss in each of the last 10 years. He said scab results in reduced yields and it produces a mycotoxin inside the barley kernel. He said the mycotoxin is known as vomitoxin. He said its chemical name is deoxynivalonol. He said farmers having deoxynivalonol incur fungicide expenses in trying to control the disease. He said those farmers also experience reduced yields and reduced prices. He said the malters and the brewers measure the deoxynivalonol levels in barley. He said they do not want barley with deoxynivalonol. He said there are a lot of acres that are not harvested as a result of deoxynivalonol and there are a lot of acres that are no longer planted because they have a deoxynivalonol problem. He said if the growers cannot control the problem, it makes no sense for them to even plant the crop.

Mr. Gianessi said there are 104 projects around the country examining chemicals to control or eliminate deoxynivalonol. He said the United States Department of Agriculture is trying to develop an engineered barley that would allow growers to deal with the disease. He said there has been success at the Fargo laboratory in transforming barley plants through the insertion of a fungal gene that deactivates the toxin if it is present in the barley. He said another method involves taking a yeast gene and inserting it into barley. He said the gene then literally pumps deoxynivalonol out of the cells. He said if this genetically engineered approach would work, it is estimated that North Dakota would see an annual increase of

\$100 million in its barley industry. He said the National Center for Food and Agricultural Policy is conducting 40 case studies for 30 crops around the country. He said it is making estimates for production gains, economic gains, and the impact of pesticide use. He said the study will be completed in May 2002.

In response to a question from Representative Mueller, Mr. Gianessi said he had built in the technology fees and seed premiums in the cost-savings he cited. He said the estimates do not take into account any premiums or loss of premiums in the marketplace. He said around the country some elevators are offering premiums for genetically modified soybeans because they come in with fewer weed seeds and consequently require less cleaning.

In response to a question from Senator Bowman, Mr. Gianessi said if one farmer would use an insecticide, a herbicide, or a fungicide on his crop and if it were to drift into his neighbor's organic plot, the same issue exists as that encountered with pollen drift from genetically modified crops. He said there are some allowances for the unintentional contamination of organics or of traditional crops. He said a farmer can also have weed seeds appear if an organic neighbor did not control weeds as well as the neighbor should have. He said spray drift or pollen drift is an issue for all crops. He said it is not unique to biotechnology. He said he believes it is possible to design regulations that would govern inadvertent contamination and preserve both organic and nonorganic farming.

In response to a question from Representative Mueller, Mr. Gianessi said brand names are everything to many companies. He said if a protester appeared on television, arguing that there is something unwholesome in the food or that it is " Franken-food," the brand name companies would lose a considerable amount of market share. He said the companies are not yet prepared to take that risk. He said corn and soybeans were approved early in the process. He said there were very few objections raised. He said it is much tougher to get a new product through today. He said the activist groups have found that they do not need a lot of science in order to get attention on this issue and stop the sale of the products. He said right now consumers do not have the choice of selecting a potato that has been genetically engineered or one that has been sprayed multiple times for a particular beetle. He said consumers are being denied choices.

Senator Wanzek said Mr. Gianessi has shown in his testimony regarding genetically modified potatoes and sugar beets that if there is not a market for a genetically engineered product, farmers will not purchase and plant the seeds. He said the product developers have a lot to lose if they do not participate in obtaining market acceptance for the product.

Representative Fairfield said at one time the bugs killed the plants and now there are plants that can kill

bugs. She said she needs more assurance than just a corporation telling her that a product is safe before she would feed it to her baby.

In response to a question from Representative Fairfield, Mr. Gianessi said we used to think of the consumer as the person in the supermarket. He said the consumer is also McDonald's and Hersheys. He said the corporate consumer is also deciding what to purchase and use. He said to the extent that the debate has been unscientific and perverted, growers have not been able to lower their costs.

In response to a question from Senator Bowman, Mr. Gianessi said there is a lot of concern about bioterrorism in this country. He said that could mean the release of an exotic pest that could attack our crops. He said biotechnology is one of the bulwarks against such an attack. He said genetic manipulation tools must be available to deal with those kinds of problems.

In response to a question from Representative Nelson, Mr. Gianessi said some of the most commonly used herbicides are under constant scrutiny by the Environmental Protection Agency and by other regulatory agencies. He said right now there are some inexpensive herbicides that might not be available in 10 years. He said weeds are becoming resistant to herbicides. He said the issue is whether farmers want to have other options. He said the Canada thistle problem can be addressed using biotechnology. He said farmers in the Northwest are pursuing genetically engineered wheat because they have a problem with viruses. He said there may be barriers to wheat yields that this technology will overcome. He said these barriers may include insect and disease problems down the road. He said if wheat that has additional weed and insect protections built in is desired, the first product must be allowed to be developed and sold in order to get the benefits from the second and third generations. He said the succeeding generations' benefits are financed from the profits of the first generation.

In response to a question from Representative Rennerfeldt, Mr. Gianessi said the general public is beginning to accept and approve biotech crops. He said economists and plant pathologists at North Dakota State University should be encouraged to become more actively involved, to study genetically modified organisms, and to help answer the public's questions.

In response to a question from Representative Fairfield, Mr. Gianessi said there is a tremendous amount of scientific scrutiny that is utilized by the federal regulatory agencies in approving the technology. He said there is a tremendous amount of science involved in the regulation of biotechnology. He said it is not just the large companies saying that the potato which kills the bug is safe. He said regulatory agencies are saying that as well.

In response to a question from Representative Mueller, Mr. Gianessi said everyone is working very hard to get the approvals in place so that there are no surprises and no StarLinks. He said whether those approvals are going to be in place before the technology is ready to go is something he cannot predict. He said the benefits are available to the growers in this state. He said a determination will have to be made regarding the viability of crops if there is no incorporation of biotech advances. He said choices may need to be made between short-term markets and the long-term viability of the agricultural industry.

Senator Wanzek said he cannot think of anyplace in the world that he would feel safer consuming food than in the United States. He said he hopes the message is sent that North Dakota does want to be part of the 21st century. He said there are some serious issues that need to be addressed globally.

Chairman Wanzek recognized Mr. Michael K. Doane, Representative for Industry Relations, Monsanto. Mr. Doane said biotechnology is an important issue for Monsanto as well as for the state of North Dakota.

Mr. Doane said global research is improving wheat through biotechnology. He said through biotechnology wheat can be produced with traits such as fungal resistance, insect resistance, gluten intolerance, larger seed sizes, higher yields, improved protein levels, and improved starch levels. He said these developments are occurring in a number of countries. He said Australia believes it can have a product available for the market as early as 2005-06. He said Australia is also pursuing biotech changes in wheat that would enhance baking characteristics. He said the University of Florida has developed a genetically modified wheat that has altered processing and baking characteristics. He said developments in the field are happening rapidly. He said work in the field of biotechnology as it applies to wheat goes well beyond that which Monsanto is doing alone.

Mr. Doane said Monsanto has developed Roundup Ready wheat. He said Roundup Ready wheat involves a technology similar to that already available for corn, cotton, canola, and soybeans. He said the technology allows Roundup to be applied without damaging the plant. He said the benefits include broad spectrum weed control, increased crop safety, increased yield, conservation tillage enhancement, cleaner grain, and crop rotation flexibility. He said Monsanto recognizes that there are other issues, in addition to the benefits, that need to be taken into consideration.

Mr. Doane said the Animal and Plant Health Inspection Service regulates all precommercial biotech field research in the United States. He said there is a similar agency in Canada. He said Monsanto has had an active field research program since 1994. He said the size of the field research program remains relatively small. He said last year

Monsanto had planted fewer than 100 acres of Roundup Ready wheat in North America. He said Monsanto anticipates a similarly sized program during 2002. He said a rigorous management protocol is prescribed for the field research programs. He said one of these protocols involves isolation from commercial production. He said the Animal and Plant Health Inspection Service sets minimal standards for field research. He said there are comprehensive third-party audits to monitor the field research and to ensure that all the grain is accounted for upon harvest. He said there is compliance training for anyone working in the field research program. He said it is important for Monsanto to maintain research plots because that is how the company develops data for product development and for regulatory submissions.

Mr. Doane said Monsanto is developing the Roundup Ready trait in elite wheat varieties. He said Monsanto is measuring the quality traits of the varieties. He said the long-term goal is to meet or exceed standard quality assessments for variety development. He said varieties that are developed with the Roundup Ready trait or with any biotech trait must meet current industry standards for its characteristics.

Mr. Doane said Monsanto has already collected what it believes is a substantial amount of data to support regulatory submissions in the United States, in Canada, and in other countries. He said Monsanto is preparing to make the submissions in 2002. He said Monsanto is also conducting research that will aid in product development. He said it will take a few more years before Monsanto will have a product that is available for commercial use. He said regulatory approvals are a part of the development process.

Mr. Doane said Monsanto has formed a committee of wheat industry stakeholders that will provide advice and counsel to Monsanto on the development of biotech traits for wheat. He said the specific objectives of the committee are to advise Monsanto regarding market acceptance, to provide an effective dialogue, to develop and review plans for potential grain handling protocols, and to advise Monsanto on the stewardship of biotech wheat and the process of commercialization.

Mr. Doane said Monsanto is still some time away from having a product that it is ready to commercialize. He said Monsanto is looking into what can be done for customers who might demand non-biotech wheat. He said Monsanto has pulled together an internal team that has been focused on grain handling. He said since Monsanto is not a grain handler, it has enlisted the help of people who are familiar with the handling of grain. He said the focus is on creating cost-effective choices for end users. He said there are some existing market mechanisms that work very well. He said growers on the front end can provide information regarding whether a product

is biotech or nonbiotech. He said that aids in the development of a nonbiotech supply for end users. He said Monsanto recognizes that it is critically important to have accurate and low-cost methods for determining and verifying whether a product is biotech or nonbiotech. He said tests are also being developed to help people determine the level or type of genetic material with which they are dealing. He said there is a need for broad regulatory approvals, for the establishment of thresholds or tolerances, and for the establishment of marketing agreements to facilitate international grain handling. He said zero tolerance is neither possible nor appropriate in the biotech industry. He said zero tolerance with respect to any level of genetic purity in seed stocks is not feasible. He said the issue of tolerance has been around for a long time. He said biotechnology has merely highlighted the issue.

Mr. Doane said 26 percent of the United States corn crop is biotech. He said 68 percent of the soybeans grown in the United States is biotech. He said the corn trade has increased .5 percent between 1990-91 and 1996-97. He said markets are being maintained despite the trade in biotech corn. He said soybeans have increased by 26 percent despite the fact that the beans are biotech. He said wheat exports on the other hand have declined by 17 percent and that is without any biotechnology. He said the wheat industry needs to be more competitive.

Mr. Doane said grower research conducted in the last two months by Marketing Horizons, Inc., showed that 74 percent of spring wheat growers in the four-state region of Minnesota, Montana, North Dakota, and South Dakota believe biotechnology provides better weed and insect control. He said 79 percent believe it reduces the use of herbicides and insecticides. He said 64 percent believe biotech crops are easier to grow. He said 55 percent believe biotech crops are more environmentally friendly.

Mr. Doane said the researchers also questioned the respondents specifically about wheat and biotech traits of wheat. He said the respondents said they were very interested in accessing traits such as higher yields, control of fusarium, and complete tolerance to Roundup, as well as consumer traits such as extended shelf life. He said the researchers' next question to growers was if Monsanto had a product that was cost-neutral, that had effective volunteer control, and for which markets existed, would they be interested in planting the product. He said 7 out of 10 spring wheat growers said they would be very interested in planting the product.

Mr. Doane said 93 percent of the growers indicated it is very or somewhat important for companies and public institutions to continue research and development of new and expanded applications for biotech crops. He said 69 percent of the growers also believe that biotech developments in wheat research have fallen behind that of other crops. He said one-third of

the growers indicated that in the last year they had shifted some of their wheat acres to alternative biotech crops. He said within the sample size, that amounted to 8 percent of the wheat acres.

Mr. Doane said Monsanto is researching and developing traits in wheat. He said Monsanto is confident that it can bring the traits to growers when the market is ready and not before that time. He said Monsanto is committed to continue the research and to have products that will meet growers' needs. He said Monsanto recognizes that markets are critical. He said Monsanto understands it needs to have technical success. He said this means that the product must bring significant and positive agronomic benefits. He said Monsanto understands it needs to have varieties that meet or exceed industry standards for quality. He said Monsanto understands it needs to have food and feed regulatory approvals in a variety of countries that import wheat from the United States. He said Monsanto understands it needs to develop appropriate grain handling protocols for the time when there will be choice in the marketplace. He said Monsanto understands there needs to be buyers willing to procure wheat with biotech traits. He said Monsanto understands there needs to be a North American consumer and an international consumer who is willing to accept biotechnology.

Mr. Doane said during 2002 Monsanto will continue the dialogue with people that have concerns and work together to address those concerns. He said Monsanto will continue to work with the Wheat Advisory Committee. He said Monsanto is committed to starting the regulatory submissions process and to developing support for biotech wheat on the domestic and international levels. He said Monsanto realizes that some wheat customers would not today extend a preference for biotech wheat. He said there is a lot of work to be done.

In response to a question from Representative Fairfield, Mr. Doane said Monsanto has a royalty structure on soybeans that recoups the investment Monsanto made in developing soybean traits. He said Monsanto has been developing biotech traits since the early 1980s. He said Monsanto's first opportunity to generate a financial return from that investment occurred in the mid-1990s. He said growers have had economic and environmental benefits. He said Monsanto believes that the technology fees are fair to growers. He said when Monsanto conducted grower surveys, the growers' response was that they were 90 to 95 percent satisfied with the value that the product brought to them. He said in some areas, like Argentina, intellectual property rights protection does not exist. He said this has damaged Monsanto's ability to introduce new traits into Latin America. He said because Monsanto cannot collect fair value for its investment in Latin America, growers in that region will not have access to the new traits. He said that is why the focus of Monsanto's efforts

are directed at places having a business model that makes sense.

Mr. Doane said Monsanto has tried to extend technology in nonroyalty cases as well. He said Monsanto invested in the development and sequencing of the rice genome. He said Monsanto made that freely available to researchers. He said Monsanto also extended royalty-free licenses for the use of intellectual property when it saw that the traits would be beneficial to humanity. He said Monsanto's ability to generate the dollars needed for continued research is dependent upon strong intellectual property rights protection.

In response to a question from Senator Bowman, Mr. Doane said competition is very intense in the field of biotechnology. He said many companies are researching and developing products they believe will have benefits to producers. He said a lot of this research is being done by public institutions. He said there will be many groups in addition to Monsanto bringing forth research. He said Roundup Ready soybeans is involved with one gene and the patent on that gene will eventually expire. He said the developer is given some time to recoup its investment. He said advanced breeding techniques are not covered by patents because of the way the government looks at such techniques.

In response to a question from Senator Bowman, Mr. Doane said if new products do not meet the claims made by the company in product warranties, the company stands liable. He said Monsanto's goal is to develop incontrovertible data in which it can believe, in which the regulators can believe, in which the industry stakeholders can believe, and in which the consumers can believe. He said Monsanto does not want to put something on the market until it is confident of the product's performance.

In response to a question from Representative Mueller, Mr. Doane said he relies on trend data which recognize that exports fluctuate from year to year. He said the data also take into account the currency exchange rates. He said right now the United States dollar is very strong when compared to the currency of other countries.

In response to a question from Representative Mueller, Mr. Doane said it will be important to recognize that the trade in wheat is diminishing and that our ability to innovate is going to drive our ability to compete in world markets. He said Australia has nearly doubled its production and supply of wheat. He said Argentina has done nearly the same. He said for the United States to remain competitive, there will have to be investments in technologies that will help control or reduce costs. He said trade is an important strategic advantage for the United States. He said the United States has the technologies that reduce costs and provide high-quality wheat.

Representative Fairfield said Monsanto, as a transnational corporation, has interests in other

countries and is therefore playing both sides of the field. She said the liability issue is very important to farmers. She said a 2001 technology agreement provides that in no event shall Monsanto be liable for any incidental, consequential, special, or punitive damages.

Mr. Doane said when Monsanto develops products, it wants products that will perform to their specifications.

In response to a question from Representative Fairfield, Mr. Doane said the market is dealing quite efficiently with the segregation and preferences that exist. He said today there is a healthy, abundant supply of nonbiotech corn, soybeans, and canola. He said the market is dealing with the flow of grain into commerce.

In response to a question from Representative Mueller, Mr. Doane said Monsanto is not committing to a particular timeframe within which it will bring Roundup Ready wheat into production. He said Monsanto will bring the product to the market when it has met the necessary milestones. He said Monsanto will not let the timelines dictate when it will bring forward a particular product. He said if it takes longer to meet with a successful end to that process, then that is the amount of time that the process will receive.

In response to a question from Representative Froelich, Mr. Doane said he knows of no moratoria or other specific impediments, whether legal or policy-based. He said research is going on around the world, but no biotech wheat products are being sold. He said there is a great deal of research being done in Australia, Canada, Europe, and China. He said everybody seems to recognize there is work to do to ensure that there will be acceptance of this research.

In response to a question from Representative Mueller, Mr. Doane said Monsanto is particularly interested in how international tolerances are developed.

In response to a question from Representative Fairfield, Mr. Doane said there is precedent for how industry, consumers, and farmers can work together to determine when a product is ready for the market. He said even though the regulatory approval exists, Monsanto has not commercialized sugar beets and potatoes. He said Monsanto knows farmers need to have markets and consumers need to have certain assurances before the products are offered commercially.

Mr. Doane said Monsanto representatives will appear before any legislative committee at any time to report on the status and progress of the technology. He said he is making this commitment today and it extends into the future.

Chairman Wanzek recognized Mr. Mark Anderson, Board of Directors, North Dakota Grain Growers Association. Mr. Anderson said he is a farmer from Regent. He presented testimony regarding biotech

developments in the wheat industry. A copy of his testimony is attached as Appendix F.

Representative Mueller said research regarding genetically modified wheat is conducted in North Dakota as well. He said the 2001 legislation was not intended to and did not hinder any research going on regarding genetically modified organisms in general and genetically modified wheat in particular.

Chairman Wanzek recognized Mr. Todd Leake, Dakota Resource Council. Mr. Leake said he is a farmer from Grand Forks County. He said the issue is still the same as it was. He said on one hand the biotech industry is pushing for the commercialization of a genetically modified wheat variety. He said on the other hand, 8 of the top 11 customers have protocols that restrict or ban the importation of genetically modified organisms, including wheat. He said the farmers of North Dakota will pay the price in this experiment of international will. He said it is incumbent upon the Legislative Assembly to safeguard the economy of the state and the welfare of the agricultural sector and the farmers of this state. He said doing that would be availing ourselves of regulatory authority with which to address the situation in the eventuality of the deregulation and commercialization of genetically modified wheat products. He said the committee should draft legislation that gives the state of North Dakota the authority to place a moratorium on the commercialization and release of genetically modified wheat within the state and also to petition the United States Secretary of Agriculture to place a moratorium on all genetically modified wheat in the United States. He said this is the only way in which North Dakota farmers can guarantee their customers. He said North Dakota has an export-driven economy. He said wheat is not a sacrificial crop. He said it is incumbent upon North Dakotans to safeguard that crop. He said this is also a biological issue. He said it is not a matter of letting the marketplace drive the issue. He said once genetically modified wheat is released, there will be no turning back. He said there will be cross-pollination and seed stock contamination. He said there will be genetically modified wheat from that point forward. He said that will be the scenario within which North Dakotans will have to try and conduct business.

Mr. Leake said it is important that people understand the gravity of the decision that needs to be made. He said North Dakota's wheat customers are already turning to other sources for their wheat supplies. He said North Dakota will have to send those customers a signal that it will regulate this and be a regular supplier of high-quality wheat to Europe, to the Far East, and to all other countries in South Asia that have protocols in place. He said those countries have the right under international agreements to regulate international trade in food. He said those countries have the right under international

biosafety protocols to reject genetically modified commodity shipments.

In response to a question from Representative Froelich, Mr. Leake said there is an issue surrounding the phytosanitary situation of North Dakota seed stocks. He said genetically modified traits are self-replicating. He said if genetically modified wheat seed is available for feed use, the seed would be available for planting anywhere in this state and there would be a cross-pollination issue. He said there would be issues of segregation in unit trains, in seeding equipment, in transporting equipment, and in elevators. He said some North Dakota elevators were built in the 1920s. He said he does not believe the product can be kept segregated. He said North Dakota has never had to deal with tolerances in the manner seed is handled. He said North Dakota has never had a commercial issue that had to be addressed. He said there are new challenges now and there is not the time or the resources to address the challenges. He said until the time comes when there is acceptance by the markets, North Dakota should avail itself of the authority to regulate the product and not rely on reports from industry.

In response to a question from Senator Bowman, Mr. Leake said he is asking for a statewide moratorium. He said the moratorium has to start somewhere. He said it is very important that North Dakota send a signal to other states and to the United States Department of Agriculture. He said he also asked for a resolution that will direct the state to seek a petition for a moratorium on the deregulation of genetically modified wheat within the United States Department of Agriculture. He said North Dakota should ask the federal government to recognize its concerns as the No. 1 producer of hard red spring wheat. He said North Dakota should ask the federal government to recognize the economic peril the state might be in if the federal government goes ahead with the deregulation. He said the international situation is another matter for the state, the federal government, and international bodies.

In response to a question from Senator Bowman, Mr. Leake said if the other countries of the world would be in a position to take advantage of a genetically modified trait and increase the value of their crops, we would be in a situation in which genetically modified traits have been accepted. He said a moratorium is a delay in authority. He said if North Dakota were to avail itself of a moratorium, it would rest with the legislative body to recognize the level of acceptance and the value of the particular gene event and to make a decision whether to accept it. He said that was the language of the previously proposed moratorium. He said North Dakota is not so slow to react that it could not take advantage of that. He said a lot of rhetoric has been used regarding the creation of miracle products using genetically modified crops. He said one of the problems with the national protocols is

that there are proposals for both animal and human pharmaceuticals being produced from agricultural crops traditionally grown for food use. He said not everything is approved for human food use. He said the United States would not allow veterinary vaccines to be put into corn flakes through the use of corn that includes veterinary vaccines. He said neither would that be allowed in Europe. He said the European Union believes it needs the authority to regulate secondary gene events. He said nobody really benefits from gastroenteritis vaccine in corn flakes. He said that is just not for human use and that is therefore a concern. He said we have to be cognizant of what is being done and what is being incorporated into high-value crops.

In response to a question from Representative Fairfield, Mr. Leake said the whole issue of global trade revolves around a concept known as the precautionary principle. He said the precautionary principle says "prove to me it is safe before I eat it." He said it does not say "tell me to eat it until I can prove that it is unsafe." He said the precautionary principle is one of the guiding principles in international biosafety protocols. He said sound science in the European Union is based on the precautionary principle. He said the European Union therefore does not necessarily subscribe to United States Department of Agriculture protocols as adequate for its regulatory approval. He said each gene event such as Roundup Ready, or *bacillus thuringensis*, or even a stacked multiple gene event has to be individually examined by the European Union's agencies to determine whether their standards are met. He said this involves the very proteins that are being produced by the gene event. He said the proposed replacement legislation for the moratorium is even more stringent than the moratorium itself. He said it amounts to a new moratorium. He said there are two different ways of looking at the same subject and Europe does not agree with the United States procedure.

In response to a question from Representative Brusegaard, Mr. Leake said there are a number of known allergens from different proteins which the United States Department of Agriculture is looking for in a genetically modified crop. He said these are compared to proteins that are known to be allergens. He said actuarial tables are then used. He said if an allergen exists in a genetically modified organism, the tables are used to determine how many people will be affected and how will it affect them. He said that is the process that leads to a designation of "generally regarded as safe" or "substantially equivalent."

Representative Brusegaard said Ms. Katic indicated that the United States Department of Agriculture had identified eight known allergens. He said the Food and Drug Administration also has a separate process for determining the safety of food. He said the process is very similar to what Mr. Leake refers to as the precautionary principle of the European Union.

In response to a question from Representative Brusegaard, Mr. Leake said the American basis of regulation when compared to the precautionary model has not satisfied regulators in other countries that have developed protocols. He said it varies from country to country. He said China and Japan will be different from the European Union or from Algeria.

In response to a question from Representative Brusegaard, Mr. Leake said when a company is putting forth a new gene event and going through the field tests, those activities are regulated under the Animal and Plant Health Inspection Service. He said the Animal and Plant Health Inspection Service has regulations primarily involved with sanitation and with making sure that there are no genetic vectors such as pollen which could possibly contaminate other crops. He said in conducting field tests, any viable seed is not to be left behind. He said the residue must be eliminated. He said that is just one small part of the Animal and Plant Health Inspection Service regulations. He said the process to get a new gene event beyond that point is the deregulation process. He said this is a petition put forth by the owner or applicant asking the United States Department of Agriculture to examine the data from field tests and declare the product safe. He said different agencies have input into that process. He said once the product is deregulated, the company can go ahead with commercialization. He said it would be proper for North Dakota to have input into the process because there is a continuing concern about contamination by pollen or about seed stock contamination caused by the inability to segregate the product.

Representative Brusegaard said before deregulation occurs, there is input from the Animal and Plant Health Inspection Service, from the United States Department of Agriculture, from the Food and Drug Administration, and from several different organizations.

Mr. Leake said there probably would be such input. He said it is incumbent upon the applicant to provide the information. He said Animal and Plant Health Inspection Service deregulation is one step in a larger deregulation process.

In response to a question from Representative Mueller, Mr. Leake said the biotechnology position statement of the Canadian Wheat Board provides that the board does not want the introduction of genetically modified wheat until marketing concerns are met. He said the board wants the commercialization issues, the segregation issues, and the market issues addressed prior to the introduction of genetically modified wheat. He said the board has full exporting authority for Canadian wheat.

In response to a question from Senator Wanzek, Mr. Leake said the European Union is turning to other sources for its wheat because it wants to procure a supply chain of high-value hard red spring wheat for milling and for bread production. He said it takes time

to build a relationship and a commercial supply chain. He said the purchasers need to know if the suppliers can provide the product at the specifications that are desired. He said it also takes money to make a supply chain work. He said a European miller facing genetically modified wheat from a supplier, when it is illegal to import genetically modified wheat, has little desire to continue with the supply chain. He said European millers have to be aware of what they can legally import and from where over the long term. He said North Dakota is putting itself at a disadvantage if it does not take the opportunity to put in place the regulatory processes that will assure overseas customers that the situation will be kept under control until everything is figured out.

In response to a question from Representative Nelson, Mr. Leake said there is a concerted effort on the part of Monsanto and other companies to conduct field trials and expansion trials in other countries that supply wheat to Europe. However, he said, countries like Khazakstan and the Ukraine also provide quality wheat products and genetically modified wheat in those countries is farther down the road than it is in this country. He said the United States is very efficient at incorporating new varieties and new technologies whereas countries with lesser developed infrastructures may not be as efficient. He said countries that have direct overland access to markets have a greater incentive not to pursue genetically modified wheat. He said in all likelihood a miller in Belgium will have a longer term supply of wheat that is not genetically modified wheat from the former Soviet Union than from the United States.

Representative Nelson said it is speculation as to which country develops and commercializes a genetically modified wheat first and as to how many countries follow. He said every country will have segregation problems. He said the United States is probably in a better position to minimize the problems of segregation and transportation than are the developing countries of the Third World.

In response to a question from Representative Nelson, Mr. Leake said the United States' largest competitor in soybeans is Brazil. He said Brazil has been capable of passing laws that limit the growing of genetically modified soybeans within most of Brazil, especially in the inland regions. He said the Brazilians have developed rail and waterway infrastructure along the Amazon at great expense so that they can deliver a nongenetically modified soybean product to Europe. He said the Brazilians have been very successful at taking market share that used to be enjoyed by United States soybean farmers. He said anyone who has been to Brazil would look at it as a lesser developed country than the United States but one that is perfectly capable of developing a highly efficient system of delivering nongenetically modified soybeans to Europe and to other markets that do not accept genetically modified soybeans.

Representative Nelson said perhaps another perspective is that the countries which are importing wheat from countries other than the United States are doing so because the other wheat is cheaper and because they have a bargaining position that is enjoyed over United States exports right now. He said he cannot understand how anyone can say that the reason we have lost market share with respect to wheat during the last five years is because we are pursuing genetically modified wheat.

Mr. Leake said there is the belief that, given what happened with soybeans, corn, and canola, if genetically modified wheat is deregulated, there will be a genetically modified wheat export supply. He said it is not only illegal to import genetically modified wheat into the European Union, it is also not accepted by the millers, processors, and customers.

Chairman Wanzek recognized Mr. Tom J. Wiley. Mr. Wiley said he farms south of Jamestown. He said the committee should draft legislation providing a moratorium on the introduction of genetically modified hard red spring wheat. He said the reason for suggesting such legislation is that it would give the committee time to address all the issues that have been discussed. He said research could still continue. He said by having a moratorium in place, the introduction of genetically modified spring wheat would be back in the hands of the people of North Dakota. He said it should be in the hands of the people of North Dakota and not in the hands of a transnational corporation. He said even if Monsanto says that it will not commercialize the product until 2005 or 2008, he still believes that the decision should be made by the people of North Dakota.

Mr. Wiley said he has traveled extensively during the last six months. He said he attended the world trade talks in Doja, Qatar. He said he had the opportunity to visit with the European Trade Commissioner Pascal LeMy about the patenting of seeds, the patenting of life, and about the European Commission's moratorium. He said that Mr. Doane had indicated there was no moratorium anywhere in the world on genetically modified crops. He said that is wrong. He said the European Union does have a moratorium on the approval of any new genetically modified organisms.

Mr. Wiley said while he did not have a great deal of time with the Trade Commissioner, it did not sound from his conversation with Mr. LeMy that the European Union would be changing its current position with respect to genetically modified crops. He said even if the European Union allows genetically modified crops to be imported, they have a lot of other protocols to follow such as traceability. He said industry shudders about trying to trace soybeans and segregate soybeans from his farm all the way to Europe.

Mr. Wiley said he spent three weeks in January 2002 touring seven countries in Eastern Europe. He

said he had a chance to meet with ministers of agriculture, environmental representatives, and ministers of health. He said if genetically modified products are so great and if market acceptance is being increased, why should the United States threaten legal action against countries such as Sri Lanka and Croatia. He said these countries wish to put in place some kind of a ban or moratorium, like the European Union. He said people were sent to the United States Embassy in Croatia to meet with Croatian officials and threaten them with being dragged in front of the World Trade Organization if Croatia places a ban on genetically modified crops. He said running around the world threatening other countries serves only to further alienate those countries from the United States. He said the European Commission recently decided not to push for an end to its moratorium on new approvals for genetically modified wheat. He said the European Commission is working on competitiveness. He said the mindset is that if America has genetically modified crops and if the European Commission keeps its moratorium in place, Europe can then ship its crops to those who are not competing. He said during the last legislative session it was said that the identity preservation system was going to be in place by now. He said he would also like to know when representatives from Monsanto are going to sit down with Mr. LeMy and conclude the deal on wheat. He said the European Union is not going to budge with respect to genetically modified crops. He said if a farmer from North Dakota can go to Europe, visit with the European Trade Commissioner, and get answers regarding what is going on, Monsanto should be able to tell the committee when Monsanto is going to do the same thing.

In response to a question from Senator Bowman, Mr. Wiley said the committee should receive information from the North Dakota Beekeepers Association. He said it needs to be determined how one will keep bees from moving pollen between growing crops that are genetically modified and growing crops that are not genetically modified. He said it is impossible to contain genetically modified crops and it is impossible to segregate them. He said that is why he does not want his neighbor to grow genetically modified crops. He said he has lost two contracts trying to reach food-grade markets for soybeans.

In response to a question from Senator Wanzek, Mr. Wiley said at the time he was trying to sell his soybeans to Japan, the tolerance level was 1.37 percent. He said when his beans were tested, it was found that they were a little bit over the tolerance level and his beans were not accepted. He said he was told later that there is a 5 percent tolerance for genetically modified beans going to Japan. However, he said, the brokers he was working with, and he was told the consumers in Japan, will not accept a 5 percent tolerance on soybeans. He said the people he was working with wanted 1 percent or less. He

said governments can make up whatever tolerance levels they want.

In response to a question from Senator Wanzek, Mr. Wiley said he would try to provide the soybean sales contracts to the committee.

In response to a question from Representative Fairfield, Mr. Wiley said he wants a moratorium on genetically modified wheat. He said when he does business with individuals through his farming operation, he performs a background check on the individuals. He said the committee should perform a background check on Monsanto and determine what Monsanto's track record is over the last 100 years. He said the committee should see what just happened with Monsanto's PCB situation in Alabama.

In response to a question from Representative Nelson, Mr. Wiley said he believes his soybean contamination resulted from honey bees carrying in pollen. He said he had been told by the individual from whom he bought his seed that the seed had been tested and was genetically modified organism-free. He said he had been told that wind will not carry soybean pollen. He said he had been told that soybeans do not cross-pollinate.

In response to a question from Representative Nelson, Mr. Wiley said even though he trusted the seed seller when he was told that the seed was not genetically modified, the contamination could have come through the seed.

Representative Nelson said it is important for legislators to know which factors can cause contamination.

In response to a question from Representative Nelson, Mr. Wiley said he is a conventional farmer. He said he does not know why he does not grow genetically modified soybeans. He said he tries to reach into the food-grade market. He said the market has been good.

In response to a question from Senator Wanzek, Mr. Wiley said he sold the soybeans from the contracts he lost in Enderlin and he took a dollar hit. He said it is true that there would not be non-genetically modified organism contracts if there were not genetically modified soybean contracts against which to compare.

Chairman Wanzek recognized Mr. Donald Nelson. Mr. Nelson said he farms and ranches at Keene. He said there are more questions the committee should be asking people. He said he would like the committee to hold another hearing and feature experts from the other side. He said North Dakota should place a moratorium on genetically modified wheat because North Dakota has the most to lose. He said wheat is probably the biggest part of the North Dakota economy. He said most of North Dakota's wheat is exported. He said because North Dakota has the most to lose, North Dakota should lead the way. He said in order for a federal-level moratorium to be put in place, states need to start the

effort. He said he thought it was well known and well documented that there are test plots for genetically modified crops in the state. He said most people do not want the research to end. However, he said, he is concerned with how the crops grown in the research plots are being contained. He said the researchers just disc the soil. He said the researchers need to figure out what should be done with the volunteer plants.

Mr. Nelson said growing a genetically modified crop should be a privilege. He said if growing a genetically modified crop is hurting someone in this country, then an infringement of rights is occurring. He said when one speaks of sound science, one has to realize that science needs to be verified. He said he did not hear a lot of sound science from those who testified before the committee.

Mr. Nelson said people talk about needing to feed the world and then they talk about genetically modified crops having better yields. He said the reason wheat production is going down is because nobody can afford to grow wheat at \$2.70 a bushel. He said the committee should ask people from the United States Department of Agriculture, the Environmental Protection Agency, and the Food and Drug Administration to appear and discuss who conducted the studies. He said as far as he knows, the agencies just took the industry's word for the findings in the studies. He said he does not believe there has been one independent study conducted by the Food and Drug Administration, the Environmental Protection Agency, or the United States Department of Agriculture. He said the committee should look into this. He said as soon as genetically modified wheat is introduced, there is contamination and no one will ever be able to go back. He said the committee needs to deal with the safety issue and with the economic issue. He said genetically modified wheat will not make more money for farmers. He said if all farmers are going to do is break even, why would farmers grow the crop. He said the liability issue, the patenting of life forms, and the loss of biodiversity all have to be taken into account. He said Monsanto claims that it has a lot of competition and he believes Monsanto should provide the committee with a list of its competitors. He said he would also like to see Monsanto give the committee the list of individuals and companies who are members of Biotechnology Industry Organization. He said the reduction in wheat exports cannot be blamed on genetically modified wheat because genetically modified wheat is not in the marketplace. However, he said, it also cannot be said that genetically modified wheat will increase wheat exports. He said it is more economical for farmers to raise soybeans and corn. He said if farmers can raise soybeans and corn, they receive a higher payment. He said he would like to request another meeting because of the volatility of this issue. He said the committee should have an opportunity to hear from

people who can discuss sound science. He said there just needs to be time and money to bring such people before the committee.

Chairman Wanzek recognized Ms. Janet Jacobson, President, Northern Plains Sustainable Agricultural Society. She said she is the leader of the largest group of organic farmers in the state. She said if there is going to be an honest debate and open dialogue on this issue, it would be best if the introductory comments did not include words such as irrational, emotional, and perverted. She said making a comparison between being concerned about the effects of genetically modified organisms and being afraid of the car is really unfair and derogatory. She said had we been able to foresee the future with respect to what the car brought to our society and our environment, we might have been able to make some choices that would have resulted in a technology which is less detrimental to our environment. She said comments were also made about good science and bad science. She said that comment is always used in the media. She said those who oppose genetically modified organisms are portrayed as being ignorant, uneducated, reactionary, and emotional. She said research needs to be based on good science. However, she said, the issues at hand are dealing with policies and policies need to be based on more than science. She said policies need to be based on economics, ethics, morality, sociological issues, and cultural issues. She said the proponents of genetically modified organisms would like everyone to ignore all those other issues that affect how communities exist in this state. She said the proponents of genetically modified organisms would like to discredit opponents of genetically modified organisms by stating that the opponents do not base their objections on science.

Ms. Jacobson said earlier testimony today indicated that *bacillus thuringensis* when used in biotechnology is exactly the same as when used by an organic farmer. She said that is not really true. She said when an organic farmer uses *bacillus thuringensis*, it is sprayed in a desiccated bacteria form. She said that bacteria is not toxic to humans because it will not grow in human intestines. She said *bacillus thuringensis* finds a host that is conducive to its growth only in the larva of a butterfly. She said the only reason it produces toxins there is because it is multiplying and growing. She said the toxins are waste products from the multiplication of the bacteria. She said the only place in nature where those toxins are evident is in the gut of a caterpillar. She said there are no studies on the toxicity of this toxin in humans. She said even in organic foods, we do not eat huge amounts of it. She said bacteria do not live very long in the sunshine. She said the bacteria die very quickly.

Ms. Jacobson said it is not the bacteria that has been bred into *bacillus thuringensis* corn. She said

what has been bred in is a gene that produces that toxin. She said that toxin is in every cell of that corn plant. She said it is in the leaves, in the seeds, in the pollen, in the root systems, and in the root hairs. She said there have been no long-term studies on the systemic effects of that toxin. She said there are no studies regarding the long-term effects on animals, on people, or on the soil microbia.

Ms. Jacobson said it was stated that genetically modified organisms do not eliminate choices and that she can go on producing organically if she wishes. She said organic producers can no longer produce organic corn or canola without them becoming contaminated. She said the organic industry does not tolerate genetically modified organisms. She said that is probably not going to change. She said she cannot grow organic canola because her neighbors grow genetically modified canola and the bees cross-pollinate the crops. She said she has lost that market and lost her ability to grow canola.

Ms. Jacobson said organic producers are very concerned about genetically modified organisms because zero tolerance is not possible. She said there is no way to contain biotechnology once it is released. She said that is obvious from the experience with corn, soybeans, and canola. She said her organic wheat is worth \$6 a bushel and she does not believe she should stand aside and let people take it from her.

Ms. Jacobson said North Dakota is No. 3 in the nation in organic production. She said North Dakota has over 90,000 acres in certified organic production. She said this market has been growing by 20 percent a year for the last five years. She said the Legislative Assembly needs to take the concerns of organic agriculture seriously. She said once the seed stocks are contaminated, she is out of business. She said it sounds as if people believe that market acceptance of genetically modified crops is inevitable and that all it will take is time. She said she does not expect that her organic customers will ever accept genetically modified organisms. She said she does not understand why those who wish to grow nongenetically modified crops should have to develop a system of identity preservation. She said those who want to develop this new technology should have to develop a system to contain it. She said that should be included in the cost of producing a genetically modified crop. She said the costs should not be externalized and placed on the state of North Dakota, the people of North Dakota, and on those producers who wish to continue producing that which they are already producing. She said for every benefit that Mr. Gianessi listed, one can find another management solution for the problems. She said the same companies that have told people for the last 40 years that chemical pesticides are safe for the environment and for humans are now telling us that the new technology will solve the problem of having to use all

those toxic chemicals and they are also telling us that this new technology is safe.

In response to a question from Senator Bowman, Ms. Jacobson said her organization has had issues with spray drift impacting an organic crop. She said in one case an organic farmer was awarded damages for the destroyed crop and for three years of production, which is the time requirement for recertification of that ground.

In response to a question from Representative Nelson, Ms. Jacobson said if one genetically modified seed is pulled out in the testing sample, it will be deemed to have contaminated the entire load. She said proving whether a load of wheat has been contaminated comes down to the sampling techniques that are used. She said if there is one seed in the front of a boxcar and the test sample is taken from the other end of the boxcar, the contamination will not be detected. She said one cannot test every seed in the boxcar. She said in some certifications there is zero tolerance. She said in other certifications the tolerances have not been set.

In response to a question from Senator Wanzek, Ms. Jacobson said there is zero tolerance for pesticide residue. However, she said, anyone who says that anything grown in this country is pesticide-free would have a hard time proving the claim.

In response to a question from Representative Fairfield, Ms. Jacobson said for every Monsanto scientist who says that genetically modified organisms are safe, there are other scientists who have grave concerns about the technology. She said the implication is that the whole world of science thinks that this is the greatest thing since sliced bread. She said that is not true. She said go on the Internet and look at the list of people and organizations who are concerned about the technology. She said one will find people with doctorate degrees in genetics, biochemistry, and other scientific fields.

Chairman Wanzek requested Ms. Jacobson to provide to the committee the names of people who would be pertinent to the discussion.

Chairman Wanzek recognized Mr. Louis Kuster, wheat farmer, Stanley. Mr. Kuster said he is a member of the North Dakota Wheat Commission. He said he is speaking on behalf of himself, not on behalf of the North Dakota Wheat Commission. He said farmers are dependent on export markets. He said the biggest export customers have repeatedly stated that if genetically modified wheat is released in the United States, they will seek their product elsewhere. He said our declining exports can be traced to our Canadian neighbors, who have a monopoly marketing entity that controls their wheat system. He said the Canadian Wheat Board's position that it will not approve genetically modified wheat until all its conditions are met is in fact a moratorium. He said there is no other market.

Mr. Kuster said people talk about genetically modified seeds that have been approved but which have not been planted by farmers. He said the industry believes that there should be no moratorium on genetically modified wheat because if the farmer does not want it and if there is no market acceptance, the farmer will not grow the wheat. He said what the industry is not saying is that there is a totally different relationship between the processor's price signals and the producer in the case of sugar beets. He said most people who raise sugar beets generate quite a bit of revenue per acre. He said the reason not everyone is raising sugar beets is because there is no market for sugar beets unless one has a contract to produce the crop. He said the sugar beet processors decide what they will and will not purchase. He said in the case of genetically modified wheat, once it is released, anybody can choose to raise it. He said StarLink corn was released as a feed grain and approved by the Environmental Protection Agency only for use as a feed grain. He said the reason it was approved only as a feed grain had to do with the allergens it contained. However, he said, all of a sudden StarLink corn was in taco shells and in our shipments to Japan. He said Japan refused to accept the shipments and the market fell about 30 cents per bushel overnight. He said the premium market for hard red spring wheat would be destroyed overnight if genetically modified wheat were commercialized.

In response to a question from Senator Bowman, Mr. Kuster said in the case of hard red spring wheat, Monsanto is selling a herbicide system. He said that is what is attractive to farmers. He said he has wondered why anyone would want to grow Roundup Ready soybeans, especially since there is data showing that conventional soybeans outyield Roundup Ready soybeans. He said about 51 percent of the soybeans now grown are Roundup Ready soybeans. He said that market has now been trashed. He said the market now is a genetically altered market.

In response to a question from Senator Wanzek, Mr. Kuster said Monsanto wants to be able to release genetically modified wheat without anybody knowing that it is anything other than just another wheat. He said Monsanto does not want to identify the product as a genetically modified wheat.

Chairman Wanzek recognized Ms. Patty Patrie. She said she is representing herself. She said she wants to know what a study is, how it is set up, and whether there will be just two meetings.

Chairman Wanzek said the North Dakota Legislative Assembly is a citizen legislature. He said all of the legislators do their best to represent the people as fairly and as equitably as they can. He said he does his best to be fair as a chairman and to allow all questions to be answered. He said she has an opportunity to speak now and that the committee is willing to listen to her comments. He said there will be as many

hearings as the members can have and that the members of the committee will try to do their best to get as much information as they can. He said the committee is willing to accept all sorts of written documents and data. He said he will make sure that her comments get considered. He said the committee has to issue its report this fall and that the last meeting will probably be in the mid to the latter part of September. He said there will be more meetings.

Ms. Patrie said she would like to believe that the committee is doing its best to be objective with respect to both sides. She said during the 2001 legislative session the bill stated that any farmer being sued by Monsanto had to go to St. Louis. She said she does not understand why that hearing could not take place in North Dakota. She said it sounds as if the Legislative Assembly is not standing up for the North Dakota farmer. She said it is her impression that sides are being taken and that people are being too influenced by Monsanto. She said she wants to believe that the Legislative Assembly does its best to represent the people. She said she wants our rural areas to survive and she does not want us to be influenced by a large corporation.

Senator Wanzek said he is a fifth generation family farmer. He said he cares about farmers and he has every intention of doing everything he can to ensure that his children have the opportunity to farm as well.

Representative Nelson said with respect to the Nelson case, the contract that had been signed by the Nelsons was a Monsanto contract and that the jurisdictional question regarding where a hearing was to take place was addressed in the contract. He said North Dakota was the only state that during the 2001 legislative session tackled the issue from a producer's perspective. He said the legislators involved the Agriculture Commissioner and created an arbitration system. He said the legislators also ensured that there were people with the Monsanto representatives when fields were inspected. He said North Dakota has more safeguards with respect to that type of situation than any other state in the Union. He said that was done for producers in North Dakota.

Ms. Patrie said good things were accomplished, but the fact is that a farmer still has to go to St. Louis for a hearing. She said that is a fight worth fighting. She said we should let our farmers stay here.

Senator Wanzek said policy development seems to progress by very slow, small steps. He said that issue had a lot of federal perspectives and there were regulatory issues governing federal patent laws, etc. He said the federal issues increased the difficulty. He said the North Dakota legislators tried to go as far as they possibly could in setting up a third-party scenario whereby the testing could be documented.

Chairman Wanzek recognized Mr. Andrew Heinze, Dazey. Mr. Heinze submitted an affidavit of probable cause. A copy of the document is attached as Appendix G. Mr. Heinze said the Comprehensive

Annual Financial Report of North Dakota shows that North Dakota has a liquid investment of almost \$5 billion. He said North Dakota is therefore perfectly capable of funding any research that it needs. He said the investment is liquid and mostly in securities. He said the public is concerned that research can be slanted if Monsanto is too involved. He said it was said earlier that Monsanto did at one time claim that it was going to forego funding for projects at North Dakota State University. He said the projects should be funded by North Dakota. He said in North Dakota there are regulations that Monsanto has to follow. He said there is a legislative system and a judicial system. He said if there are judicial barriers, Monsanto has to cross those barriers. He said North Dakota Century Code Chapter 19 places a barrier on what Monsanto is doing.

Chairman Wanzek thanked everyone who participated. No further business appearing, Chairman Wanzek adjourned the meeting at 4:15 p.m.

Copies of documents submitted to the committee after adjournment by Mr. Roger Nelson, Cass County, and by Mr. Duane Boehm, Richardton, are on file in the Legislative Council office.

L. Anita Thomas
Committee Counsel

ATTACH:7