House of Commons
CANADA

Standing Committee on Agriculture and Agri-Food

AGRI • NUMBER 048 • 3rd SESSION • 40th PARLIAMENT

EVIDENCE

Monday, February 7, 2011

Chair

Mr. Larry Miller

Standing Committee on Agriculture and Agri-Food

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● (0835)

[*English*]

The Chair (Mr. Larry Miller (Bruce—Grey—Owen Sound, CPC)): I call the meeting to order.

I'd like to thank all of our witnesses for being here this morning.

I understand that Mr. Cross has to leave early, so we're going to adjust the agenda a little bit and have Mr. Cross present first. Then he can leave as he wishes.

Thanks for having us here in Saskatchewan on the first leg of our cross-country tour on our study of the biotechnology industry.

With no further ado, we are going to move to Mr. Cross.

Please try to stay under 10 minutes, sir. Thank you.

Mr. John Cross (As an Individual): Thank you.

Welcome to you and your committee members. I'm sure your briefing notes have well described the powerhouse of bioscience capabilities that we have in our wonderful town, and I'm sure you'll learn more while you're here.

I must say that the last time I was called a witness was a rather different situation, which I prefer not to remember—

Voices: Oh, oh!

Mr. John Cross: —but let me just tell you a little bit about me.

It has been my belief for many years that farming is the most noble profession practised by mankind since the beginning of time. I've been fortunate to spend my career in the food and agriculture sector. My passion is doing things that will enable farmers to be more productive and more profitable. I'm really delighted with the results so far, but I haven't finished yet.

Here's a little story about me. In 1980, two colleagues and I founded a company called Philom Bios, the purpose of which was to use natural soil-derived microbes to enhance crop productivity. We registered Canada's first biological herbicide. We commercialized the world's first phosphate inoculant, which increased phosphate uptake in plants and increased yield and crop quality. We also developed and marketed the world's first combination phosphate and nitrogen inoculant for pulse crops. The company was acquired by Novozymes three years ago, which continues now with the marketing—essentially globally—of these products and the improvement derivatives of them.

The point of all this is that the essence of our success was very simple. We had very powerful collaborative research and development arrangements with the National Research Council laboratories in Ottawa, Saskatoon, and P.E.I., and most especially with the research branch of Agriculture Canada. The bioherbicide was developed in collaboration with Dr. Mortensen and the research station in Regina, a research station that, shamefully, was closed some years ago. The phosphate inoculant was developed in collaboration with the Agriculture Canada research station in Lethbridge with Dr. Gusse, and the combination phosphate and nitrogen inoculant with the research station at Beaverlodge with Dr. Wendell Rice and his colleagues.

These were dynamic times, gentlemen, when the research branch was a leading linkage between science and the farmer. I've learned from contacts I have in the research branch that this has changed drastically in recent years. There is a great deal of frustration among scientists with changing business models and the continuing reduction in funding. The connection between the research branch and the farmer also has been eroded almost to the point of non-existence.

Some of you will remember the great delight of the annual field days that every research station had, and the interaction of farmers and researchers. Those days are gone. In your deliberations, Mr. Chairman, I would encourage you and your colleagues to give serious thought to restoring the research branch to its former glory. This is the 125th year of the foundation of the research branch, a wonderful time to rejuvenate this great Canadian organization.

That's the only negative thing I have to say, Mr. Chairman. I have some positive comments for your and your colleagues.

I think we're doing great things. An example is Genome Canada and its constituent provincial organizations, which are doing world-class leading-edge research in the field of genomics. It is powerful stuff.

One of the organizations you may know, NAFGEN, Natural Fibres for the Green Economy Network, is a network of collaborators from across the country. There are 54 researchers from 22 organizations developing, from a feedstock of flax and hemp—Canadian natural fibres—materials for the bioeconomy: energy, chemicals, and bioproducts. It is powerful stuff. It is a wonderful model for multiplying and synergizing individual researchers in one whole.

The wrap-up presentation for NAFGEN is next Monday here in Saskatoon. Unfortunately, the funding expires at the end of March, but there is a wealth of research-generated knowledge that is now poised for the next phase of development, closer and closer to the commercial world. You may give some thought to the funding and how we fund these multiple-participant research organizations.

We're doing very well on the value-added side. Some of you will remember your former colleague in the House of Commons, the Honourable Otto Lang. In the early 1970s, he was the spearhead behind the assessment that we were hewers of wood and drawers of water, and when were we going to start processing our agricultural commodities into more value-added food and feed products? He was the originator behind the POS Pilot Plant Corporation, now called POS Bio-Sciences, which today is a world leader in providing scale-up services for companies that want to take value-added processing of commodities from the top of the laboratory bench through the pilot plant scale to a commercial level. It is a wonderful example of foresight that came from the federal government at the time. It has paid dividends over 30 years and is doing so at a greater and greater rate.

Today we have two commercial operations using university-based research in this town. They're extracting protein from canola meal. One is concentrating on the human food market, the other on the animal feed market. It is powerful stuff.

I'm involved with a little company that has developed the world's first truly natural biopesticide for soil-borne pathogens. In fact, the reason I have to leave, Mr. Chairman, is that we are in the midst of fundraising between $3 million and $5 million. I have another presentation to make. If any members of this committee would like to have subscription agreements, I can supply them at their request.

There's something happening here that I must tell you and your colleagues about, Mr. Chairman. We've done presentations on this venture across the country from coast to coast. Most investors will understand oil and gas; very few understand the agricultural world, but there is a change occurring. There is an awareness of the potential economic as well as social benefits that are now coming up through the agricultural world. That bodes well for what we're doing here generally as a community in the biosciences, and for the future prospect of gaining capital to take these developments to the commercial sphere. That is a situation I have not ever seen before in my career in Canada. It is a very encouraging development.

We are blessed in this country with excellent research supports. The sustainable development technology program is excellent. There is IRAP, which we all know, and the Canadian agricultural adaptation program, and, of course, in town there is Ag-West Bio, which is a very powerful commercial supporter.

What can I offer you for opportunities to enhance our agriculture and agrifood innovation? Please give some real thought to the research branch. I urge you to do that.

The regulatory process is getting better. It used to rot my socks when farmers in North Dakota could get our new products three years before my Saskatchewan farmer customers could. It's getting better, but this lunacy of demanding efficacy data has to stop. Everybody loses, including society.

I encourage you to continue aggressive funding for strategic research consortia such as NAFGEN, and please think about the investment tax credit and the R and D tax credit, which is now 35%. This is great. Those two become exporters, but why does that not apply to field trials done outside Canada's borders? It's crazy.

● (0840)

Also, if we want to build our academic powers, let's increase 35% to, say, 55% for those companies that invest in collaborations with academic researchers, because that ties in with the elephant in the room, which is that we have a dire shortage of scientists looming in our country. We know we have a science-poor culture, and there's a history for that. If you had half an hour, I'd tell you why, but it's a fact.

Where are our agronomists is coming from? I'd urge you to think about that too. The largest landowners in this province are the aboriginal bands. How are we training aboriginal agronomists? Mr. Chairman, I urge you and your committee to think about how we address this void of scientific staff in the agricultural world.

These are my points. I appreciate the time, and I hope my points will be useful to you.

Thank you.

● (0845)

The Chair: Thank you very much, Mr. Cross.

We'll now move to Ms. Mary Buhr, the dean of the College of Agriculture and Bioresources.

Go ahead, Mr. Lemieux.

Mr. Pierre Lemieux (Glengarry—Prescott—Russell, CPC): I just wanted to ask, Mr. Chair, if Mr. Cross was staying or leaving.

Mr. John Cross: I'm staying until about nine o'clock.

Mr. Pierre Lemieux: I do have a question I'd like to ask, based on the testimony we just heard. I don't know whether we want to do it now or wait until later.

The Chair: Ask him now. I'll take it out of your first round of questioning.

Mr. Pierre Lemieux: I was very impressed with your grasp of funding and research and development, and obviously you've got a lot of experience with the research and development arm and what it can do for agriculture.

There's a debate that's going to be taking place in the House tomorrow on Bill C-474, a private member's bill put forward by Alex Atamanenko about GMOs in particular, not biotechnology. It talks about moving away from sound science in terms of whether GMOs should be acceptable, including having a fiscal way of evaluating the impact of a GMO product before it might be approved.

In Ottawa we heard much testimony about how this bill is sowing uncertainty in the research and development field and that investors are actually pulling back, or at least going on hold, in terms of continuing with financial commitments to research and development.

I'm sure that over these past nine months you've been giving a number of presentations, and I wanted to get your opinion. When you were talking to potential investors and looking for financing, did you find that Bill C-474 had an impact? Was it positive, negative, or neutral? Could you fill is in on that?

Mr. John Cross: That's a good question.

Bear in mind that we're talking about people whose lives are quite different from ours, but they are different in the sense that they have money. Some of them have a lot of money, unlike us.

It didn't come at once, but.... A parallel tangent to your question is that the one thing investors hate most of all is uncertainty. If you think about this bill, it casts a pall of uncertainty; the regulatory uncertainty about our future really is very distressing. I would suggest to you respectfully that little truly analytical support has gone into this private member's bill. It could be a disaster.

Don't forget, gentlemen, we are operating on the world stage here. This is not just about Saskatchewan. It's not just about Canada. We are on the world stage. If we want to retain and enhance our global capacity and recognition.... It's similar to when the Foreign Investment Review Agency came in about 1981. What happened to the perception of us outside our borders? Don't touch Canada. I was there and I remember that. It shut us down economically for four or five or six years.

This private member's bill has the same potential in the scientific arena. That's my view, sir.

Mr. Pierre Lemieux: Thank you.

The Chair: Thank you very much.

We'll now move to Ms. Mary Buhr, dean of the College of Agriculture and Bioresources. Please try to take 10 minutes or less.

Dr. Mary Buhr (Dean, College of Agriculture and Bioresources, University of Saskatchewan): Thank you.

Biotechnology is one of the tools that we use in agriculture and bioresources to address the really critical issues that are in front of us right now. It takes 10 years to develop a new plant variety, 10 years from the moment you conceive of the idea of what's needed until you can actually release that variety.

When we're looking at the world, we see that the global population will have increased by 50% by 2050. We'll have over 9 billion people by 2050, and we have no idea what's happening with climate. However, all of the climates we have right now that we can provide agricultural product for exist somewhere in the world, so it almost doesn't matter what climate we get.

Saskatchewan has over 43% of the arable land in this country. This province is critically important to the future of agriculture and bioresources. We use biotechnology, and we clearly understand that it's far more than just GMOs.

What the politicians and the policy-makers really need to do is assess the balance of good and risk in all of the technologies that are being used and all of the products that are coming out, in order to address the critical needs of our population in our country as well as the global population—and not just for food, but for the bioproducts of fibre, for fuel, for clean air, and for carbon capture. All of those pieces are part of biotechnology and are influenced by it.

What is the role of the university in the agricultural biotech sector? First of all, we're actually assumed to be an honest broker of solid information that can inform the public. We also provide research for the public good. It is not commercial research, but public good research, meaning that when we release a plant variety, having gone through all of the appropriate effort, farmers can use that seed, grow a crop, harvest a crop, and then take the seed from that crop, save some of it, and use it the next year. Corporations, because they make their money selling seed, have to sell seed that essentially cannot be harvested and renewed, because they'll lose their profits.

Canola is a hybrid crop. The corporations have the two parent varieties. They produce a hybrid seed. That's the seed that's released to producers. Producers will plant that and harvest the crop. The crop has all the excellent traits, but farmers can't keep any seed from it because it won't breed true the next year. Other crops may be bred deliberately by commercial operations to be sterile if replanted. When a university breeds plants and releases them, it's public good research. That's the definition of public good research. All of the investment comes in up front, and we're not charging for it at the far end, so again, it's the choice that has to be made.

We can undertake long-term, risky, and speculative research like the kind that led to the development of canola and pulses. Corporations have to generate income for their shareholders, so they cannot undertake the kind of risky research that we can, yet without the research that led to the development of canola, we wouldn't have it as a crop these days.

We also innovate and generate new knowledge, including those “eureka” things, the ones that you just stumble across. Those are the things we are best known for.

The critical thing we do that nobody else does is train future minds. We train the biotechnologists. We provide the learning skills—we teach how to learn—and we provide the link between disciplines and between ethics, science, and culture. Community colleges give you discrete skills; we give you learning and the ability to figure out how to learn. We stimulate that when we do it the best way we can.

In medical innovation within our university, agriculture and bioresources is working with the nutrition department and pharmacy and industry. We are literally building a research chair together to look at the human good that will come out of biofortified pulse crops to provide unlimited metals for public good. Again, these are the kinds of things we can do that nobody else can.

● (0850)

When we look at biotech, we can see that in this province we work in an incredibly effective research cluster. It is amazing. I came from Guelph—I was 20-some years at Guelph—and the effectiveness of the cluster here is absolutely astounding.

It took me months to figure out who worked for whom, because we move back and forth so readily that it was really confusing. It's a feature of this unique cluster that we work so well together, including Agriculture Canada, the NRC, VIDO-InterVac, the Saskatchewan Research Council, Alberta Gentech, and the B.C. dairy industry. It's all of those pieces, and we do all of that together.

We do plant breeding and selection, and yes, we've done GMOs, but we do it far better than that. We take apart the genome and the genetics, we understand what the genes can do, and then we select plants that have those genes naturally and enhance the operation of those plants.

We do animal and human health, including the development of drugs and vaccines, enzymes, probiotics, omega-3 eggs, and omega-3 enriched milk. That's because we can link to the product the foods that the animals take in and the health benefits that come to the people who eat that product. Those are the things we can provide when we export internationally as well.

We are also very involved in technology development. We take the plants that have the genetic traits and feed them to the animals that we know have the genetic traits to allow them to get the most good out of them. We then take those products and develop the actual oil extraction and protein extraction in all of those different ways to enable us to produce the product, which we can then sell abroad, or we can actually sell the technology as well as use it to develop our own products here for Canadian use or Canadian benefit.

These improved or novel crops and the high-value animal protein are the things that the rest of the world needs and wants. Our emerging partners, such as China, India, and Kazakhstan—you name these countries—are coming to us because of what we can do in biotechnology and in terms of the links to the technology of how to do it.

How do we maintain our soils? What are the microbes that will take that soil from tar sand and enable that soil to grow plants? For stressed soils in the north, or non-soils in the north, what are the values in the rocks that are there that enable us to produce a crop or grow the animals or...? I keep on telling my plant breeders that we need to look at how to grow wild rice in Saskatchewan these days, but we also need to work with our indigenous peoples so that they can use their lands in ways that they understand and know.

We learn from them, and then we work together to help them with different animal products, such as caribou, bison, and ground animals, and plants such as cranberries. What are their lands becoming? These are the things that we can use our biotechnology to develop. We use tissue culture for horticulture crops and, again, we can use that as well.

There are difficulties that we have specifically at the university level. First of all, there is the misunderstanding of the public of what biotechnologies are and what we do. We also have the whole problem of non-tariff trade barriers; flax is certainly one of those. My math says that .00 is zero, but the argument is not about science internationally; the argument is about barriers.

We also have a need for expensive infrastructure to maintain our animals in ways that abide by the Canadian Council on Animal Care. They're hugely expensive. We need them to train our veterinarians, to develop our vaccines, to train our students, and to enable us to do that holistic approach to agriculture from the soil right through to the end product. Anything we can do to help you get the message across and to help us to get the students in the door and as excited as we are about agriculture and biotechnologies, we would really appreciate.

Thanks for your time.

● (0855)

The Chair: Thanks very much, Ms. Buhr.

Now we'll go to Ms. Jill Hobbs, professor of bioresource policy, business, and economics.

You have 10 minutes or less, Jill. It's good to see you again.

Dr. Jill Hobbs (Professor and Department Head, Department of Bioresource Policy, Business and Economics, University of Saskatchewan): It's good to see you too.

Thanks for the invitation to speak to the committee this morning on the topic of the biotechnology industry.

Allow me to preface my remarks very briefly with my background and expertise. I'm an agricultural economist in the department of bioresource policy, business, and economics at the University of Saskatchewan. I teach and conduct scholarly research on food markets, consumer preferences for food traits, and the structure of agrifood supply chains. My past research has examined various aspects of the biotech sector from a social science perspective, including, for example, food labelling, consumers' response to biotechnology, and the international trade rules concerning products of biotech. I welcome the opportunity to share some thoughts on the biotech industry and its implications for public policy in Canada.

I'd like to cover three main points today. First, at a macro level, I'll comment on trends in global food markets and the role of biotechnology in that regard. Second, I'll offer some observations about the economic impacts of public sector investment in agricultural research. Finally, I'll address the challenges created by different rules for the labelling and segregation of agricultural products produced with biotechnology.

I'll take the macro-level trends in global food markets as a starting point. Recently we've seen the consequences of imbalances between supply and demand on world food markets in the form of significant price volatility and major spikes in the prices of key commodities—wheat, canola, soybeans, corn, and so on. Price instability, I think, in world agricultural commodity markets looks set to continue. Last year, world food prices were close to a record high.

For consumers, instability in world food markets creates economic hardship and is often the source of political unrest in low-income countries, as we've seen recently. For agricultural producers, instability in agricultural commodity prices creates uncertainty, and it exposes them to higher levels of price risk for outputs and often for inputs as well.

On the demand side, the major driver of world food demand is going to come from population growth and increasing incomes in developing countries. For example, it's estimated that world food demand could double in the first half of the 21st century as low-income consumers in developing countries escape from poverty. As the populations in those countries become increasingly urbanized, where is all that food going to come from?

If we turn to the supply side, the major drivers of world food supply are land and climate constraints and technological change. It's estimated that there is, at most, 12% more arable land available worldwide that isn't currently forested or subject to soil degradation and erosion. Climate constraints in many parts of the world preclude bringing more land into viable agricultural production, and climate change is expected to increase the frequency of extreme weather events. Increased food production, therefore, must come from improvements in agricultural productivity in the form of improved yield and through increasing the genetic potential of crops and animals.

Technological change, then, is the third key driver of world food supply. Technological change is the reason that Malthus, writing 200 years ago, was wrong when he said that population growth would outstrip food production. Technological change has been at the centre of agricultural productivity growth over the last 150 years.

Most of the productivity enhancement potential of the pre-biotech era, the so-called green revolution, has already been achieved. I'd say it's widely recognized that biotechnology offers considerable potential for yield increases, increased tolerance to drought and heat, enhanced nutritional content in grains, and improved resistance to disease and pests.

What are the implications, then, of this big global picture for the Canadian agricultural food sector? Well, of course Canada is a net exporter of many agricultural commodities. For Canada to remain competitive, continued improvements in agricultural productivity and the development of crops and livestock with innovative new traits—enhanced nutritional qualities, functional traits, and so on—will be necessary.

This requires ongoing investments in both the public and the private sectors in agricultural R and D. Economic evidence for high rates of return to society from investments in agricultural research is really quite compelling. Accurately measuring the cost-benefit ratio of agricultural research is complicated by the fact that there are very long time lags between knowledge creation and the eventual commercialization and adoption of technology, together with substantial spillover effects. In other words, investments in one province or in one country often spill over into benefiting other regions.

● (0900)

Nevertheless, the returns to society from expenditures on ag research are estimated to be substantial. Recent estimates, for example, for returns on public sector agricultural research expenditures in the United States put this at around 19% to 23% return per year, on average, over a substantial period.

Despite those well-documented high rates of return, however, public sector expenditures on agricultural research have declined in Canada and elsewhere. Alongside that decline in public sector investment in agricultural research has been a pervasive slowdown in agricultural productivity growth rates since the 1990s.

In this regard, the recent decision by the Natural Sciences and Engineering Research Council of Canada, or NSERC, to drop food and agriculture from its list of targeted areas for research funding is, I find, particularly troubling. Given the imbalances in supply and demand in world agricultural markets that I outlined earlier, continued investment in technology in both the public and private sectors is going to be necessary to deliver those needed agricultural productivity enhancements, and increasingly, as we already heard, public-private research partnerships and clusters of research expertise are necessary to deliver the advances in knowledge—new crop varieties, animal vaccines, functional food products with health benefits, and so on—that characterize a competitive agricultural sector in Canada.

So an examination of the state of public sector funding of agricultural research in Canada, including ag biotech, and the interplay between industry-funded, producer-group-funded, and publicly funded research is timely. It's one of the topics being examined by researchers in the Canadian Agricultural Innovation and Regulation Network, or CAIRN. The work of that research network may be of interest to members of this committee as they consider this topic.

The second public policy issue I'd like to briefly highlight pertains to rules concerning the labelling and segregation of products derived from biotechnology and the implications these have for international market access. Differences in the way different countries treat agricultural products produced through biotechnology can significantly increase costs for exporters. They can also limit or restrict access to some international markets. This, I think, has been a challenge for Canadian exporters of some agricultural products when accessing the European market, given rules over mandatory labelling of food containing GMOs and zero-tolerance requirements for commodity shipments into Europe.

Differences in international rules for market access create uncertainty and impose supply chain segregation costs on the industry. Uncertainty and higher costs deter investment, so a policy priority, I would argue, would be to push for an international agreement on harmonization of labelling and market access rules. This could be done multilaterally through the WTO as well as bilaterally through the proposed Canada-EU free trade agreement.

In closing, I'll reiterate the three main points: I think biotechnology has a key role to play in contributing to the agricultural productivity growth necessary to meet world food demand; renewed public sector investment in agricultural research is an important piece of the Canadian competitiveness puzzle; and proactive protection of international market access for products derived from biotechnology is also an important piece of that Canadian competitiveness puzzle.

Thanks for your attention. Copies of my speaking notes have some references to that sort of material, if you'd like to follow up.

● (0905)

The Chair: Thanks very much, Ms. Hobbs.

We'll now move to Professor Kerr, from the department of bioresource policy, business, and economics.

Mr. Kerr, please go ahead. Please keep your presentation under 10 minutes.

Professor William A. Kerr (Professor, Department of Bioresource Policy, Business and Economics, University of Saskatchewan): Thank you for inviting me to present to the committee on the topic of the biotechnology industry.

I should preface my remarks by outlining my background and expertise. I'm an agricultural economist in the department of bioresource policy, business, and economics in the faculty of agriculture and bioresources at the University of Saskatchewan.

My research area is international trade policy, and biotechnology is perhaps the most contentious issue in international trade at this time. It has been the focal point of my research for more than two decades. I published my first paper on biotechnology in 1989. I have co-authored a number of books on biotechnology, including *The Economics of Biotechnology*, *International Environmental Liability and Barriers to Trade*, and *Regulating the Liabilities of Agricultural Biotechnology*. I have over 300 academic publications, many of them dealing with biotechnology.

I sit on the editorial boards of a number of academic journals, including *Journal of Environmental Management*, *AgBioForum*, and the *Journal of International Food and Agribusiness Marketing*. I'm a founding editor of an international trade policy journal. I'm a fellow of the Canadian Agricultural Economics Society.

International trade issues pertaining to biotechnology relate primarily to the compatibility or incompatibility of domestic regulatory regimes in different countries. Thus, while I have an international orientation, I have had to learn a great deal about domestic regulatory regimes for biotechnology.

On the future of the global agrifood industry, there are two striking challenges, and biotechnology can play a major role in meeting those challenges.

The first challenge is that we are going to have to produce a lot more food globally. Between 2010 and 2050, as previously stated, the world population is expected to grow from almost 7 billion to 9.5 billion people. There will be 2.5 billion more mouths to feed, a 38% increase. To feed those extra billions, we need a rapid rate of technological improvement, and agricultural biotechnology is the best hope to be able to meet that challenge.

The second major challenge is that the climate is changing. The crops we have bred to date will not be as productive under the new climatic regime. We'll have to breed new crops, and we'll likely need to breed them quickly. Biotechnology is the key to doing that.

International trade in agricultural products is also going to increase dramatically if these challenges are going to be met. The goal of agricultural self-sufficiency is a pipe dream. The areas of the world that will have both the most rapid increases in population and the largest increases in income already suffer from stressed ecosystems and water shortages, which will only become more acute because of climate change. If that is true, where will the extra food come from?

It can only come from areas of the world where agricultural land can increase in productivity and where population is relatively stable. Canada, and particularly the Canadian prairies, is one of the few areas of the globe that has that potential. However, it can only contribute to meeting these challenges and have farmers reap the benefits that come with higher prices and yields if farmers have the appropriate technology. Again, biotechnology is likely the key.

Those who object to biotechnology often make reference to its being a risky technology. What are the risks? The risks that are often suggested are largely speculative. In other words, they're hard to test. What does the evidence actually suggest? It is often forgotten that in Canada, the United States, and a number of other countries, there has been a large-scale population-sized trial going on for approximately 20 years. We've all been eating GM foods, and GM crops are in use over a wide range of ecosystems. After all this time, there's no evidence of risk to human health or of measurable risk to the environment.

Those who oppose biotechnology are quick to point out, however, that no evidence of risk is not the same thing as no risk. Of course one needs to be vigilant and vigorous when licensing new genetically modified products and in monitoring human health and the environment after they are released. The evidence does, however, suggest that the current regulatory system is working and that biotechnological advances should not be hindered.

Those who oppose biotechnology would like to have a regulatory regime based on the strict version of the precautionary principle, whereby no risk is allowed. I ask myself what would have happened if that principle had been applied to past transformative technologies. If this were 1910 and the new technology were the automobile, I suspect it would have been banned. After all, in 1910 we knew that cars killed people. Certainly no one in 1910 could have foreseen all of the changes the automobile would bring to society—both beneficial changes, such as the ability to travel long distances, and negative changes, such as pollution and gridlock. Still, I don't think you'd find many people today who would like to have seen the automobile banned in 1910.

● (0910)

New technologies will have a negative effect on the well-being of some members of society. Automobiles ruined the horse, buggy, harness, and animal feed industries. It it the nature of progress. The economist Joseph Schumpeter called it “creative destruction”. Denying a technology on the basis that it will have negative economic impacts on some is to deny progress and to deny increases in societal well-being. This is very different from denying technology on the grounds of risk to human health or the environment.

There are issues of industry concentration and sharing in intellectual property in biotechnology that others are probably better qualified to speak to, but I will make one observation. At some point a decision was made that most of the research on biotechnology should be done in the private sector. To my mind, the best way to reduce the anti-competitive influences that the private sector might have on agriculture is to rebalance the research effort so that the public sector has a greater role, particularly at the universities, and as I said before, in Agriculture and Agri-Food Canada.

Studies consistently show that public sector research in agriculture is chronically underfunded. The scientists in the College of Agriculture and Bioresources at the University of Saskatchewan, for example, have made huge contributions to the welfare of prairie farmers and Canadian society. They continue to contribute, but they could do a lot more.

If the public sector creates more biotechnology products, it will lessen the influence the private sector can have. The public-private contribution to biotechnology research needs to be rethought if the current challenges of increasing food production and adaptation to climate change are to be met. If Canada is not part of meeting the challenges, other countries will reap the benefits—for example, China is investing heavily in the development of biotechnology, all of it being done by government.

Finally, international market access for genetically modified products remains an issue. A major impediment to market access is the European Union. However, the European Union is showing signs of weakening in its position, particularly over animal feeds and biofuel crops. They have had to loosen up their imports of genetically modified products. The EU is finally approving new varieties, but there is a major split among EU member states. Canada needs to continue to actively push for science-based rules for trade in the products of biotechnology.

The challenges of global population growth and climate change are real. In part, success in meeting these challenges lies in biotechnology. To benefit from the effort required to meet these challenges, Canadian farmers need to improve their technological efficiencies.

Thank you.

● (0915)

The Vice-Chair (Mr. André Bellavance (Richmond—Arthabaska, BQ)): Thank you, Mr. Kerr.

A bell is chiming. If you will permit me, before going to Mr. Potter, we will maybe wait for the bell to stop. We will pause for a few moments.

The Chair: The bell has stopped.

Mr. Kerr, were you finished?

Prof. William Kerr: Yes.

The Chair: Okay. Thank you.

Thanks, André, for taking over for a minute.

We'll move to Mr. Potter, director of the Vaccine and Infectious Disease Organization for the International Vaccine Centre. Please try to keep your presentation to 10 minutes or less.

Dr. Andrew Potter (Director, Vaccine and Infectious Disease Organization-International Vaccine Centre, University of Saskatchewan): Thank you very much for the opportunity to speak to you today.

I apologize for not getting any written material out. I just got off a plane from India and I'm really not sure what time zone I'm in, so essentially I'd just like to share a few thoughts with you.

First of all, I'll share a little bit about the organization. I know that you're coming over to our place this afternoon to have a look. We were founded in 1975 as a research institute, so we're not a commercial entity. We were founded as a partnership of the four western provinces. Alberta provided the actual buildings, Saskatchewan the land, and all of the provinces a little bit of operating funding. That's opposite to today: trying to get two provinces today to agree on anything is nigh on impossible. You talk about innovation; if you go back to 1975, I think you'll see some really innovative ways of doing things.

To make a long story short, the organization focuses on the livestock sector, specifically on infectious disease, and that's what I'm going to talk about. Anything I say won't go beyond that particular topic.

We've been relatively successful in terms of product development and the number of vaccines on the Canadian market coming out of our organization, virtually all of which were world firsts. These are not me-too products. These are high-risk types of things that can be picked up by Canadian industry. We've spun off four different companies, the latest of which is one of the new centres of excellence in commercialization and research focused on vaccines.

Finally, as was brought up earlier, very clearly our biggest product as part of a public sector institution is information. There's extension work. There are technical groups that serve the livestock industry, the swine and beef sectors specifically, and we are expanding that aspect. It has been a very successful organization over the last 35 years.

I'll switch to infectious disease for a second. Infectious diseases are still important. I think we lose track of that. If you look at the biggest threat to the livestock industry in this country, you'll see that it is in fact infectious disease. Look at that single case of BSE in 2003. We all know what happened with that. It's only now that we're actually starting to get back to the 2002 levels, eight years later. That's what it took to recover. Although the published figure says it cost $6.5 billion, it's probably more likely around $50 billion. It was an incredible risk to the industry.

We see it in the poultry industry. I don't know how many times avian flu has caused the mass killing of birds in the Fraser Valley and elsewhere across the country.

We saw it with swine flu a year and a half ago, and we all know what happened in the human sector: the story that hasn't been told is what it did to the swine industry and what it did to food processors like Maple Leaf Foods. Export markets disappeared.

We're facing a trade issue today. It's not necessarily the day-to-day disease losses, although they are important; the trade markets are the issue. How do we get around that problem from a research perspective? It's difficult.

We need to be proactive in our approaches. As a country, we tend to be reactive. We wait until something happens and then we see what we can do about it. That's not good enough in the industry if we want to be competitive.

You hear a lot about innovation. Innovation is a word that I'm pretty much convinced nobody understands—or maybe I don't understand it, and everyone else does.

Innovation is not the same as excellence. All of the programs we have set up deal with excellence, as they should, but if we want to encourage innovation, we must realize that innovation is transformative in nature. This means new markets and new ways of doing things, rather than the same old same-old. We should reward excellence, but if we want to encourage true innovation in this country, we have to do it a little bit differently, such as the way Bill Gates did it when he set up his funding program in vaccines six years ago. He funded things that were crazy, but that's what you have to do. You can't go through the regular systems.

What else do we need? We need infrastructure in this country. I think we're doing a passable job at it. I know that within the next week and a half we are completing construction of a $140 million infectious disease facility on campus at the University of Saskatchewan. The problem we face is that we have this wonderful piece of infrastructure there—it's the best in the world—but how do we operate it? We fall down when it comes to the operation of these facilities. We have to do it through partnerships. It's the only way it's going to happen.

● (0920)

We have a number of funding programs that I think are very good. The problem we face as researchers and research organizations is the way they're administered. If you want to talk about innovation, take the AgriFlexibility program. It's a great program in the sense that the public is involved and the private sector is involved, but you can't wait over a year to get a decision on something. It can't happen. This is a problem with the bureaucracy. I could go through a number of those programs, not only within Agriculture Canada, but in Industry Canada, Foreign Affairs, and a variety of others. We need to be nimble. If we're not nimble, innovation is not going to happen, and at the end of the day industry will suffer.

We need to really work on the partnerships. Mr. Cross talked about the value of federal research organizations, and I concur 100% with what he said. The National Research Council in the vaccine field is a jewel, a real jewel. This is an organization that has a culture of research. They understand it. The problem begins when the private sector organizations try to interact with a federal agency, and I'll speak here about one of our companies, PREVENT. When it tries to interact with a federal agency, we're still in this 1970's mindset that the crown owns everything. It doesn't work that way. We need to form true partnerships in order to move this forward.

The last thing I'd like to say is this: over the last five years or so, in the infectious disease field in the biotechnology sector we've seen incredible consolidation occurring, and there really aren't any Canadian companies active in the sector. They're all multinationals. A lot of people look at that as being a threat, an issue. I look at it as an opportunity. We need to get biotechnology moving again in the animal infectious disease sector. I think there are some real opportunities that need investment. Again, it doesn't need handouts; it needs an investment.

A study done for the Government of Saskatchewan about 10 years ago suggests that an investment in the infectious disease field for the livestock sector gives a return on investment of about twentyfold. In this case it was a $60 million investment; it returned about $1.2 billion over a 10-year window in the province of Saskatchewan. If my pension fund had done that well, I would not be speaking to you today. It's an incredible return on investment. It doesn't matter what type it is or what your target is; the smallpox vaccine for humans returned $27 for every patient who was immunized.

These are incredibly powerful technologies, but we have to harness them and we have to get manufacturing back into Canada. If we continue to develop the intellectual property.... We're masters of that in this country: in the vaccine field, we outdo any other country per capita, but it all gets exported either to the U.S. or to Europe, and we buy the products back. It can't continue to happen that way.

With that, I'll end.

● (0925)

The Chair: Thank you very much, Mr. Potter.

We'll now move to Mr. Bert Vandenberg, professor at the university. Please take 10 minutes or less, sir.

Professor Bert Vandenberg (Professor, University of Saskatchewan): Thanks for the invitation.

I'll tell you just a little bit about me. I work with pulse crops. I grew up in Ontario. I've been living with plants since I was born. My dad was a Dutch immigrant with a greenhouse business, so I've been working since I was two. That's the way it is in Dutch families.

When I came to Saskatoon, we started from scratch. I don't have much to say about the federal research system, because I haven't been involved in it. My career has been in partnership with the provincial government, with farmers, and basically with those of us at the university. We started in a very small way. We had maybe 30,000 acres, and we're at about seven million now. I can honestly say that what Albert Einstein said was correct in our case. He said that if you know what you're doing, it isn't research. We started off not knowing anything, and that's real research.

I'm going to go through my list of 10 comments. They all start with the letter “b”.

The first one is biology. One of the fundamental things that made us successful was that right from the beginning we understood that without knowing the biology of what we were working with, we couldn't understand the economy. In our case, with pulse crops one of the fundamental things was that seed cost was very high for a crop that's more risky to grow. We changed the economic model. Instead of trying to produce seed companies that would charge royalties and pass those on to farmers, we said, “Let's do it the other way. Let's have a check-off at the end, so that farmers finance the research.” It's only a four-month delay, but it's the same price, and at least then the farmer didn't have to take the risk of putting seed in the ground that didn't grow. That became fundamental to us—gaining the confidence of farmers.

The pulse thing is pretty interesting, because Canada really was one of the last places on earth to discover that you actually need legumes in your agricultural system. We were under ice 10,000 years ago, so maybe that has something to do with it, but we didn't understand that. Almost everywhere else in the world, they do that.

Understanding biology is fundamental. It's a tough challenge. My estimate is that only 20% of high school students ever take a course in biology, and forget reading labels. Most people don't understand what the labels on our food say. I think 20% understand labels. It might be related to that high school thing.

Second is biotechnology. I've heard this term misused throughout my whole career. I know there's a narrow definition that may be your focus here—transgenics—but those who are in the business of plant science think of it as an ever-expanding toolbox, and even what we call transgenics may be superseded by genomics. That's our hope in the small-crop world, because we can't afford transgenics anyway. We never bothered with them, because we couldn't afford them. Maybe with genomic information we will actually be able to do it better, more cheaply, and more precisely. That's what we're counting on.

That toolbox is full of new things and old things. We still use some old technologies that are, as I call them, biological technologies. We're still using something as old as grafting. Why not? They're good technologies, and we shouldn't restrict what we're trying to do. Let's keep in mind that maybe even the transgenic approach is not going to last. We don't know.

The third point is biodiversity. In biological terms, this means retaining as much as we can of the vestiges of our ecosystem. Let's keep it diverse. That's actually the most productive system. The more we can introduce that into the system, the better off we will be. In economic terms, we would call it diversification of your portfolio.

I'm trying to forge this link between biology and the economy in your minds, so that you can have some discussion about it. Everybody puts “bio” in front of everything these days. You can find shoes with “bio” at the beginning. I know you can find yogourt. To an extent, we've lost our whole word there.

However, I would say that biodiversification is what's happening in a place like Saskatchewan. It's harmonization of biodiversity and economics. We're trying to produce more types of lentils, not fewer. We use the car model as our example. There are many more kinds of cars today than there were when I was a kid.

Today there are four million acres of summerfallow. In 1970 there were 24 million, and there are only 44 million acres of cropland, so it's pretty incredible. Since then, we've had an additional 20 million acres of crops. Those 20 million acres in 1970 were mostly cereals.

● (0930)

In those days we had almost three million acres of canola. Since then canola has increased by about 4.5 million acres. Pulse has increased from zero to seven million acres. This is without the addition of transgenic technology; what we really did was harness the economy to the diversity out there and to farmers' needs.

This is happening across the country. In 1970 there were 300,000 acres of soybeans, no lentils, and no peas. Now we have about 7.5 million acres of each of those three. It's a pretty good story in Canada.

That's my “bullish” trend. That's the fifth “b”.

The sixth one is the breadbasket. I grew up with the concept that Canada was the breadbasket of the world—it was the sort of thing you saw in magazines—but in fact we produce between 3% and 5% of the world's wheat and barley and less than 2% of the corn and soybeans, and in all cases we produce less of the global share than we did in 1970.

Are we falling behind, or what are we doing? It's hard to say, but we do produce 30% of the world's peas and 45% of the world's lentils. They're not huge crops on a global scale, but they are growing in consumption faster than human population growth, so the consumers are telling us something: that we shouldn't be afraid of changing our crop base, and that they like what we produce. We're obviously the world's largest producer and exporter.

The seventh point under the “b” is bigger genetic gains. This is the real goal of genetic improvement of grain crops. We need higher yield and we need to accumulate the genes that give us the combinations that make us more productive. Without genetic gain occurring at rates above human population growth, food costs are going to rise. We're witnessing this scenario on a global scale, and I would make the argument that in the case of ethanol, biofuel policies may be adding fuel to that fire. I'm sorry for the bad joke.

Our customers are countries with large, growing populations. In most of our customer base, 60% of the population is under 30 years of age, so the impact is going to continue. They're going to live longer and they're going to eat longer, and the rate is accelerating.

The eighth point is on biofortification and beyond. This is the genetic improvement component, with the goal of improving the nutritional quality of our basic foods. We're trying to do this at an international level. It is conceptually simple, but it's going to require a big change in the way we do plant breeding. We're going to need new biological technologies, and I don't think we're going to be able to take the simple solution of transgenics. Moving one gene in and changing things is not going to work. This is a more complex issue, yet we're probably on the cusp of being able to do that. We think this is really going to help the small crops, and that's going to allow us to harness biodiversity, so that's a focal area where there could be some investment. That's going to improve nutrition, yield, nitrogen fixation, and all the things that go back to that basic principle of understanding the link between biology and economy. Let's be focused here on the long run.

The ninth point is on bits and bites of nutrition.

Human health is obviously linked to nutritional status. This goes into our biofortification discussion. We see two billion people on this planet who don't have enough iron in their diets and who have an inadequate supply of nutritious basic foods. Where we do have enough food, we're also malnourished because we don't know how to eat anymore.

The people who are involved in agriculture need to get their heads around the fact that we need to educate people. We need to educate kids, because right now the kids in school have parents who do not know anything about nutrition, don't know anything about agriculture, and don't know anything about food. Food is what you buy at a store or at a restaurant.

We're starting to see big changes in our health care costs. They're going to accelerate due to poor nutrition. Maybe the Department of Agriculture could take a lead in focusing on educating people about their food. You might find that it relates back to the whole business of biology and economy. If you don't understand what's keeping you alive, you're not going to understand the economics around it. Health care is definitely related to what we're going to see in the future.

My last point deals with barriers to innovation. I would say that fully understanding what I said about biology will provide excellent guidance on this front. We have a lot of regulatory scenarios that really are barriers to genetic gain. They are positions that people have taken through the regulatory system and they have influence. We have rules regarding barriers to innovation that are 20 years old, and they need to be revisited.

I'm specifically referring to the issue of plants with novel traits. We regulate all innovation in Canada as though they were GMOs. How stupid is that? That's like tying your shoelaces together and saying you're going to go on a run. It doesn't make sense.

● (0935)

Many of the technologies that non-GMO people are using are age-old technologies that were used by agriculture 6,000 years ago. We can use information, we can use knowledge, and we can train people to use simple DNA analysis to make the gains. Why don't we focus there? Then we could skirt this whole issue.

As I said, I think possibly transgenics will be an ephemeral technology in the world of plants. In the world of pulses, we deliberately did not use transgenics, because it was already causing a lot of ripples in the marketplace, particularly in our customer base. We ship wheat to only 25 countries, but we ship pulses to 140. How are we going to figure that one out? It's very complex if you do it, so our choice was to remain uninvolved in it.

Those are my comments.

The Chair: Thank you very much, Mr. Vandenberg.

Now we'll go to Mr. Wartman for 10 minutes, please.

It's good to see you again, sir.

Mr. Mark Wartman (Development Officer, College of Agriculture and Bioresources, University of Saskatchewan): Thank you. It's nice to be here.

It's really a privilege to have the opportunity to appear before the agriculture committee, and particularly to address this subject on the part of the College of Agriculture and Bioresources. I've been in association with the college to some extent for over seven years. I have really valued not only the work of the college but also the whole ag-bio cluster, which I think is important to keep in mind when we're looking at what is happening in this area.

One of the biggest challenges I hear across the board is to have funding in place to enable the development of these technologies that are vital to our future. My job in the college is fundraising, and I can tell you that there are some unique challenges in fundraising in our environment today. We definitely need our governments, provincial and federal, on board to help build the infrastructure that enables these technologies to progress.

We have seen a tremendous shift in our taxation picture in this country over many years. There is less and less corporate and capital tax, and the benefit of that shift is certainly there for the corporations. We can see it in the banks' profit numbers and corporate profit numbers. However, there has not been a corresponding shift in the amount of money they are putting into these vital developments. As the public purse is reduced through the changes in taxation, there is also less available from the corporate structure, so we turn to our federal and provincial governments, clearly, with the reality that we need your support in terms of making these very vital technologies move forward.

When I talk about ag biotech, I'm talking about a whole lot of tools, as Bert so well put it, that we have and that we have been working at developing, tools that are vital not only to our future economy here but vital also, I believe, to the future of the world.

When we look at the largest challenges in the world, we're looking at environmental challenges, climate extreme challenges, and population growth. When I look at the work that is happening around this ag-bio cluster, I see it as essential for us to be working in each of these areas.

In the area of the environment, we are looking to develop plant products and products around our soils that will mitigate environmental problems and remediate those problems. For oil sands and for some of our mining areas, we are developing effective plant remediation. If we're going to be developing in these ways, we have to be able to mitigate the impacts.

One of the other key areas that we are working on in terms of ag biotech is adaptation. We know that with climate extremes and changes in our environment, over the last decade we have seen a number of pests that have never been here before moving further into our hemisphere. We need to be able to adapt in what we're doing, but we also need to be able to enable adaptation of our plants. We do that through our breeding programs. We do the same with our animals. How do we help the animals become more resistant to disease? How do we help our plants become more resistant, as others have said, to drought, to frost, and—in these days, Brad—to excess moisture? These are all things that are happening at our college.

Finally, there's production. With the world population projected as it is, we are going to need to increase our food production dramatically. The research and development work we're doing at the college is about increasing production and making sure production is secure by making our plants and animals more resistant.

These are vital activities, but in order to do this work, we absolutely must have the infrastructure, and that infrastructure costs significant dollars.

● (0940)

I can say that over the last decade, we've had some very effective partnerships from the province and the federal government. We took the wedge funding under the agricultural policy framework and applied all of that—$54 million—to research in this area. It benefited a number of the organizations that you heard about today. It helped build some of our most productive infrastructure, which you'll tour later, such as the crop development centre and the new grains innovation lab.

Many of these benefited from that funding, but it needs to be ongoing. It can't be one shot, and then we feel good about it and it's done. We need to continue to have the best equipment and the best infrastructure if we're really going to develop in the way that we very clearly need to develop.

Today one of the greatest demands I hear when I'm meeting with corporate and other people in the ag-bio sector and the food sector is their need for our graduates. They need knowledgeable graduates. In biotech, our students are probably the greatest bioproduct that we can deliver to this world. These are the students who are researchers, the students who are very well educated and who have had that opportunity to work with people like Bert, Jill, Bill, and Mary and really understand what is needed to move forward in this whole area of ag biotech.

Also, we must have the facilities. We must have both the educational facilities, which I know are outside of the federal purview, and the facilities for research that will draw them in. We have to be able to provide them with a good education. That's foundational, so today when we're looking at what's foundational about the College of Agriculture and Bioresources, we keep in mind that education and the development of new researchers are key aspects.

We have a shortage of plant breeders. I think I've heard that from a number of people. The only way we're going to counter that shortage is by having very good educational systems and infrastructure that draw them in and enable them to learn.

Today in our college, we have three major projects under way. We have the new phytotron renewal, an upgrade of the phytotron, which I'm not sure you'll get a chance to see today. I know that some of you have seen it. That is our controlled environment plant growth facility. It gives us three full cycles a year. It's absolutely essential as one of our biotechnology tools that enables plant breeding. If we don't have that up and running at capacity, the impact on the economy is huge. Delaying some of those new developments in plants by just a few years has a huge economic impact.

We have a need for a new dairy facility and we are working at developing it. Now, people will say that the dairy industry in Saskatchewan isn't that big, and it isn't, but this facility and the research it does have an impact on at least all of western Canada. It's used by the veterinary college, which trains veterinarians for all of western Canada and for all of Canada, really. Also, there are huge dairy herds in B.C., where we draw a lot of people from, and they are people who are going to be going through the training, so although it may not seem that essential at first glance, it's essential in terms of its broader impact in the whole cluster. The research going on at VIDO-InterVac is using the animals that we have there as well.

Our third project, a new beef facility—which I think is key as well—shares some of the same areas with the dairy. We've heard about the impacts of BSE and how far down it took our beef industry, which was, I would have to say, growing nicely at the time BSE hit. In this province we have recognized that we need to do more than just produce cows and calves and then ship the feed off to Alberta, where they're fed and finished. It's part of what John was talking about: we need to be able to do the full cycle here, and that full cycle includes doing the research related to feeding and finishing cattle. We need a facility that does research and also does outreach to the public. We need to hold public schools for cattle feeders and farmers who are working in that area.

● (0945)

We need to be able to provide premium beef by having the genetics of what we are feeding those cattle and the genetics of the cattle combine to get the best products. Cargill's Sterling Silver beef is their ultra-premium beef, and if they know that the genetics are right and that the feed is right as these cattle come through the system, then they know that the cattle are going to fit within that Sterling Silver beef category.

We have to have support for the foundational pieces, and it doesn't come generally from private industry. If we're going to advance in biotech, if we're going to meet those world needs, we must have the foundation, and that foundation is a good, solid, and continually upgraded infrastructure that will draw and encourage our students into this area and will enable us to produce graduates and postgraduates capable of doing incredible work in helping to move this whole area of biotech forward.

When you hear some of the returns on investments in this area, you know that it's only going to be good for our economy. When we see a follow-up on elements of our regulatory systems so that we don't have to do the registration in another country and we can get the product on line within two or three years instead of waiting five years or longer, I think that we'll have made some significant progress.

Your committee can have an impact by taking these pieces forward, by pressuring decision-makers to make sure the money is put in the right places. A big concern for us was seeing NSERC pulled back from its grants for food.

The Chair: Thank you, Mr. Wartman.

We'll go to Mr. Hanmer. He's been before the committee before as well. It's good to see you again, Brad.

Mr. Brad Hanmer (President, Hanmer Ag Ventures Inc., As an Individual): Thank you, Mr. Chairman, and thank you, committee, for the opportunity to present.

My name is Brad Hanmer. I'm president and CEO of Hanmer Ag Ventures. We operate a 24,000-acre grain, oilseed, and pulse farm two hours southeast of Saskatoon. I'm a graduate of the University of Saskatchewan's agricultural economics department, and since then, one acre at a time, I've been taking a PhD in agricultural business.

I've spent six years on the Saskatchewan Canola Growers Association board of directors, three of those years as president, and since then I've sat for three years on Farm Credit Canada's board of directors. For the record, I'd like to state that my comments today do not reflect those of any board member or staff member within Farm Credit Canada. These are my comments exclusively.

I'm going to start off with a fairly bold statement. I'm going to say that since my first crop in 1996, when I graduated from the University of Saskatchewan, of the three biggest technological advancements, number one undoubtedly has been the Internet. That has flattened a lot of the playing field and allowed us, in the middle of rural Saskatchewan, to be able to have that information. That's step number one.

Number two, I would say, has been GPS and its related technologies. That's allowed us to become very efficient in precision agriculture, with site-specific farming, satellite imagery using fertility maps, and those kinds of things. That's been paramount to our profitability.

However, I would say that very biggest one has been genetics in canola. With all due respect to Dr. Vandenberg and his comment, I am going to have a fairly narrow focus and use canola as the example of what that has done for somebody like me.

I suppose I'm still classified as a young farmer; I'm in my late thirties. On our farm prior to the innovation of the herbicide-tolerant canola, as Bert has said, we had mainly been a summerfallow and cereal province. In the mid-eighties my father was innovative, and we added pulse crops in our rotation, but the problem we were finding with pulse crops was that was the only major economic driver we had. Wheat, which we can get into later in my presentation, has been a stalemate in our ability to generate revenue and a stable return. Lentils and peas and chickpeas were fantastic, thanks to the work of Dr. Al Slinkard and Dr. Bert Vandenberg—they were a game changer for us in the province—but in our part of the world, canola is king. They call it the Cinderella crop, and I really think it's been the most important economic driver in my life. Without the canola crop, I wouldn't be here today, and I'm that bold in the statement. It has been the one that has flatlined our ability to have stable economic returns year after year.

Here are some of the things I have to tell you about: 1997 was the first year in Saskatchewan, and in Canada for that matter, that the novel-trait herbicide-tolerant canola was allowed to be commercially grown. Prior to that, canola production was mainly limited to the northern part of the grain belt because of the weed control issues. As well, at that time there wasn't a lot of direct seeding technology, so right around the same time that direct seeding technology was coming down, we were allowed to have another crop, canola, that was an economic powerhouse. It could be grown in big quantities on massive acreage that previously would have had either summerfallow or an unproductive crop. Without that I wouldn't have a business as I have grown it with my parents and brothers today.

Of the direct results we found, number one was reduced chemical cost. We are not dumping out the quantities of chemicals that we had used prior to herbicide-tolerant canola. Second, it reduced our fuel consumption. Our fuel bills are a lot lower because of a one-pass system with seeding. We're using a lot less fuel per acre as a result of this crop. Third, our soil health has improved. As a trained agronomist, I know we have improved our pH, our water-holding capacity, and our cation exchange capacity, in parallel with using pulse crops. We're pulling off yields we never would have imagined, and at the same time we're respectful of the environment and we're promoting better soil health.

When hybridity of canola came in the mid-2000s, it was a second big game changer for us. We're realizing yields on the canola crop that are matching, and in some years surpassing, the yield we get on cereal crops in our part of Saskatchewan.

● (0950)

With the stable returns, we've actually seen a resurgence of young farmers in our business. You cannot make a stable business plan and bring in financing if you don't have some model of stability. There's talk about stability of investment on the biosciences side; well, it works exactly the same way at the grassroots level of agribusiness. You need stability, and that's what biotech has done for many parts of this province. It has allowed that to happen.

Without this buoyancy of innovation, I don't think I would be participating in the commodity boom we have right now to the extent I am. Basically, this canola crop seems to find a way to get through a lot of adversity. Some of the panellists mentioned that. It's a direct result of the novel traits and also of hybridization.

Some innovations that are also going on right now relate to everything from insect events to different disease events and pathogens. They are just going to further increase our profitability on the farm.

Those of you in the corn-growing belt know what the biotech advancements have done for the corn rootworm, which is a cousin to the American corn rootworm; I think it's the same species. There is also the corn borer. Those two things allow a non-invasive species to not be controlled with insecticides, because they target those exact insects in a field. Those same innovations are coming to canola.

As a side note, I had the honour of being at a conference in Costa Rica two weeks ago, where Paul Schickler, the president of DuPont's genetic division, Pioneer Hi-Bred, said that right now western Canada is their number one global priority as a company for R and D into bringing in soybean varieties, corn varieties, and further canola traits. One reason, he said, is that Canada has a very stable regulatory system at present. They can be confident in that. Second, he said that growers are innovative and are quick to adapt to change.

I'm led to believe that the rate of adaptation of genetically engineered canola has actually surpassed the rate for the wheeled tractor and the combine versus the stationary threshing machine. Those innovations took longer for complete adaptation than genetically engineered canola. Those two things, he said, are why they're putting their stake in the ground and making sure that western Canadian agriculture is one of the most important strategic investments for a company the size of DuPont. DuPont, by the way, sold an oil company in 1998—and their stock price halved—to buy a genetic company named Pioneer Hi-Bred. Today their stock price has gained back everything it lost as a result of that strategic investment in the bioeconomy.

In 1997 there was a lot of debate about what we were going to do with canola. People said it was going to destroy markets and that the Europeans wouldn't take it. We have to keep in mind how that transpired in history. There was a lot of rhetoric on the disadvantages of what happened. The fact of the matter is that it was very strategic for the greater good of this industry. One of the panellists summed it up a lot better than I'm going to: in Europe, that market was never ours to be had anyway. It was a protectionist measure, for the most part, to protect the rapeseed industry, so the rhetoric needs to be brought down to the grassroots of investment.

If this conversation on what we call the biotech killer, Bill C-474, had happened back when canola was coming forward, I highly doubt that we would have that innovation in agriculture today, so I want the members to please be very respectful of the lessons we learned in canola and what they meant in terms of the billions of dollars canola has dumped into the rural economy.

I want to mention a couple of things in closing, and I don't want to sound like a broken record, but a lot of the panellists have stated their wish lists.

First, zero tolerance in our international markets is totally unacceptable. That is our first and foremost point. As you know, we're a major exporting country, and my business relies solely on the export business. We absolutely need to make sure that there is no such thing as zero. I think there are a couple of industries, such as the flax industry, that are in a lot of trouble right now over having zero tolerance. It can't be done anymore.

Also, I have a warning flag. We are going to lose our advantage in cereals. Pulse crops and oilseeds in western Canada are very buoyant, and there's a bright future, as Dr. Vandenberg said and as I said, for oilseeds, but the other component of a rotation is absolutely needed, and that's the cereal side. We're losing advantage every year. Economically, it's very unlikely that I would turn a profit growing a cereal grain.

● (0955)

That is something we need to address. We need to attract investment to make sure people understand that Saskatchewan's economy is not driven by wheat any more. It is a necessary evil for us in a rotation, but it's highly unlikely to have a price-times-yield combination that makes me money. That is a challenge I have for this table. We really need to address this.

The last thing is that biotechnology is very exciting for us right now in our business. We absolutely need to have younger people come into this business. My father, who has been a great innovator his whole life, is going to turn 65 this year. It's a hard year for him, because he won't be able to drive any of our implements. It has become so high tech that you no longer need a driver; you need an operator. We're continually bringing in new knowledge on the farm in order to operate. It's getting very sophisticated.

Volatility in the marketplace is also becoming one of our biggest challenges, and not only in the commodities, but in buying our fertilizer. This is big business that swings on a dime. It can be hundreds to millions of dollars within a month. We need to have stable returns, and biotech is one of the keys that will allow us to have stability and that backstop.

We're maintaining yields that we never dreamed of even 10 years ago. In terms of the advancements in canola, buying the latest and greatest innovations in canola has allowed us to keep up with our cost-price squeeze and inflation over time. That's driving big business and innovation to come to our country, so please keep those markets open. That's the first priority. Allow biotech innovation to keep us competitive so that Canada is the number one spot globally. We are not the biggest on the block, as Bert said.

One of the biggest visuals that I remember was in 1997. The first big wave in Brazil opened up, and they were basically farming the Sahara. They went from being a nonentity in the global marketplace to being the world's largest exporter of soybeans. Since then the world has swallowed the continent of South America, so keep that in mind.

Prior to 2004, the profitability of farms was not that sexy. Consumption and production had a 1% growth rate until 2004, when something switched. We've had seven consecutive years in which consumption patterns outstripped our ability to produce. We are now at about a 2% to 2.5% consumption growth in countries where they need it the most.

That's the challenge to us. In Canada we do have the comparative advantage, and we need good legislation to allow this to happen.

● (1000)

The Chair: Thank you, Brad.

You commented about being a young farmer. Being a farmer myself, I will tell you that anybody 54 and younger is a young farmer today, but agriculture certainly needs young farmers in there.

We'll move on to questioning now.

Mr. Valeriote, you have seven minutes.

Mr. Francis Valeriote (Guelph, Lib.): I want to thank you all for coming today and for taking time out of your busy schedules to present to us.

I'm going to approach this a little differently. It's not meant to be contentious. I just know there's another side to this story, and we need to have that side for our discussion. It's been our intention to have a full discussion of all of the issues. Living as we do in our own world, we sometimes do not embrace the other part of the discussion that I think we need to have.

I agree that there is room for biotech in this world. I appreciate the three billion more people who will require a 70% increase in the production of food over the next 30 years. Then there's the reduction in the accessibility of water and all the incidents associated with global warming. We've had that discussion. What I see, though, is a growing rift between those who embrace biotechnology and those who have concerns about it, whether it be the Enviropig at the University of Guelph or transgenics. We sit around this committee and hear ideas, but it's hard to mould these ideas into actual policy.

Before 2004, there was a forum in which all people involved in biotechnology were able to get to the table and talk about possible regulations and what might be needed in biotechnology. I understand that in the early 2000s the forum evaporated and no longer exists.

My first question, from 20,000 feet, would be this: do you value a forum in which these two solitudes might be able to come together and have reasonable discussions that would produce recommendations to the government about the regulations we need?

My second question is with respect to alfalfa, and I'm getting closer down to earth now. You talked about GM canola. I honour and recognize the value of GM canola, but I'm also aware, having been told by witnesses before the committee, that it contaminated non-GM canola, certainly in Saskatchewan, to the point that it's impossible for it to exist.

You know the scares about alfalfa. We're told there are over 4.5 million hectares in production, 75% of which are in the prairie provinces. Canada is the second-largest producer of non-GE alfalfa. We've heard this quote: “Contamination of organic alfalfa would impact organic farmers in many negative ways. Alfalfa is a perfect legume for nitrogen fixation and losing alfalfa in organic farm crop rotation would severely hamper the ability to maintain soil fertility and prevent soil erosion, which would harm the future of our soils’ health”.

We talk about the horse and buggy giving way to the car. I see it a little differently. If you wanted to continue to drive the horse and buggy, you could, but the contamination likelihood takes away the ability to continue to grow organic products. I agree that we need low-level presence in our international trade agreements, but low-level GM presence takes away the value if you're under the threat of contamination and you're looking to grow a particular organic crop.

First, can someone clarify whether you see the value of re-establishing the forum? Second, can you honour the idea that organics need to be able to thrive as well? Shouldn't people have the choice of buying organic products?

● (1005)

The Chair: Go ahead, Ms. Buhr.

Dr. Mary Buhr: I can address the bit about the forum and the need for choice.

We teach organics. We do research in organic farming, and so does the agriculture school at the University of Guelph. It is widespread. What the world has to recognize is that there is a choice, and we have to enable it. First of all, there has to be a definition of "organic", and there needs to be an investigation of what the costs and benefits are.

Is there a benefit in having a forum? There is, absolutely, but I would argue that we essentially already have one. We've incorporated it into our educational programs. We have a wide variety of inputs from organic farmers into our decisions.

The genetic piece is a harder one to deal with, and somebody else might want to answer that part.

Mr. Mark Wartman: I won't answer the mechanics part, so I'll wait for a moment if somebody else wants to do it.

Mr. Francis Valeriote: Mr. Kerr, you made a comment about the car versus the buggy. You made reference to it. Do you understand...? Bert, or anyone, is welcome to answer it as well.

Prof. Bert Vandenberg: Go ahead. I'm going to get more technical.

Prof. William A. Kerr: I'm not an expert on genetics or on genetic drift, but it seems to me that one of the problems is that you create a system in which the people who want to use the biotechnology products.... The way it's couched now, the right is with those who want to grow organics. In other words, there's the idea that you are going to pollute me; however, the organic people are a smaller industry.

I don't know how to say this. I grew up in British Columbia, and we had free-range cattle in the Cariboo area of British Columbia when I grew up. There are two ways to approach free-range cattle. One is that you fence them in, and one is that you fence them out. That was the dominant production system for free-range cattle. The system they used was to fence them out. In other words, if you didn't want to be polluted by cattle coming and grazing your vegetable patch, you fenced them out.

I think that's the real discussion. We have to say that if you need to have a barrier around your land to keep genetic drift out, maybe it should fence out rather than force people to fence in. That would be my answer. At least, that's the real discussion to have.

● (1010)

Mr. Francis Valeriote: Bert, if you're answering this, could you address that aspect as well? My third question was going to be about these barriers, because I am aware that an identity-preserved isolation distance has been created in the seed industry so that we really can identify the distances.

The Chair: Francis, your time is up.

Go ahead, Professor Vandenberg.

Prof. Bert Vandenberg: There's research involving many crops on how gene flow works and the fact that mother nature will always surprise you. The way I look at it, there's nothing that is not possible in biology, but you can determine scientifically what the barriers need to be. If you think of it from a continental point of view, if it's going ahead in the U.S., it's going to be here anyway. It's going to move. You're going to see some flow.

Scientific studies can be done to at least create some kind of system whereby people would feel protected, but as you said originally, it's quite an emotional issue. I don't know how you deal with emotion, other than through education.

Dr. Jill Hobbs: I have just one quick observation. The problem here is that there are tolerance rules. We create these. I think you're aiming at the wrong target here. It's finding ways to address those zero-tolerance rules in a trade context, and then you can have differentiated markets for organic and non-organic, which is really what the consumer is looking for. Some want organic, and some don't. I would remind you that the point about the zero-tolerance rule is the thing to address.

Mr. Mark Wartman: I think the forum can be good, but the basis upon which you're making decisions in the forum is crucial. I know the temptation in politics is to make them on what's popular or what's going to have impact in terms of a vote, but if you're making them, I would make the appeal that what needs to be used in this area in particular is the very best of our science.

When you have population bases that really have little to no understanding of agriculture and agricultural biotechnology, we've seen, I think, some real pitfalls to just having a public forum. The pressures are huge, then, on political decision-makers to really take a look at what the science is and what the impact is.

From a provincial point of view, we are very dependent upon trade, and the bulk of our grain and oilseeds trade, particularly in canola, has some very clear GMO implications. I think this is a minefield, and the best of science is essential in your decision-making.

The Chair: To clarify, Mr. Wartman, when it comes to politicians, we should be making decisions based not on politics but on science. Is that what you're saying?

Mr. Mark Wartman: Yes.

The Chair: Thank you.

Mr. Bellavance, you have seven minutes.

For translation, I believe English is on channel 2.

[*Translation*]

Mr. André Bellavance: Good morning. Thank you very much for your testimonies.

I am sure you are more qualified than I am in biotechnology. I won't be telling you anything new when I say that biotechnology does not only deal with genetically modified organisms, but that it has a much broader scope. Biotechnology is invaluable to humanity, particularly to human health and animal health. For example, in my constituency, Domtar is currently building a pilot plant to produce nanocrystalline cellulose from wood fibre. There will be applications in all areas, and health in particular. It is a way forward for the forestry industry in Quebec and across Canada, at a time when the industry is facing real, though cyclical, challenges. At the moment, we are looking for new possibilities for the forestry sector and I think biotechnology is one way forward.

But, when we talk about genetically modified organisms, guidelines should be in place before any product is marketed. Just now, before Mr. Cross had to leave, Mr. Lemieux asked him a question about Bill C-474, which is currently before the House of Commons. We shouldn't bring up a doomsday scenario right away. We have to say that we are studying the commercial impact of a genetically modified organism before putting it on the market. For example, that's what they did in Argentina, which is one of the leading producers of genetically modified organisms. You said it well. Before taking purely partisan positions or simply playing politics, I tried to find out what the impacts in Argentina were, according to the studies. In addition to looking at the impact on health and the environment, a study was also done on the impact on international trade. So far, there has been no case filed against Argentina by the other countries or by the World Trade Organization. This example provides additional confirmation of what needs to be done before a product is put on the market.

Mr. Kerr mentioned the precautionary principle. I think that allowing no risk is actually very difficult. I also don't think that this is the understanding of the 160 signatory countries to the Cartagena Protocol on Biosafety that, may I remind you, aims to set control standards based on the precautionary principle. Canada has not ratified the protocol. And to say that all these countries have never marketed genetically modified organisms is false. Some of these countries are producers of genetically modified organisms and also develop biotechnology. So it is possible to do both, and do research on biotechnology. Before putting a product on the market, extensive analyses can be conducted to make sure public health is not at risk. I don't think the two are mutually exclusive.

Ms. Hobbs, you've made some very interesting comments on investments, and I am going to ask you a question about the situation in the United States. You've said that the return on investment is roughly 20% in the U.S. Do you know how things work in the U.S.? Is the government the largest investor in biotechnology or does the private sector invest more?

● (1015)

[*English*]

Dr. Jill Hobbs: Yes, that was some work looking at the returns to public sector agricultural research in general. In the U.S., as in Canada, it's a mixture of private sector and public sector investment in research. The key point is that in Canada, and in the U.S. and elsewhere, the public sector share of contributions to the research has been declining; at the same time, we've seen these declines in agricultural productivity growth at the same rate, so I think these concerns are not just limited to Canada. They're also concerns elsewhere.

[*Translation*]

Mr. André Bellavance: You are telling me that public sector investments have also declined in the United States.

[*English*]

Dr. Jill Hobbs: Yes. I think public sector investments in agricultural research have been declining in most developed countries, and that's a general concern in terms of what's happening to the agricultural productivity growth rate.

[*Translation*]

Mr. André Bellavance: Would I be wrong to say that the Canadian government decided to cut back on research funding in the mid-nineties? I know that crop producers and grain producers in Quebec have joined forces with producers in Ontario and are asking the Canadian government to bring back the investments in research that were available in 1994. As you can imagine, it has been years since this area has seen investments similar to those in 1994. What would an increase in investments mean, especially for a university like yours?

[*English*]

The Chair: I would like to remind you that when you take your headset off, you should keep it away from the microphone. I think that's where we're getting the feedback.

Go ahead, Ms. Hobbs.

Dr. Jill Hobbs: I can't speak specifically to going back to exactly 1994 levels, but in general—and maybe some of my science colleagues can comment—I think we're heard about the importance of ongoing investment to make sure we have both the infrastructure and the people in place.

● (1020)

Dr. Mary Buhr: We've looked at the returns of dollars spent in agricultural research to the producers and the consumers—that's economic research undertaken by people in our university and many others—and it varies, depending on exactly what the research is. The dollar return per dollar invested is anywhere from nine dollars to $18 or $20. This has been done by independent third party groups as well.

There is very little doubt that even when you're investing in speculative research, the overall return per dollar invested is enormous, and it's a return to producers, to consumers, and to the country.

[*Translation*]

Mr. André Bellavance: The most recent statistics on research expenditures are from Statistics Canada. In 2005, $2 billion were spent on biotechnology research in Canada. Does anyone know how much of that funding came from the government and how much from the private sector?

[*English*]

Dr. Jill Hobbs: I have some information that might be helpful. In 2007, total private sector investment in plant R and D in Canada was about 40%; Agriculture Canada A-based funding was about 21%; provinces were about 6%; and producer check-off funding was 4%. Someone earlier pointed out that NSERC is important; NSERC was at 18%, and other federal funding was 11%, so it is a mixture of funding sources. That's a total investment in plant R and D, in 2007, of $165 million.

[*Translation*]

Mr. André Bellavance: Yes, but that's—

[*English*]

The Chair: André, you're well over your time.

We'll now move to Mr. Hoback for seven minutes.

Mr. Randy Hoback (Prince Albert, CPC): Thank you, Chair.

I'd like to move over to get closer to the mike.

The Chair: The mikes are controlled from behind us, and you don't have to move them toward you; they will pick up the sound very well. If we are having trouble hearing anybody, we'll address it at the time.

Mr. Randy Hoback: Thank you, Chair.

I want to thank everybody for coming out this morning. It's great to see such a great group of Canadians from Saskatoon and the area, including Brad Hanmer, talking about this topic.

When I first approached this topic, I went to the University of Saskatchewan and to Innovation Place. Mark Wartman toured me through the university and showed me what you're doing there. I'm really excited about sharing that with my colleagues here, because it's great stuff.

This study is one that I think is very important, and I think we need some help in developing new regulations and new rules through it so that we can see this industry grow in a responsible manner.

I think the goal of everybody here is not to see this industry fizzle and die. That could kill Brad and all the other farmers in Canada, and it would also have a dire effect on our population as the world population grows. We need to grow in a responsible manner, but we need to make sure we've got the proper regulations and incentives and investment to make sure it grows in a proper manner.

That's where the gist of my questions will probably go this morning. The first thing I'm going to do to clear the air is on the definition of biotechnology. When we talk about biotechnology, everybody goes straight to GMO—at least, that seems to be a consistent practice.

Does the name biotechnology need to changed? Does it need to be branded something different?

Could give a quick answer? I think I'll just go right across.

Mr. Mark Wartman: I don't think it does—I think biotechnology is a good term—but we do need to continue to define it publicly. I agree that most people seem to assume that it's just dealing with GMO.

Mr. Randy Hoback: Would that response be fairly consistent across...? Okay.

Then as far as the low-level presence goes, I think it's fairly consistent; you'd probably all nod your heads that we need a number. Yes, I see that's fair to say. I'm not sure what the right number is. There are people smarter than I am on a low-level presence policy in Canada and around the world, but I think those would be two recommendations we could come forward with.

Mr. Wartman, you talked a bit about attracting youth. Ms. Buhr, you could probably comment on this also. What do we have to do to get our kids into this sector? Are we doing a good enough job? What can we be doing better to attract our youth into this sector?

● (1025)

Mr. Mark Wartman: There are two areas, and one is just generally bringing youth in. We know the farms are no longer providing enough young people into this area, so our outreach into urban areas and our education around the impacts of agriculture and ag-bio are really essential. We're developing new programs in the area, and those programs need to be supported and sustained in outreach.

The second area—and I'm sure Mary will want to comment on this—is support for indigenous agriculture development. We are leading North America in terms of our programs at the Indigenous Land Management Institute and our new postgraduate diploma program. As somebody indicated earlier, they have a significant portion of land in this province and across the country. It is vitally important to enable and encourage and bring in those indigenous people, so we're working on outreach in that area as well. They also are the largest number of youth in our—

Mr. Randy Hoback: Mark, I don't think I have time to ask you, but if you've identified any of the barriers to having them come forward and could forward that information to the committee, that would be good.

Mr. Mark Wartman: Okay.

Mr. Randy Hoback: Bert, you looked as though you wanted to say something.

Prof. Bert Vandenberg: With regard to encouraging recruitment to the college of agriculture, people are saying that nobody wants to come. Well, what's more basic than food? Everybody is concerned with it at least three times a day in this country. That's where we miss the link all the time.

I'll go back to my point on that. If you consistently started to introduce the concept of nutrition in grade 3, people would understand where their food comes from. People have to understand that everybody needs to eat. The solutions to the argument about allowing transgenics or not is whether you are providing a food solution. You can't deny people food.

There are many answers to the question. There's a whole box of technologies. I think you just have to seriously educate people, in a very effective way, and I think it has to be earlier in life.

Mr. Randy Hoback: I apologize, but I've got to keep moving on. I've only got so much time.

The next thing I want to talk about is attracting investment. Mr. Potter, you talked about creating those partnerships. We've heard some conversations about how public dollars have shrunk since 1994, but we've also seen private dollars increase. We're not sure what those numbers ar—how they offset, or if we've had a net gain or not—but the reality is that we need both. We need to have both public and private investment. I think everybody would agree with that.

How are you going about tackling that problem with the centre you have here in Saskatoon?

Dr. Andrew Potter: More and more for us, it simply means being a bit creative. We tend to tap international sources a lot more than we used to, which is not a bad thing. Private money is tough these days. Over the last two to three years especially, as I think as everyone would appreciate, there hasn't been a lot of it around.

The other thing is that in the space I operate in, venture capital funding in Canada is problematic at the best of times, and over the last few years it has been virtually non-existent. Therefore, most of the technologies go south, where you don't have that issue with biotech.

Mr. Randy Hoback: Okay.

Ms. Hobbs, was it you who talked about the manufacturing going south?

Dr. Jill Hobbs: No.

Mr. Randy Hoback: Maybe it was you, Mr. Kerr, who mentioned that we're seeing stuff being developed here in Canada, and then all of a sudden it's being manufactured abroad.

Dr. Andrew Potter: That was me.

Mr. Randy Hoback: Oh, sorry.

Why is that? Why can't we keep that manufacturing here? What chases it abroad?

Dr. Andrew Potter: There is no single reason. It ranges from our regulatory system, which today is...“cumbersome” would be a polite way of putting it. The Canadian market is a tenth the size of the U.S. market, and they have an easier regulatory system down there, so you know where industry will go. It's a no-brainer.

That's one reason, but not the only one. The VC side of the coin, of course, is important as well. We've established very successful companies that have been bought out by others and moved south of the border.

● (1030)

Mr. Randy Hoback: So it's the regulatory and the manufacturing process. The research is being done up here, so obviously we've gotten it to a certain level. Then, as we try to commercialize it, you're saying it's just that much easier to do it in the United States.

Dr. Andrew Potter: It's commercialized where it makes the most economic sense.

I would argue that especially in Saskatchewan.... In our field, making vaccines, we have the last publicly funded fermentation operation in the Saskatchewan Research Council in Saskatoon, which is a phenomenal resource, so there are always very creative ways that one can do it within the country if there's a desire. I think we just need to find that desire and motivation again.

Mr. Randy Hoback: Thank you.

The Chair: Thank you, Mr. Hoback.

We'll move to Mr. Easter, and if it's okay with everyone, we'll just continue with the seven-minute rounds.

André, could I ask you to sit in for a second here, please?

Go ahead, Wayne.

Hon. Wayne Easter (Malpeque, Lib.): Thank you, Chair.

Thank you, folks, for coming. If there's one thing that I think Saskatchewan is well recognized for, it is the Innovation Place, the cluster, with the competitors actually cooperating together to move ahead. It is absolutely amazing what we've seen in that area from out here.

Randy asked this question as well, in a sense. One of the problems.... I believe it was Mary who said that biotech is far more than GMOs, but that is an issue that we're just not getting around. We aren't.

As was mentioned around the table several times, Bill C-474 is up for a vote this week. Since I put word out yesterday, I can tell you this morning that we'll be recommending that at least my colleagues vote against the bill. I'm getting a lot of not very friendly mail, but it isn't a bill that does what its regulatory intent was.

At any rate, we have to get around the idea that biotech isn't just GMOs and get to all the other good things it does. Personally, I think there are good GMOs and bad GMOs. I think the science of each has to be looked at on its merits. How do we do that? Am I right in saying that biotech is not just GMOs? How do we do that?

Bert, I think you were suggesting earlier that there was a need for a biological solution to improve quality and nutrition, etc. There are a lot of different areas we can go into. Good research needs to be done in organics, good research needs to be done in natural solutions, good research needs to be done in biotechnology and even in GMOs, but how are we going to get people to understand the positives of it all? It's starting to be a war out there, from what I'm seeing. We're only going to hurt ourselves as a country and hurt our ability to progress, and even hurt, as Brad said earlier, people down on the farm.

How do we overcome it?

Prof. Bert Vandenberg: Can I answer that?

Personally, I think it's a messaging issue. You need to have two dozen really good 10-second clips to educate the public. That's the only way it gets done these days. Do it through social networking or whatever.

Defining biotechnology as transgenics, to me, is like defining food as a hotdog. That's crazy. People won't relate to that. If you think about the biology of everyday meal consumption, you can come around with a fairly sophisticated education program. If you make it funny, it's even better. That's the only way I see the public changing attitudes.

I used to tell the organic farmers that the one problem with their plan is they're going to starve the planet. We cannot afford a 10% or a 20% productivity loss. It's essentially a market for people who have a lot of money.

Hon. Wayne Easter: The issue of hunger, though, is more than just production. It's transportation, it's storage, it's waste, it's poverty. It's all those other issues. However, I agree: we do need to be improving our yields.

There's been a lot said here this morning. If I may sum up some of the key points, almost everyone is suggesting that we foster biotechnology and all its components. There's a real need for increased public research and development. There's a real need for infrastructure funding, which I think, Mark, you said basically is going to have to come from the public sector. As well, we definitely need to move away from zero tolerance, which I suppose would have to happen at the bilateral international trade level.

Does that sum up most of the key points?

● (1035)

Mr. Mark Wartman: I'd like to amend somewhat the sense that it's just from the public sector. The public sector, the government, has an opportunity in dealing with the major corporations that work in the agricultural biotechnology field. It's not just about tax cuts, which of course ring well if you're politicking; it's also about structuring those taxes and tax regimes so that companies are encouraged and enabled to invest in these areas.

Today we're not getting that kind of investment. We don't get the kind of investment they get in the U.S. in our public education either. Rather than giving it back and having it go to the shareholders or the executive or the board, we should make sure that it's structured in a way that's going to build our national agenda, which I know is what you're engaged in trying to do, and build it in a way that it's going to have the impacts we need.

Hon. Wayne Easter: There's no disagreement from me there, Mark.

What perspective do all of you have on how we stack up against the rest of the world, in particular the United States, on research and development in relation to both the public sector and the private sector?

Secondary to that, one of the huge concerns in the food system at the moment is with the increasing amount of corporate control—there are a few big players—and with having to go back to the company for seed instead of producing your own. I think somebody mentioned—I believe it was you, Mary—that they're into encouraging public rights on seeds and the ability to reproduce your own, but all the GMO material really is going back to the company, and you are captive to that company. Their profits are increasing, and their executive salaries are going through the roof.

So how do we stack up against the world and how do we get a handle on controlling some of that corporate power that is imposing restraints on individuals?

Prof. William A. Kerr: We changed the system so that we were largely going to have private funding of biotechnology research because it is very expensive to commercialize these things and bring them forth to market, but we created a system whereby only the biggest of the multinationals can do this. I think that's a very consistent problem. It seems to me that the way you reduce that concentration is to go back, and as we did in pre-biotechnology days, and have the public sector able to put more products on the market directly. That will reduce the power of those companies. We can produce crops that can self-regenerate, and farmers can keep the seed. The private biotechnology company has no incentive to do that at all, but the universities and Agriculture Canada can do those things. That, to me, would be a way to reduce that concentration. We created a system whereby the private companies would take the bulk of the lifting and do that investment, and now maybe the result has been this great increase in concentration. Probably nobody saw it at the time.

● (1040)

The Chair: We'll now go to Mr. Lemieux. Pierre, you have about four minutes.

Mr. Pierre Lemieux: Thank you, Chair.

First, thank you very much for being here.

What tremendous testimony we've had this morning on this subject, which is critical, I think, to agriculture and to consumers. Consumers are the end winners in these types of discussions and in the products that result.

As I was mentioning before, biotechnology is not well understood. There are a lot of misconceptions, and that's one of the reasons we're having this study: to lift the veil and have a bit of public debate on this, so that people see that biotechnology is not necessarily GM, and even if it is GM, we don't need to feel threatened by it. We have processes and policies in place.

I think this is a very important tour we're doing as the agriculture committee. I think it's disappointing that the NDP are not here. We have a Bloc member, we have two Liberal members, we have Conservative members, and the NDP pulled out. I say that because we've had just a bit of discussion on Bill C-474, and it's very focused on GM only. Alex Atamanenko, who is the NDP MP, is a strong proponent of his bill. To me he's the one who should be hearing what we're discussing this morning, or at least one of his colleagues should be here to bring the word back to him about some of this great discussion we're having. I think it's unfortunate that they're not here.

Mr. Wartman, you made a comment that sound science should trump politics. Sound science is very important and should take a leading role over politics when we're talking about biotechnology. I'm wondering if you might be able to elaborate on that. Is there a particular issue that comes to mind that leads you to make that statement?

Mr. Mark Wartman: Actually, it's a general lack of understanding. We talked about it in terms of education—what is biotechnology? There are a number of national figures who have significant public impact and influence who, in my view, do and should know better, but who continue to promote a view that is anti-biotechnology, even though they're focusing primarily on GM. David Suzuki is an example. He has an inordinate amount of influence with the public. There has to be some other kind of education for the public, because you and I know as politicians that public pressure can be huge, and it doesn't necessarily have any kind of scientific base, so as leaders it becomes risky and sometimes costly to make those decisions based on science. It takes a lot of courage to do it—

Mr. Pierre Lemieux: Yes.

Mr. Mark Wartman: —but if we're actually going to meet the needs that we see in front of us as we're moving into the future, we must, as leaders, make good decisions based on sound science.

Mr. Pierre Lemieux: I'm not going to go on about Bill C-474. I'm just going to finish up this round, and then I have a bunch of other questions. If I run out of time, I'll be holding on to them.

Do you feel Bill C-474 is a threat to biotechnology and the agricultural sector in that sense?

Mr. Mark Wartman: Alex and I have had a couple of discussions about this over the years, and we don't have a shared view of the ag-biotech industry. I believe we have seen over many years, with the development of crops like canola, that there is tremendous positive impact, and I think that is being missed. It's being ignored. I'm really concerned. I want to see very good science used in the decision-making. I think that primarily we need to have a better understanding that ag-biotech is far broader than transgenics.

The Chair: Your time is out.

Mr. Pierre Lemieux: That's fine. I'll pick it up in the next round.

The Chair: We now move to Mr. Hoback.

I have been remiss. I should have thanked Randy for hosting us here in Saskatchewan. Randy and I have something in common. John Diefenbaker was born in my riding. We raised him and educated him and sent him on to bigger and better things in Prince Albert. That's an ongoing discussion we have down there.

Anyway, Mr. Hoback, go ahead for seven minutes.

● (1045)

Mr. Randy Hoback: Do you really want to get into that right now?

The Chair: No, that's okay.

We have a lot of fun with it.

Mr. Randy Hoback: We do. That's for sure.

In fact, there's a certain picture in Mr. Miller's office that would look really good in my office, I figure. It's of the Chief in his glory days.

Moving forward, I'm going to talk a little bit about the regulatory process, how we bring new crops to market, and what kinds of changes we need there.

Bert, I'm going to lean on you a little bit. Mary, I might lean on you a little bit, and anybody else who adds knowledge to it would be appreciated for sure.

As we see new crops being developed and new seeds being developed for different uses, both non-food and food, does the regulatory system we have in place address the concerns of bringing these products to market, whether the product is going to be used in the plastics industry or is going to be used for making a new vegetable oil or something like that? Is there a way we need to be looking at that properly?

Prof. Bert Vandenberg: Back in 1986, when the definitions were made, there was a proactive attempt to regulate the GMO industry, because people were very sensitive to it at that time, particularly in Europe. In Canada we managed to expand the definition so that any genetic change, even through traditional plant breeding, could be deemed as a plant with novel traits. I think that was a big mistake, because it basically created a level playing field at an unaffordable level for the minor crops. We have a huge problem there, and I've had personal experience with this. I tried to release a bean variety once, which was held up, and I eventually just abandoned it. The argument was that it was not grown in Canada and that it could be harmful to Canadians. Well, they've all been eating it in Mexico when the've gone on vacation.

There's some very poor science behind some of these regulations, and maybe that needs to be revisited. This, in a way, could also defuse the situation. Basically your argument for organic is that we need to go back to a more natural way. Why not create two paths to get to the problem of food? I think people could accept that.

Mr. Randy Hoback: So when we go to a new product.... Let's use canola.

Brad, this is a good product for you. We've had that situation. Canola has a nice base. It can be used for a lot of different things, including plastics. In that scenario, if we're developing a new type of plastic from canola, should it go through the exact same process to meet all the food requirements anyway, because of cross-contamination?

Mr. Brad Hanmer: Let's use the U.S. system and soy beans. A lot of the plastics that are derived are soy-based. The same soy goes into soy milk, and the oil goes into biodiesel and all sorts of things. I would say that unless there are proper tolerances for non-food uses that would not have the trait that would be proven safe for human consumption, first we would have to have a tolerance in place. Second, we would need infrastructure that would allow for segregation, and third, there would have to be enough of a market for the innovator of that technology to come forward.

I think, absolutely, Randy, that we are leaving a lot off the table for producers as a result of putting food, feed, fuel, fibre, and health all in one basket. People who are smarter than I am can address that, but I'd say absolutely.

Mr. Randy Hoback: Are there any other comments on that?

Prof. Bert Vandenberg: I think that's the way. We need to be logical.

Mr. Randy Hoback: Yes.

Dr. Jill Hobbs: Could I add to the point made earlier? Canada is a small market and it takes a long time to get registry approval, so some companies will move south of the border. I think that's a big issue. We're a much smaller population, and it's a smaller market to get our product commercialized in. If the regulatory burdens are too high here, then that investment is going to move to the U.S., and that's what we're seeing.

Mr. Randy Hoback: My goal is to identify hurdles and opportunities in the biotech sector as a whole. How can we remove some of these hurdles? If there is one hurdle you would tell this agriculture committee to get rid of, what would it be?

● (1050)

Dr. Mary Buhr: This is not my area of expertise, and I would bow to any of my other colleagues who could better answer, but what I continually hear is that although we are relatively supportive of the early stages of taking a new product and developing it, when that corporation or start-up is trying to move into full-time, long-term production, that is the valley of death where we continually lose those companies. This is the biggest gap that I've heard of. We support the start-up companies, but how do we help them to get through to that next step?

The Chair: Go ahead, Ms. Hobbs.

Dr. Jill Hobbs: I would say addressing the zero tolerance issue so that you can have differentiated supply chains and segregation that don't increase costs.

The Chair: Mr. Kerr, do you have any comment?

Prof. William A. Kerr: That it is the major thing. We need to be careful, but we also have to realize that zero is just impossible. We have to find a reasonable commercial way of doing this.

The Chair: Mr. Potter, would you comment?

Dr. Andrew Potter: We need communication and education. People aren't anti-GMO. I've yet to see a diabetic who wouldn't take recombinant insulin or a stroke patient who wouldn't take recombinant tPA. They know it's good for them.

Let's do a better job of educating and communicating the benefits.

The Chair: That's a good point.

Mr. Vandenberg, do you have anything further to add?

Prof. Bert Vandenberg: I like his comment. It comes down to identifying the message the public needs to hear about biology. It can be good or it can be bad. Dinosaurs were scary.

The Chair: Go ahead, Mr. Wartman.

Mr. Mark Wartman: I think the biggest problem is in the regulatory area, where so many of the companies are held up. That timeframe is huge. It's different from the U.S. timeframe, and the area of development funding is weak as well.

The Chair: Mr. Hanmer, would you comment?

Mr. Brad Hanmer: In addition to the tolerance thing, which is by far the most critical thing, maybe we need a government strategy not to be deemed as being self-fulfilling by the private sector. Genetically engineered crops do not equal environmental disaster. I think that's the message. People talk about the Frankenfoods. We lost this battle a long time ago. It's time we stood up and were proud of what genetically engineered crops can do for the planet and for our country. Do not be ashamed of our support as a country and as a government for genetically engineered crops. It's time to steer the electorate a little; unfortunately, they are is uneducated on this issue.

The Chair: Mr. Potter, I believe you said in your presentation that in Canada we produce a smaller share, percentage-wise, than we did in the 1970s, although we have better genetics today and we're producing more overall. Could you tell us why we've fallen behind percentage-wise?

Dr. Andrew Potter: I don't think that was from me. That's out of my—

The Chair: Was that not you?

It was Mr. Vandenberg. I'm sorry.

Prof. Bert Vandenberg: I think I said it.

You can attribute that to technology changes all over the world. People are trying to maximize—

The Chair: But why have we fallen behind in Canada? That's the part I'm trying to put my finger on.

Prof. Bert Vandenberg: If you go from 3% to 2.5%, you're still in the ball park, but it's still very low. We're not influential. The technology is going to be focused on the large and large-producing countries, meaning the U.S., China, and India. These are now huge influences in where technology goes.

The Chair: Okay.

Mr. Wartman, you made a comment in reference to the BSE, and being a cattle farmer, I know all about that. You talk about research and making sure that we're on the top on that game, and I agree 100%. There were some other factors that came in maybe a little after BSE, and one was the dollar. That's one thing that we can never control, whether we're doing the right thing in research or whatever. The bottom line was that BSE came at a time when we'd been increasing our herd size, the same as the pork industry did for years.

It really isn't a question. I just want to point out that other factors contributed to that. That was really all that I wanted there, but there's no doubt in my mind, whether it's in breeding genetics in livestock or what we feed them, that we certainly need that research and development in there, and I support that.

One of my questions comes from a lot of people, especially organic farmers in my riding. As a farmer I totally understand why we need, say, Roundup Ready corn, soybeans, wheat, or whatever it is. I have to be honest that one thing that I've never really been able to get my head around, and one that the nay-sayers to the biotechnology industry and GMOs in general use, is Roundup Ready alfalfa. Can somebody tell me why Roundup Ready alfalfa is needed or required or an advantage?

Can anybody speak to that? I think we all need to be able to address that question; I know I do.

● (1055)

Mr. Brad Hanmer: I'm going to talk. I know just enough about it to be dangerous, so this needs to be clarified. Maybe Mr. Vandenberg could help me out.

I'm led to believe that one of the key genetic markers of getting other traits into alfalfa is this. The way that it's been designed in the past is that the Roundup Ready event has a marker to bring forward certain other traits that come with it. I could be talking out of school, but that's one option.

The second option, as I understand it, is just a new invasive species that is now starting to take hold on a lot of alfalfa production in North America. It wasn't there previously, so there is a need for some sort of weed control in, specifically, alfalfa. As with agriculture in the last thousands of years, when you till the soil, species find ways to adapt.

The Chair: Then is it more about weed control than it is the actual genetics or requirement of the alfalfa itself?

Mr. Brad Hanmer: I believe so. This committee should clarify that.

The Chair: Are there any comments?

Go ahead, Mr. Vandenberg.

Prof. Bert Vandenberg: I'd say it's all about weeds.

The Chair: Weeds?

Prof. Bert Vandenberg: Yes. It may be dandelions.

The Chair: Okay.

Maybe it was you, Mr. Potter, who talked about research decreasing in the United States. Has our research here stayed even or on pace, good or bad, with the U.S.?

Dr. Andrew Potter: I don't think I said that either. Sorry.

The Chair: My apologies. It came from somewhere in the middle here. Was it Mr. Vandenberg?

Prof. Bert Vandenberg: No.

The Chair: No.

Is there any comment to that?

Dr. Jill Hobbs: I think it declined. The public sector portion of agriculture research has declined in a number of countries. I couldn't tell you, relative to the U.S., if we've fallen more or not, but that might be something to look into. Some of the sources I referenced in my speaking notes might have that information in there.

The Chair: My last question is this. When we were on our agriculture committee tour last April and May for our study on the future of farming and young farmers, we were in a research facility, which I'll just leave unnamed. A question I had for one of the researchers was on byproducts of agriculture, whether corn stover or whatever, basically for the creation of plastics and what have you in cars. I asked him what kind of research, if any, they had done to look at that area. When you have that kind of trash on the farm, you plow a certain amount of it back down, and it's good for your land, obviously, but when you take it away, you have to replace it. I asked him if they'd done that research and what the positive or negative results were. His answer was that they had done some research into it, and their initial findings were that it's not good.

Can anybody comment on that? Should we still be going down that road? Obviously we all like to see more products that we can make out of just about anything, but over the long term, is it really good for our land to be doing that overall?

● (1100)

Mr. Brad Hanmer: The petroleum-based fertilizer prices would dictate that. That's totally true. I've looked at a lot of these business opportunities that are putting the value of that stover or waste product at zero, and that is far from the truth. That is a very valuable product.

For sure, Larry, there is.... They are not doing it justice. They feel, on the biofuel debate, that you can just take the waste straw from Saskatchewan and make cellulose ethanol. You couldn't take it from me without a major cost.

Dr. Mary Buhr: Very briefly, the critical piece about this is that we have to ask the question and we have to ask the full question. What we have to do is evaluate exactly what you're talking about. What are the costs and benefits of both pieces?

Again, research for the public good is more likely to do that than commercial research, which is simply going to take the product and make something else to sell. We have to be able to support that fully fledged, completely rounded research and undertake the economic assessment, the biological assessment, and the long-term assessment of the value to the land.

That is part of the critical piece that has to be gotten across: that we're not just stealing one little bit and just doing something quick and dirty and simple. We are actually taking the time and spending the incredible amount of effort that it is going to take to be able to answer your question.

The Chair: Thank you.

Now we'll move on to Mr. Valeriote for five minutes.

Mr. Francis Valeriote: Thank you again.

I have two questions, and the first is for Bert. Can you, for the record and for those who read reports of this meeting, clearly distinguish in definition the difference between transgenics and genomics? You mentioned genomics earlier as a new opportunity.

Prof. Bert Vandenberg: Transgenics is basically taking a gene, a piece of DNA, from another organism and then splicing it into the organism that's your target and making sure that the gene is functional.

For instance, the herbicide tolerance gene may have originated in a bacterium. That bacterial gene is then spliced into a plant, and it's functioning because it's coming with a series of genes that allow it to function.

The genomic approach would be to understand the genes we have in the organisms we're already growing. I'll use lentils as an example. We may have six or seven species of lentil. We know from our own research that the wild species and maybe even the lentil itself are full of genes that we don't know anything about.

What we can do with genomics is go to an organism that's well characterized—one of the relatives of alfalfa is one of those—and if we know what genes are there, we can now start looking for those genes based on the DNA sequence in the crops that we work with.

Basically it's computerized biology. The cost is much cheaper, and it's going down every six months. That allows us to analyze what we have, rather than searching outside the organism. All you really need to do is have a little DNA test kit that could then identify the genes, and maybe you can find that it's already existing in the plants we are working with.

Mr. Francis Valeriote: If it's not, you would then have to introduce it from one to the other.

Prof. Bert Vandenberg: No, because there's a huge amount of biodiversity within the species—

Mr. Francis Valeriote: You're saying there's a huge amount of biodiversity within the plant itself.

Prof. Bert Vandenberg: My view is that if we take that approach and promote genomics and say we have an alternative for people who don't want to do it that way, it will lend value to the whole concept of preserving biodiversity. Canada has signed on to that treaty.

We don't live in a perfect world, and the oil industry is maybe a good example. Nobody is saying that we shouldn't have oil tomorrow morning. People are asking if we can just rearrange it a little bit so that it's a little bit better and has less effect. I think the same approach can be taken here. In some cases, we may need transgenics because there is no alternative, but we also have other alternatives, and these are compromise positions.

Mr. Francis Valeriote: Earlier, William, you mentioned maintaining appropriate buffer zones between crops. I want to know how realistic and practical that conversation might be.

Brad, Bert, or William, you may have an opinion. Is that something on which maybe the two different solitudes, as I call them, might sit down, talk realistically, and make some recommendations either to provincial or federal governments about learning to coexist? Can you talk more about that?

● (1105)

Prof. William A. Kerr: I'm no expert on the drift and the size of barriers you might need, but again it seems to me that it comes back to what tolerance there is. If you say you're organic and you have zero tolerance, it puts a huge cost on somebody, so again you've got to come up with a reasonable tolerance. What is the honest health risk of having a very small presence from genetic drift? I think that's the honest question.

Prof. Bert Vandenberg: The types of studies you are referring to have been done historically. This is where I go back to square one: understand biology. If the plants are self-pollinated, you're going to have a different buffer zone than if they were cross-pollinated by bees. The zone for alfalfa will not be the same as the one for flax.

We've just interviewed people who seem to have a done a lot of work on this in the flax industry, and it's stimulated by the whole transgenic issue. It looks as if 40 metres would be a barrier for flax. It may be a little bit bigger for alfalfa, because you have to understand the biology of the bees and how far pollen is going to transfer. It may depend on whether you use honey bees or leafcutter bees. It's basically a science question; once that question is understood, you can come up with reasonable guidelines that will create isolations that are a compromise position for everyone.

Mr. Brad Hanmer: Those are very good comments. Again, it's the tolerance issue.

To give another analogy, I'm growing a Genuity Roundup Ready canola. Let's say I have a grower beside me who's using some new form of whatever, and that species ends up being a plant on my side of the fence that current herbicides can't control. I can name you a few that are minor crops. Should we also tell him that the dill or the new camomile cannot be grown in my rural municipality because he can contaminate me as much as he will be? It all goes back to tolerance, and zero is not an option.

Mr. Francis Valeriote: Thank you.

The Chair: Thank you, Mr. Valeriote.

Mr. Bellavance, you have five minutes.

[*Translation*]

Mr. André Bellavance: Thank you, Mr. Chair.

I simply want to continue the discussion we started earlier on investments. We were saying that, in 2007, the private sector invested twice as much as the Canadian government in research. There is nothing to indicate that things are any different now. Even when we add up the amounts from the various levels of government, we don't reach the amounts invested by the private sector.

As university researchers, you are in the best position to tell us how this all works exactly. I suppose the approach towards research is different when the investment comes from the private sector than when it comes from the public sector. I am obviously not saying to eliminate funding from the private sector. I am not even saying that the private sector and companies will cunningly try to direct research towards a particular result that suits their needs. But, in the public perception, perhaps this is the type of question that comes up.

Since you work at a university, could you describe the process to me, right from the start? You are doing research on a given topic. The private sector provides part or most of the funding. What is the process you have to follow?

[*English*]

The Chair: Who would like to tackle that?

Dr. Mary Buhr: I can address it.

When we are doing public sector research, we start with a bright idea. We write a proposal describing that idea. It's evaluated by a public body. Typically it is also evaluated by other scientists to see whether it's a sensible idea. Then we get the funding, or we don't.

A private corporation, a private company, may know our expertise and ask us to answer a question for them, or they may ask us to work with them to develop an answer for a problem they have. In those cases, you work with them to decide the budget and how much work you can do. You tell them what you want to do and what it would cost, and they tell you whether they can afford to fund the research.

Let me give you an example from my own research. I deal with a firm for artificial insemination. I started looking at molecules in the sperm membrane to see how they would affect the sperm's recognition of the egg. That's basic, fundamental, discovery-level research. There are companies that sell semen for dairy bulls or for pigs or chickens. They thought they would like to be able to protect their sperm so that they could freeze that semen and use it for inseminating their females. I worked with the companies to look at ways to adapt the information I had from my basic research to better protect the sperm for freezing and thawing and to develop freezing and thawing methods for them.

That's the difference. If I hadn't done the basic research, I couldn't have developed the application, and the corporations wouldn't have been interested, and sometimes companies aren't interested anyhow. Sometimes they want to pay you just to answer a specific question for them, such as whether a machine works or not.

You can go to corporations, and the best operations we have in Canada are those partnerships through which we work with a company in partnership with a federal agency and get extra money into the private sector that will enable them to develop new products, make them more profitable, and benefit the overall Canadian industry. In these federal-public partnerships Canada does exceptionally well—much better than the U.S., according to my U.S. colleagues.

● (1110)

Prof. Bert Vandenberg: In my case, we've never been able to attract much money from companies. Because it was a small crop—peas and lentils—nobody was prepared to invest. However, we had some forward-thinking farmers who set up an organization. They taxed themselves and put the checkoff dollars into genetics. To date they've probably spent 50% of their research money on genetics. In exchange, we gave them the commercialization rights to all the genetics. That has created a different scenario, which is maybe unique. Maybe asparagus has the same thing, but in the grain industry, this is unique on a global scale.

When the issue of herbicide tolerance came in, transgenics was a difficult thing for our traders. We started on transgenics, but we stopped because of this difficulty. We did it for about three years. We were able to do it, but instead we went in favour of something that was basically mutation-based. We knew that a variation existed for herbicide tolerance in the natural population, so we were able to develop herbicide-tolerant lentils. In that case, we came to an arrangement with the corporation, so now we, together with the farmers and the corporation, are partners in this. In fact, we receive royalties, but not on seed. We receive them on herbicide use.

There are many creative ways to do things if you understand biology and have willing partners.

The Chair: Would you comment, Mr. Lemieux?

Mr. Pierre Lemieux: As you know, this meeting is public. Canadians can follow what we're discussing here today. For the benefit of the wider audience, I'd like to engage in a little discussion about the difference between GMO and non-GMO and what would fall under the biotechnology sector.

Professor Vandenberg, you mentioned that if you take a gene or a trait from outside the plant and put it in, this would fall under the GM category, because you're taking something foreign to the plant and injecting it to have better characteristics. If you study a plant's genetic matter and its genes and you see traits that would be worth enhancing, developing, or isolating, that would not be GM. That would be taking what's inherent in the plant and maximizing it to achieve the result you want. Is that a fair description? Do you want to comment on that further?

Prof. Bert Vandenberg: Yes. If we understand where the gene is, we can then go through the natural process of hybridizing. Without hybridizing, none of us would be here. In that case, what it allows us to do genomically is just to track the fate of the genes. For a very low cost, we can find out which progeny of the genetic strains we want to select. We can find out which ones are carrying the genes we want.

● (1115)

Mr. Pierre Lemieux: Right.

Again for the benefit of the wider audience that is not in the room today, I'd like to ask another question. I don't direct it at anyone, because if I ask one person, someone else might have a better example.

Can you give the public an example or two of a GM product that they might be using today? They might not even be aware that it's a GM product, and therefore you know the risk is very low because they're already consuming it and you see it has been well integrated into the consumer marketplace to their benefit. As well, could you perhaps give an example or two of a biotechnology type of product that's not GM and that the consumer is benefiting from, and that again is well integrated into the marketplace?

I'll just open the floor.

Mr. Brad Hanmer: Well, the best example is canola, if I may go back again to the canola industry.

There are three different types of herbicide tolerance, we'll call it, within the systems. The one, as Mr. Vandenberg said, is using a mutagenesis-type system, and the other two are using the traditional insertion of the gene into that plant. The two genes that are inserted into the plant are based on a cell's ability to metabolize ammonia. That's how it was discovered: in rinsing out the vats of a winery, they saw the mould wouldn't die, so they took it to the lab to find out why ammonia wouldn't kill it and they put it into the plant.

The other one was in a water purifier. They found out that it didn't do a very good job of purifying water, but in fact killed anything that photosynthesized. I grow those three types of canola on my farm. If you crush them into oil and put the oil in a canola oil jar and take it from the Loblaws or whatever to a lab, you would not be able to tell one bit of difference as to which one came from which one. Both are bringing in a new event, but it's within the plant. You would not tell any—

Mr. Pierre Lemieux: Okay. That's great example of a GM product widely accepted, canola oil. Consumers buy it in the store and have no issue with it.

Mr. Brad Hanmer: As well, if you had an organic oil or a totally conventional oil from Europe in that same bottle and took it to the lab, you would not be able to tell which one is which. They are all canola oil.

Mr. Pierre Lemieux: Right, so that's a great example.

Now how about some biotechnology examples that are not GM in their nature that the consumer is benefiting from? Do you have any examples there?

Prof. Bert Vandenberg: Go ahead. There are vaccines.

Dr. Andrew Potter: Most pharmaceutical compounds today are examples of genetically engineered products that they will not only ingest, but inject.

Mr. Pierre Lemieux: Do you have some concrete examples?

Dr. Andrew Potter: Any vaccine given to either an animal or a human today is a biotech product.

Mr. Pierre Lemieux: Right. That's going to be part of our visit this afternoon to VIDO-InterVac.

Dr. Andrew Potter: You'll see more of that.

The Chair: Are there any other comments?

Go ahead, Mr. Kerr.

Prof. William A. Kerr: I might have the number wrong, but I think that GM soy, in North America anyway, is found in about 40% of processed foods that you buy. Soy is prevalent in any kind of processed food that you buy, and there are no problems.

Mr. Pierre Lemieux: I come from eastern Ontario, right beside Ottawa, and there was a time when soy was not grown there, just because it didn't have the traits for the climate found in my region; now it's an extremely important product that's grown by farmers across my riding, just because the plant has now been modified to be better suited to the environment in eastern Ontario.

It's good to know that the product is being integrated now into processed foods quite safely, and the consumer is quite happy consuming it.

The Chair: We'll have one last comment.

Goahead, Ms. Buhr.

Dr. Mary Buhr: One very simple example, as well, of a non-GMO biotech is almost any of the plants that you buy to put in your garden in the springtime. They have been developed by tissue culture, which is growing identical plants from the cells of one plant. That's biotech, but that's not GMO. I'll bet you that in any garden store where you buy your pansies or your coleus or umpteen dozen different plants, those plants are produced through tissue culture. That's biotech; it's not GMO.

● (1120)

The Chair: Thank you.

Okay, we'll have one last comment.

Mr. Bert Vandenberg: I can give you one more food example. This is very common in the world of legumes. The legume crops that I work with were not very conducive to using the transgenic technologies because of technical difficulties. Our position was therefore to transfer genes from relatives of those crops, so we've transferred disease resistances from some of the relatives of the bean crop. The result of that has been going through the tissue culture system and rescuing embryos. We've been able to produce new bean varieties for which we use fewer pesticides.

The Chair: Thank you.

I didn't mean to cut you off there. I thought you were finished.

Mr. Easter, you have five minutes.

Hon. Wayne Easter: Thank you, Chair.

I wonder if we might suggest to our Library of Parliament folks that they could do some research for us on the public funding of research. We'd have to go back 25 years, because I think it was in 1996 or so that we went to matched funding. We'd need the comparison between public research, private research, and the combination of the two in Canada back over 25 years, vis-à-vis that in the United States and maybe some other country, just so we'd have some data to work from.

We're growing canola on P.E.I. now too, and it's a non-GM canola. We have a premium market in Japan, which allows both GM canola and non-GM canola. The company that imports this product is very fussy. They come over to P.E.I. and inspect whether there's potential for contamination from GM canola and so on.

That brings up the issue of labelling. I forget who it was, but somebody mentioned it earlier. If they weren't labelling GM products in Japan, we wouldn't be in that market. That's for sure.

Where are you folks on labelling? It's a controversial issue.

Dr. Jill Hobbs: I could address that issue. The controversial issue with labelling is the question of mandatory versus voluntary.

I'm arguing that there is no such thing as an average consumer. Markets are differentiated. I would be on the side of voluntary labelling. If you have companies that wish to sell products that are GM-free, and there's a market premium for those, then they would label them and consumers could move to those products.

I think having a clear set of organic standards now in Canada has been helpful in terms of defining what organics are. Sometimes having standards that define the products is an important part of labelling.

The big challenge we see in Europe is moving to mandatory labelling, which in essence imposes costs on anyone who wants to prove that their product is not GM and so forth. I think voluntary labelling allows consumers who want to pay for that product to go into the market and buy it.

Hon. Wayne Easter: Does anybody else have anything to add on that? I think somebody said earlier that people don't read labels anyway.

Go ahead, Andrew.

Dr. Andrew Potter: It's just a comment. I don't think one can talk about communication without that sort of information being available to a consumer. Let them decide, at the end of the day.

Hon. Wayne Easter: I heard someone say the other day that if it's so good, why doesn't somebody put on "certified GMO product" in big bold print? I thought that was an interesting comment.

The other side of the coin—and some of you alluded to it or mentioned it—is how slow and cumbersome our regulatory system is versus anybody else's. Whether it's on an immigration question or on AgriFlex or anything else, if you want to see people frustrated with the regulatory side, talk to any one of us in our MP offices. We can tell you how bad it is.

Why is that? It doesn't matter whether it's CFIA.... Andrew mentioned AgriFlex. To me, an application under AgriFlex should be a simple six-week affair. What's your experience there? It is something we have to address as a country, because we are losing out everywhere else because our system is so slow. I can understand on the research side why companies go to the midwestern United States. That's a big market. If we're going to do it, we have to look at it in microclimates like P.E.I. or the Annapolis Valley, or like the climates in southern or northern Saskatchewan.

Who would like to answer?

● (1125)

Dr. Andrew Potter: On AgriFlex, I don't know what to say. We have an application in, and it's approaching a year. I haven't heard a word.

There are other agencies. Genome Canada was mentioned by somebody. They move very quickly, so it can be done. I don't know why that particular one is....

On the regulatory side, CFIA has become so risk-averse that it's not a question of how much risk there is anymore; we're told to prove it's safe. Well, you can't do that.

Hon. Wayne Easter: I can assure you that the Larsen plant in Nova Scotia basically closed down because of one CFIA inspector who was dotting the i's and crossing the t's. It was impossible.

The Chair: Go ahead, Mr. Wartman.

Mr. Mark Wartman: Also on the CFIA, I have a complete lack of understanding of why they would go to a long list for specified-risk materials in the beef industry when we have had a North American industry for decades and we're supposed to compete with the U.S. market, where they're doing a short list of specified-risk materials. Why not take that extra step and look at the impact on our industry? There was no moving them; that was their decision, and that's the way it was going to be, period.

The Chair: That was pushed for by the beef industry to try to qualify for some of those foreign markets they went after. Was it successful? I'm not convinced that it was, but I think that was the reason behind it.

Mr. Hoback, you have the last five minutes.

Mr. Randy Hoback: Thank you, Mr. Chair.

This has definitely been educational. I think a lot of us have learned a lot more about what's going on. I really look forward to the tours this afternoon. I think they will open our eyes. When you can touch something, you can get a better feel for what's actually going on.

I want to touch on the education side of things, and on whose role it is to provide that education—not only education of consumers, but of our students, bringing the kids forward.

Mary, maybe I'll start with you. How do we share that role? Whose role is it to educate the consumer? Whose role is it to educate the students?

Dr. Mary Buhr: Legally it's obviously the province's role to educate the students. We in the university sector certainly take that responsibility very deeply. We also understand that we are a trusted source of knowledge transfer. All of our faculty are asked to do three things in their job descriptions: teach, do research, and do what we call "service." A lot of that service is literally going out and working with people in these various industries. In our college we do that a lot. We're out on the ground.

Are we really educating consumers in the way you mean? I would say we're not good at that. We clearly need help with that. In these kinds of conversations, misunderstanding of the term "biotech" is exactly the same as misunderstanding the term "agriculture". When you say "agriculture," over 90% of the Canadian population see a farmer in overalls standing in the field with a pitchfork. They don't see GPS or banks. They don't see the high-tech research institutes.

It is this need for communication to the public about the matters that are the most important to them that we really have to get across. The food riots that we're seeing around the world are going to really bring that.... We have an opportunity and we need to take it, but we need to work together on that public communication.

● (1130)

Mr. Bert Vandenberg: I learned something very interesting at a meeting at the University of Wisconsin a couple of years ago. They were trying to teach the general public about vitamins and healthy eating back in the 1930s. They hired an artist and a writer at the college level to get that across to the public. You can see those paintings if you go there. They're very interesting. It was a communication exercise, and we don't take it seriously enough.

Mr. Randy Hoback: Brad, you talked about reducing your cereal acreage at your farm. I've talked to some of the researchers, and there are concerns that we're not seeing any research on the cereal side of things, such as on wheat and barley.

How do we prevent some scenarios that are not healthy in the environment, where we see canola, canola, canola, or rotations being pushed because of the lack of profitability in the cereals? What would be your suggestion?

Mr. Brad Hanmer: It might take a ride in a pickup and a case of beer to really get down to the bottom of it, but I'm going to take a stab at it.

The genome is done. Are we going to use genetic engineering on wheat globally, yes or no? If the answer is no, you won't see the private industry come in for the reasons we've discussed and do the proprietary traits for profit. If we're going to have that as the scenario, public breeding is going to have to take hold in the cereal grains.

Publicly, some of the big guys have said that they're going to double corn yields, and they put that on the wall. Whether they can get there or not, I don't know, especially with aquifers drying up in the Midwest and all these things, but let's pretend they do. Where are Canadian farmers going to be globally, if they can't compete when corn yields double?

In Saskatchewan we will be relying more and more on pulses and oilseeds, Randy, to make profitability. We could have corn varieties that are bred for cold tolerance, which are coming. One hour north of Regina we're putting in 640 acres of a 2,050 heat unit Roundup Ready corn. We bought a corn header and a corn planter. That's going.

Agronomically, the best suited crops are cereals, as you know. I believe firmly that has to come from public funding, because you will not have that event in wheat. Maybe Bert wants to disagree or agree with that.

The Chair: Does anyone want to comment?

Mr. Mark Wartman: I'll just note that we have done some exceptional research in barley over the last few years, and it continues.

There is cereals research going on in our institution. There's also research going on in terms of wheat midge tolerance in the wheat area, so it is happening. If I could pick up on what was being said, it's not happening at the levels that might produce much more effective cereal crops here, crops that would be much more competitive.

Dr. Mary Buhr: I would like to say a few words on wheat as well.

Certainly the major global corporations are betting on GM wheat. They are going to take over and own a lot of those. At the university we have released a new variety of durum wheat. We have released three new varieties of wheat over the last year from researchers at our university. We're clearly doing that kind of work, but it's not a profitable crop for the producers.

Part of what we have to do is get back into that profitability piece so that it really is an effectively used crop. Otherwise, if we don't continue to breed in the public sector and make it a profitable crop in the producer sector, our consumers are going to be paying whatever the major global corporations decide they need to be paying for GM wheat. That's what they're betting on.

If we're not doing the disease resistance and we're not doing the drought and wet tolerance and we're not growing a wheat crop for a specific end product use—durum wheat for pastas, or whatever—then it's going to be in the hands of the corporations. That's a decision that has to be made one way or the other, but it needs to be made thoughtfully. We must not just let it happen.

● (1135)

The Chair: Thank you very much to all of you for being here.

I think this morning is a good example of the kind of meeting we can have when we take out the sentimental, rhetorical, and political aspects and just sit down to facts. For me, it was very educational. I know a lot more about biotech and GMOs than I did earlier this morning.

Thank you very much to all of you. I'm looking forward to our visit this afternoon. I'm sure we'll see some of you, if not all of you. I'm not sure who is going to be there.

Thank you very much again. I found it very good.

To the committee members, I believe we're having lunch here. I'll remind you that at one o'clock sharp, the bus is leaving. We're not boarding it then; we're leaving then.

The meeting is adjourned.

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