HOUSE OF COMMONS
CHAMBRE DES COMMUNES
CANADA

Standing Committee on Agriculture and Agri-Food

AGRI • NUMBER 105 • 1st SESSION • 42nd PARLIAMENT

EVIDENCE

Thursday, September 20, 2018

Chair

Mr. Pat Finnigan

Standing Committee on Agriculture and Agri-Food

Thursday, September 20, 2018

● (0845)

[*English*]

The Chair (Mr. Pat Finnigan (Miramichi—Grand Lake, Lib.)): Welcome, everyone, to our committee meeting this morning, as we continue our study on advancements in technology and research in the agriculture industry that can support Canadian exports.

Before we start, I certainly want to welcome Mr. Shipley, and also Mr. Terry Duguid, who is replacing Eva. We're certainly wishing her mom all the best. I know she had some health issues.

This morning we have with us Mr. Andrew Casey, president and chief executive officer of BIOTECanada. Welcome, Mr. Casey.

[*Translation*]

We will also be hearing, via video conference, Mr. Simon Dugré, who is the director of the Centre d'innovation sociale en agriculture.

Good morning and welcome, Mr. Dugré.

Can you hear me?

Mr. Simon Dugré (Director, Centre d'innovation sociale en agriculture): Good morning. Yes, I can hear you very well, thank you.

[*English*]

The Chair: We also have, from Richardson International Limited, Jean-Marc Ruest, senior vice-president, corporate affairs and general counsel.

[*Translation*]

Welcome, Mr. Ruest.

Can you hear me?

Mr. Jean-Marc Ruest (Senior Vice-President, Corporate Affairs and General Counsel, Richardson International Limited): Yes, very well, thank you.

The Chair: Thank you.

[*English*]

We will start with opening statements for seven minutes.

We can start with Mr. Casey, if you're ready. You have up to seven minutes for your opening statement.

Mr. Andrew Casey (President and Chief Executive Officer, BIOTECanada): Absolutely.

[*Translation*]

Thank you, Mr. Chair.

[*English*]

Thank you to the committee for this fantastic opportunity to testify on this very important subject. I understand this is your last hearing. Hopefully we can help out at the very last day and get you on the road with some great suggestions.

I thought I might start by introducing BIOTECanada, not because I think we as an organization are particularly interesting but I want to focus on our membership. We have 250 member companies. They are across the country and they occupy a number of important baskets or buckets.

We have a large health care component. That's the area where you would see large multinational pharmaceutical companies, but also a lot of small companies that are developing new drugs, medicines and therapies to keep people healthy. We also have in our membership industrial, agricultural and environmental biotech companies. They are also right across the country, usually in clusters spread out in the different provinces. Each province focuses or has a specialty. The companies are usually around universities or research institutes, as you would expect.

What are they doing? They're doing biotechnology, which is essentially taking living organisms and turning them into useful things. The earliest form of biotechnology are things that are near and dear to most of our hearts—beer, wine and bread—but we've come a long way since then. They are developing biotechnology solutions for the world, and I think the key here is to understand what the challenge is that they're addressing.

When you look at the world we see a global population growth. We expect to be somewhere in the nine billion person area probably within the next 30 to 40 years, maybe even more, maybe 10 billion. That brings with it some enormous challenges, not the least of which is how we feed all of those people on a landmass that is shifting on us, in the sense that some land is becoming less available and some land is becoming more available. Part of the reason for that is the climate is changing.

Why is the climate changing? We know that with the global population growth along comes a massive economic growth, particularly in countries like China and India, where you see those economies really taking stride and ramping up. With that economic growth comes the burgeoning middle class, which spends more money and demands more consumer goods, and that proliferates the economic growth.

That kind of economic growth puts enormous pressure on the planet as well, as factories manufacture more goods and more people waste. We have to find ways to address those challenges. We cannot keep living the way we have. We have to change fundamentally how we manufacture, how we grow, how we live our lives. Ultimately, the planet is going to be just fine, as the dinosaurs can attest. It is us that are in danger. We have to find a way to save ourselves and biotechnology is the solution that's going to help get us there. That seems like a daunting challenge and, of course, it is and we must address it.

It's also an enormous economic opportunity for a country like Canada. In the agricultural space, when you look at our history, we are in a really fantastic space to bring forward amazing solutions for this global challenge. We have a lot of companies in this country that are building on that history of innovation and also our agricultural heritage and developing some fantastic solutions.

I'm going to use two to illustrate the point because I think it's the most effective way. One is a company called Agrisoma. Agrisoma takes a genetically modified mustard seed or a version of a mustard seed. That seed can be grown anywhere you cannot grow other plants. You can grow it in fallow fields. You can grow it in places where there's not enough nutrients in the soil, where there's not enough sunlight, not enough moisture, so that spreads out exactly where you can put this thing.

Once you've grown the seed, the seed is crushed and you extract the oil. The oil is processed into jet fuel. There is no fossil fuel in the mix. The jet fuel can go straight into a jet engine and the plane will fly. There's the NRC plane. Many of you as you've gone out to the Ottawa airport have seen there's a little hangar off to the right as you pull into the airport. There's a little jet in there and there's also a sniffer plane. They've flown the jet with the fuel. You don't have to alter the jet engine in any way. They send a sniffer plane behind it and because there's no fossil fuel in the mix there are no emissions.

It's a fantastic story that gets even better. If I go back to that seed I told you about, once you crush it there is meal that's left over afterwards. That meal then gets put back into the food chain. It's used for protein to feed cattle and other animals.

It's a wonderful life cycle. You use the whole product. It's put into fields, and so farmers, if they have a field in fallow, can use it to put nutrients back into the soil while growing the seed, and it provides an income. Obviously, from a transportation and from an environmental standpoint there's a fantastic benefit, and then it goes back into the food chain. That's a great example I think, but as you hear that story you can start to understand all the different parts of government that have oversight from a regulatory standpoint.

You have transport, environment, agriculture, and at the very end you have Health Canada through the Canadian Food Inspection Agency, which takes care of the genetically modified meal that's going back into the food chain.

The other example I'm going to leave you with is a company called Okanagan Specialty Fruits, out in the Okanagan Valley. It figured out a way to stop apples from turning brown. I'm the father of a 12-year-old and I would like him to eat apples, but he won't take any apples to school because the minute they're cut at home, they turn brown. Kids don't eat them. You can't put them in fruit salads at school, and sometimes you can't give them to kids because they don't want to eat brown apples. Thousands if not millions of pounds of apples are basically discarded every year because they get bruised and turn brown. This is a way to stop food waste.

Like you, when I first heard this story I wondered if this was really all about just stopping an apple from going brown. I got the idea that this may not be the ultimate goal, and it's not. If you look at that company, the other thing these scientists and orchardists discovered is a way to stop something called “fire blight”. Fire blight is a fungus that will rip through an entire orchard and destroy it if not controlled. Using the same sort of technology, they have figured out how to stop that, and that's what they're working on. It's a step change. You develop certain things and you improve on what you've already discovered and use that for further discovery.

When we think back to the challenge we're facing as a civilization in having to deal with the global population and the need to be more efficient and effective in how we grow, manufacture and live our lives, these are the types of solutions that are going to help us get there. We have a fantastic history of doing it through innovation in our agricultural departments. We also have a great amount of support from government. As you've probably heard, there are a number of programs that have been enormously supportive. The most recent large one is the protein industries supercluster, which is going to develop a lot of fantastic innovation out of the Prairies. It's a great development. It's an exciting industry, and it's a great opportunity for Canada to be at the forefront and be a leader in solving some of these problems.

I will leave it at that, Mr. Chair. I thank you very much and look forward to the questions.

● (0850)

The Chair: Thank you, Mr. Casey, for the opening statement. It was very interesting.

● (0855)

[*Translation*]

I will now yield the floor to Mr. Jean-Marc Ruest for seven minutes.

[*English*]

Mr. Jean-Marc Ruest: Good morning.

[*Translation*]

It's a great pleasure for me to take part in this morning's meeting from Winnipeg.

[*English*]

On behalf of Richardson International Limited, I'm truly grateful for the opportunity to appear before you to address an issue that is both critical and timely in Canadian agriculture, namely advancements of technology and research in the agriculture industry that can support Canadian exports.

To provide context to my comments, I think it's important to provide a bit of background information on Richardson International. Richardson International was founded in 1858, which was 10 years before Confederation, by James Richardson in Kingston, Ontario. The company continues to be privately held by the Richardson family and is headquartered in Winnipeg. It has grown to become Canada's largest grain company with operations spanning from the sale of inputs to producers who are required to grow their crops, to the purchase of those crops for export to over 50 countries around the world, or for further processing in our own canola oil processing and packaging plants and oat processing plants situated in Canada, the United States and the United Kingdom.

This background is important, I think, because we have long been at the forefront of Canadian agriculture and the export of Canadian grains and oilseeds, and more recently, processed grains and oilseeds. Our experience has shown us that when it comes to the export of Canadian agricultural commodities, we are operating in an extremely competitive global marketplace.

Unfortunately, when we look objectively at that global marketplace we have significant disadvantages to contend with. Our cost of production, in particular labour, is high. Our growing season is short. Our winter climate is harsh. Our production is far from tidewater and the geography required to get there is challenging. We have also, unfortunately, in the recent past had significant rail service failures that have negatively impacted our reputation as reliable suppliers.

How, then, can we possibly compete and succeed given these significant challenges? The answer is the very issue that you are considering: technology and research. Technology has provided, and continues to offer us, the possibility to increase the quantity of grains and oilseeds produced in Canada, thereby reducing the overall cost of production. It offers us the opportunity to improve the quality of grains and oilseeds and to reduce the environmental impact of farming, in particular carbon emissions.

Canada has world-class public and private researchers, and we have producers who embrace new technologies in inputs and agronomic practices. However, this advantage that we have, that we need to be able to compete in the global market, is currently, in our opinion, under very significant threat domestically and internationally.

Our industry is under attack domestically by individuals and groups who want to eliminate the use of certain products, the most recent being glyphosate and neonicotinoids, in Canadian agriculture. They do so by making alarming claims that are not borne out by rigorous scientific analysis as an attempt to disparage the innumerable reports that confirm the safety of these products.

Unfortunately, too few people, including government, speak up against these tactics, and as a result science and the benefits of technology and research in food production are frittering away.

In the case of a recently announced eventual ban on neonicotinoids, we see a regulator, the PMRA, Pest Management Regulatory Agency, changing its approach to product registration, we believe, as a direct result of this pressure. Let us be clear. This is not an attack limited to glyphosate and neonicotinoids. It is an attack on technology, science and modern agriculture.

While government's failure to actively promote and support the safety of these products and technologies is problematic, things get significantly worse when provincial and municipal governments jump on the anti-technology bandwagon by adopting measures such as cosmetic pesticide bans, which, again, are not supported by scientific fact. You may ask what cosmetic pesticide bans have to do with Canadian exports of grain and oilseeds. The connection is actually quite direct and leads to my second point: the international attack on Canadian grain and oilseed exports.

● (0900)

It is obvious that we are currently in a phase of global trade protectionism. While the most obvious trade barriers are typically monetary tariffs imposed on imports, in agriculture, equally effective if not better barriers are the non-tariff trade barriers, which often manifest themselves through phytosanitary regulations or technology approval processes.

For example, countries will use their domestic regulations to limit the quantities of pesticide residues—known as maximum residue levels or MRLs—on Canadian crops to impossibly low levels as a means of preventing the entry of Canadian crops, usually at times when the importing country has a domestic production surplus.

Canada's ability to challenge the legitimacy of these measures on the basis that they are unreasonable and not backed by sound science is completely eviscerated when, on a domestic level, we have regulations that prohibit the use of these products on lawns on which we walk. How could we say on the international front that regulatory decisions must be science-based when we fail to do so domestically?

I opened my remarks by saying that the issue of advancements of technology and research in the agriculture industry that can support Canadian exports is a critical and timely issue. We are truly at a tipping point. We need to decide, from a policy and strategic perspective, where we stand on the development and application of technology and research in agriculture. We are currently, in our opinion, veering down a dangerous path where we say that we support technology and research in agriculture, but then fail to stand up to their domestic and international opponents and, more significantly, adopt regulations that run contrary to the primacy of scientific basis. Without a clear and conscious decision on where we stand, the current and future advantage that Canada has in the fields of technology and research in agriculture will inevitably be lost.

As a result and in closing, rather than considering the advancements of technology and research in agriculture that can support Canadian exports, I urge you to consider the issue through a somewhat different lens, namely the support required for advancements of technology and research in Canadian agricultural exports.

Thank you very much for your time and attention.

[*Translation*]

I thank you once again for the opportunity to take part in this meeting.

The Chair: Thank you, Mr. Ruest.

I will now give the floor to Mr. Simon Dugré, from the Centre d'innovation sociale en agriculture.

Mr. Simon Dugré: Thank you, Mr. Chair.

First, I would like to thank the Standing Committee on Agriculture and Agri-Food for this unique opportunity to introduce the work of the centres collégiaux de transfert de technologie, the CCTTs, the college centres for technology transfer, of which the Centre d'innovation sociale en agriculture, or CISA, is a part.

Forty years ago in Quebec, research at the college level was just beginning. Today there are more than 59 college centres for technology transfer located throughout Quebec. Our mission is to support industry in its innovation efforts in order to help it develop and be more profitable. The partners involved must contribute effectively to the complementarity of this mission.

CISA is linked to the Cégep de Victoriaville, which is located in the Centre-du-Québec region, a rich agricultural area. I would say it accounts for about about 15% of Quebec's production. We are funded by the Ministry of Education and Higher Education, since in Quebec, the CEGEPS are the first level of higher education. We also receive some core funding from the Ministry of Economy, Science and Innovation.

CISA is a young centre; its status was recognized in 2009. That year, Quebec and even Canada were getting over a crisis in the pork sector. In the Centre-du-Québec, several producers had been affected by the consequences of the crisis. At the psychological level, producers were dealing with fatigue, and the suicide rate among them was alarming. Social innovation allowed us to design innovative solutions.

What is social innovation, and what is our definition of it? It consists of any idea, approach, intervention, service, product, law or organization that provides an appropriate and sustainable response to a social, economic or environmental need. I'm talking here about a solution that has been adopted and provides a community with measurable advantages. It is a systemic solution with a transformative scope. It's a methodology that supports innovation. In our opinion, when people work with technological and social innovation right from the outset to develop programs and meet the needs of enterprises, those innovations allow the enterprises to acquire work methods that are much more productive, commercially. That is in fact one of our first recommendations.

According to Grand Challenges Canada, the joint work of organizations that specialize in social innovation, together with technological enterprises and commercialization firms, is likely to allow innovations to have a worldwide reach and viability, if, at the outset, organizations are developed in parallel with appropriate social and commercial innovations. In this regard, a good example is the iPhone. That is exactly what happened there, several years ago. At the social level, people are now even studying the impact of the iPhone on human beings.

I'll give you a concrete example. We are currently developing a self-driving, electrical weeder in co-operation with another CCTT, l'Institut du véhicule innovant, which is associated with the Saint-Jérôme CEGEP, as well as with the ELMEC company, from around Shawinigan, which specializes in the design and manufacture of electrical charging stations. The CEO of that company loves the Tesla model, and decided to ask a CCTT with a technological vocation to work with him in developing an innovative solution. We were contacted and we got together with this business as well as with that college centre for technology transfer in order to determine, with them, the social and technological needs of the agricultural producers, who will be using this technology in the near future.

Our project was funded in part by a small Ministry of Education and Higher Education program whose objective is to support transfer and social innovation. We received about $100,000 for a project that represents, in total, more than $3.5 million in the context of federal government technological programs. I'm referring here to NSERC and anything involving the CFI in connection with infrastructure.

● (0905)

Our work has now taken this project to the prototype phase. The Centre d'innovation sociale en agriculture is now an industrial partner, together with the Victoriaville CEGEP, in testing this product at the pre-commercial level on the land close to our research infrastructures. Consequently, we hope to see a strengthening of technological innovation capability through the contribution and joint efforts of social innovation from the very outset of the creative process.

I'd like to add a few brief words about the Cégep de Victoriaville. For 25 years, this CEGEP has been providing training to agricultural producers in the areas of traditional agriculture and organic farming. We have developed an organic farming diploma, with a new three-year technical program leading to a DCS in agriculture.

I'd simply like to add that the joint presence of research and college-level training has allowed us to attract a large number of students to our college. About 15 years ago, the Cégep de Victoriaville had about 15 students in its agriculture program. Now we expect to have 250 students by 2021. The federal and provincial governments provided $20 million in funding for our infrastructures, which were delivered this year.

Despite this, we still have some important challenges to meet regarding the functioning of these devices and infrastructure. We are constantly looking for funding from our partners, be they at the municipal, federal or provincial level. It's important to fund training to properly meet the short and medium-term needs of enterprises. We would like to see the federal and provincial governments make that one of their priorities.

We would like you to note the importance of supporting the Institut national d'agriculture biologique of the Cégep de Victoriaville, as well as other infrastructure needs in Quebec.

In closing, I would like to mention labour. In my opening remarks, I spoke about the psychological needs of producers. I'd also like to address the well-being of Quebec producers and processors. Currently, market pressures—

● (0910)

The Chair: Unfortunately, Mr. Dugré, we are out of time, but you will have an opportunity to answer our questions.

Mr. Simon Dugré: That's fine.

The Chair: Thank you for your presentation.

Mr. Simon Dugré: Thank you, Mr. Chair.

[*English*]

The Chair: Mr. Shipley, before we start, I just want to highlight that you were part of that motion when we first introduced it, when you were on the committee way back, so it's fitting that we have you here on our last day today. Again, you are not just a replacement this morning, you are now permanent, so welcome to you.

[*Translation*]

Mr. Berthold, you have six minutes to put your questions.

Mr. Luc Berthold (Mégantic—L'Érable, CPC): Thank you, Mr. Chair.

I want to thank our three witnesses very much for being here, either via video conference or in person.

Mr. Dugré, I want to say good morning to you. We live quite close to one another. I'm happy you are here with us, and pleased to discover that agriculture in the Québec region is doing so well, particularly at the Cégep de Victoriaville.

Today's topic is at the very core of our study. It's a topic we probably should have addressed a bit earlier. There are two competing trends.

Mr. Casey, you said in the beginning that the population, and demand, were growing. The answer lies in technology, but the trend is for people to reject technology. It doesn't make sense.

How did this conflict develop? What caused the gap? Why do people no longer trust technology, Mr. Casey?

Mr. Andrew Casey: I'll answer you in English, so that I can be more precise.

[*English*]

That's entirely correct. These are fantastic innovations. They are based in science. They are moving very rapidly.

Generally speaking, people are always hesitant about new things that seem incomprehensible. In our case, we're talking about biologics and using biology to change structures of different things. I think the key to that is to ensure that our science and our regulatory system is as stringent and strong as possible. In this industry's case, I see it as a competitive advantage for our industry because Canada is world renowned for its regulatory capacity. It struggles sometimes to keep up with the pace of change, but it is well known around the world as one of the leading jurisdictions from a regulatory standpoint. If our regulations are based in science and are science-driven, then I think we stand a very good chance of changing minds. Over time, people will understand.

As an example, I know that the sun is bad for my skin. I know that if I put sunblock on my skin it protects me against the sun. Is it possible that in 10 years a study will come out that says sunblock causes a cancer of some sort? Absolutely. What I do know now is that it protects me from the sun. That's what the science tells us.

It's the same thing when you're talking about genetically modified foods or any other type of produce. Science tells us that it's absolutely safe. It's been consumed for hundreds if not thousands of years. When we're talking about food that is genetically modified, we're essentially doing a more surgical version of what we've done naturally over hundreds of years. If you look at corn from a thousand years ago, you'll see that it looks like a little grain of wheat. It does not look like the corn we have today, but over time, we were able to selectively breed and grow the kind of corn we have now. Now we're doing the selective breeding in a much more refined and specific way, which provides you with something more quickly, and it's based in science.

[*Translation*]

Mr. Luc Berthold: Mr. Ruest, I'll follow up on Mr. Casey's answer.

People do indeed seem to fear technology. I worked in government for a long time. I won't name names, but it's quite a widespread trend; at a certain point, people start to bring in excessive regulation, they yield to public pressure, and they listen to popular opinion and not the science. We have to develop more and more regulations, because people were hired to do that. It's similar to what you described. Canada may wind up losing its international advantages because it has become stricter than its competitors, and that is simply due to this tendency to analyze, overanalyze and bring in too much regulation. Is that correct?

● (0915)

Mr. Jean-Marc Ruest: As I said, in Canada, the advantage our technological, scientific and other capabilities give us are being threatened by sociopolitical pressure.

To follow up on Mr. Casey's point, I would say that as a society we are willing to accept the use and application of science in a multitude of areas, such as aviation and transportation. No one fears the use of biotechnology in health care. However, when it comes to nutrition or food production, attitudes seem different. People who lie about certain facts are given a hearing.

With regard to regulation, we have to make sure that it rests on proven scientific facts.

Mr. Luc Berthold: In your opinion, this is not the case in Canada. At this time, we are going too far.

Mr. Jean-Marc Ruest: There are two things I'd like to point out. First, at the government level, we have to make sure that the debates that take place are fact-based, and not based on anecdotes or fabrications. Secondly, regulation should be applied with scientific rigour.

Mr. Luc Berthold: Thank you very much.

Mr. Dugré, you heard Mr. Casey and Mr. Ruest's testimony. The Centre d'innovation sociale en agriculture has an interesting challenge to meet. Indeed, technological progress goes hand in hand with the evolution of social thought.

I know I don't have any time left to put a question to you, but I just wanted to give you that opening, because I think you are going to have a role to play, and this may be a growth opportunity for your centre.

Mr. Simon Dugré: Yes, indeed.

The Chair: Thank you, Mr. Berthold.

Mr. Breton, you have six minutes.

Mr. Pierre Breton (Shefford, Lib.): Thank you very much, Mr. Chair.

I thank all of the witnesses for their superb presentations.

This is the last day of our study. Throughout our various meetings, I realized that research and development plays a large role in the development of technological innovation. We saw that R and D is often focused on production. People want to produce more, and faster. We may want to replace human beings, and that's fine. There are a lot of improvements in that regard.

However, how can we see to it that this R and D happens upstream from production? In Canada, we have an extraordinary competitive advantage: we have knowledge, experts, space, and high-quality products. Explain to me how all the actors could cooperate so that more R and D happens upstream.

Let's start with Mr. Casey, and then I'd like Mr. Dugré and Mr. Ruest to answer as well.

Mr. Andrew Casey: You are quite right: it's a big challenge.

[*English*]

It's one of the biggest challenges of the industry. We're great at innovation. We have great science that comes out of our universities. We have these fantastic ideas. Then, what do they do? They go. They go to other countries for a number of reasons. I'm going to give two that I think are the most important.

One is, if you want to create a company in Canada, you need investment. It's expensive, the timelines are extraordinarily long, and the outcomes are not certain, so you require special kinds of investors. You have to have a very patient investor who's willing to come here and willing to sit through the long process. In medical therapies, you're going through clinical trials, and the timelines are not that much different when you're talking about some of the technologies that we're trying to advance. Therefore, you require a very special investor.

You also require people. As Mr. Dugré was talking about, the schools are creating those people right now. One of the key things we have to try to do is to develop leadership, leaders, CEOs for these companies because they're a unique kind of company, not just a person who can step into some of those large organizations and run an existing operation. We're talking about somebody who has to take something from the ground and build it up, go out and attract those investors.

Where government can play a role here is on the public policy side, because investment is like a global tourist. It's roaming around the world looking for places to go. Canada has to look at itself like a hotel. If you stay at a hotel, you know that they always put out little things such as chocolates on the pillow, free Wi-Fi, free breakfast, nice sheets, or whatever it is. They're trying to attract you as a tourist. Canada has to do likewise to attract investors and to keep people here. We have to put our own chocolates on the pillow.

One of the chocolates on the pillow for investors is how we do tax and how we do regulatory policy. Those are the types of things that provide investors with the assurance that when they invest in these companies, it's going to be here, it's going to grow, and it's going to be successful. That's what we need to do as an economy.

What we don't have right now is a national bioeconomy strategy that links all of this together, something that takes all these different threads and makes a whole cloth. That is one of the most important things that could be done, because as you've heard from my examples, each one of those companies is regulated by about four or five different departments, yet they're not all connected. We have to find a way to identify this sector, the importance of it, the great innovations that are coming out that you highlight, but how do we take them so we can create companies that are going to be based here in Canada?

A huge thing the government could do would be to develop a national strategy that would identify those objectives and bring public policy to that purpose.

● (0920)

[*Translation*]

Mr. Pierre Breton: That's very interesting, Mr. Casey.

Mr. Ruest and Mr. Dugré, you have about 90 seconds each to give us your point of view.

Mr. Jean-Marc Ruest: I agree completely with the comments that were made.

I would, however, like to add one other point, which is very important: we will only be able to invest in research or the development of new technologies on condition that we are certain that we respect scientific requirements and that there are no health risks involved.

The regulatory process cannot contain any subjective elements. The authorization of commercial production, for instance, should not be called into question later because of social pressure to change things. The regulation has to be totally objective and science-based.

Mr. Pierre Breton: Mr. Dugré, I'd like to reassure you. Earlier, you talked about the well-being and psychological health of agricultural producers. If you followed our discussions over the past months, you will know that the Standing Committee on Agriculture and Agri-Food will, in the next few weeks, be undertaking a study on that topic. I invite you to follow that study, and perhaps even to register as a witness, if that interests you.

Madam Clerk, I don't know if we have any room left for more witnesses, but it could be interesting to hear from this organization.

I will give you the floor for the last minute.

Mr. Simon Dugré: In the final analysis, as my two fellow witnesses explained so well today, we are talking about Canadian regulation, which must govern the safety and quality of products destined for the Canadian market and for export.

However, regarding innovation, we have to give some leeway to the users, to those who work with these raw materials, the natural resources, in Quebec or in Canada. And so, we think that social innovation, from the outset, or upstream as you said, represents a good opportunity for enterprises and those who shape them to be able to work—

The Chair: Mr. Dugré, my clock seems a bit faster than yours, and I must, unfortunately, stop you once again. Please forgive me.

[*English*]

Mr. MacGregor, you have six minutes.

Thank you.

Mr. Alistair MacGregor (Cowichan—Malahat—Langford, NDP): Thank you very much, Chair.

Mr. Casey, I'll start with you.

In the springtime, our committee did a great cross-country trip visiting various locations. We often heard the theme that companies appreciated what the CFIA did. Our regulatory structure was sound because there was this theme of brand Canada, the maple leaf internationally. When people look at Canadian agricultural products, they understand that we have a science-based regulatory system. It's produced by high-quality farmers and our attention to detail is pretty good. However, they would sometimes grumble that it's a bit onerous.

In your mind, how do we strike that balance and what more could the federal government be doing to help Canadian companies understand the export market? Do we need to have more CFIA staff in our embassies to understand the international situations? Do you have any comments on that?

● (0925)

Mr. Andrew Casey: Absolutely, it's a common refrain we've heard from some of our companies.

From both examples I gave you, whether it's the mustard seed into jet fuel or the non-browning apple, both of those companies went through long regulatory processes that they felt were probably too long. In fact, the apple one received FDA approval in the U.S. long before it was received here in Canada.

Can it be better? Absolutely it can.

The only point I would make, though, is that the brand that we have is not just the maple leaf. It is the fact that we do good science and we do have a really good regulatory policy. That's what is recognized. We would never want to lose that, because I do believe that is a competitive advantage. Can it be more streamlined? Can it be more efficient? Yes, it can.

From a promotional standpoint, having those out in the trade commissions would be useful. Probably more important, though, would be to beef up our regulatory capacity here by adding more scientists who are able to keep pace with the change, because when we're talking about this type of change, it is very rapid, with huge leaps in many cases. Keeping up with that would be extraordinarily important. It would be a very good objective to increase our capacity for handling this, because we're at the tip of the iceberg. We're looking at a lot more innovation coming. It's not like it's going to decrease, and it's a competitive advantage for us to be out there in front of all this. It seems to me from an economic standpoint that it makes great sense to do that.

Mr. Alistair MacGregor: Mr. Ruest, do you have anything to add to that?

Mr. Jean-Marc Ruest: From a regulatory standpoint, you mentioned the CFIA. In our industry, we have the CFIA, the Canadian Grain Commission and Health Canada that are all regulating at different times and oftentimes, possibly too often, overlapping in their regulation and involvement in the industry. There is great merit in reviewing the mandates of each of those regulators to determine whether we don't have overlap and inefficiencies built into our regulatory system with respect to grain exports.

As well, from a regulatory standpoint, one of the things that is very difficult and hurting Canadian exports of products is what I'll call the lack of collaboration with respect to the registration of new technologies in different jurisdictions. We have a Canadian registration process, and then in order to be able to export to other jurisdictions, we need to go through very long regulatory processes, and oftentimes in countries where we have very similar backgrounds and stakes at play.

The United States is an example of that. To have to go through again a very long regulatory registration process seems inefficient. We ought to be striving for synchronous approval of new technologies in various countries so we can actually deploy them much more quickly than we currently do.

You spoke about the embassies and the role they can play in importing countries. What we need to do, as I pointed out earlier, is to challenge non-tariff trade barriers being raised under the cloak of regulation and sanitary and phytosanitary and technological issues. We have to recognize when in fact it's not a safety issue but a non-tariff trade barrier that's being raised, and be very aggressive in our position that we defend the interests of Canadian exporters. However, as I said, to do so, we have to be on sound, firm ground in our own internal domestic policy, and at times that is questionable.

Mr. Alistair MacGregor: Thank you.

Mr. Casey, also, during some of our stops, the conversation came up between genetically modified organisms that were using genetic material from a completely foreign plant or animal, and now the new gene-editing tools, which I think in a public relations agenda can come across to the public and they can understand it a bit better if you're taking certain traits of certain plants and trying to make them express themselves better. In the time I have remaining, do you have any final comments, if you're trying to get the public aware of how these can actually help us in a changing world to combat climate change?

Mr. Andrew Casey: My only comment is that I think it's absolutely imperative that we go there. As to the earlier question from Mr. Berthold, I understand the trepidation. There is some fear out there. This is science and it is advancing very quickly, so it's very prudent for us to make sure we get it right. There's no question about that, and that's where the regulatory system comes in place.

If you have the ability to grow plants with less pesticides or grow plants that use less water or less fertilizer, or grow them in places where you can't normally grow them, why would you not take advantage of that technology, given the challenge that we are facing? If you can grow rice to which you can add vitamin A and it's a staple of a diet in a country that needs vitamin A, a country where there's a deficiency, why would you not take advantage of that technology?

● (0930)

The Chair: Thank you, Mr. MacGregor.

[*Translation*]

Mr. Drouin, you have six minutes.

[*English*]

Mr. Francis Drouin (Glengarry—Prescott—Russell, Lib.): Thank you, Mr. Chair.

Welcome back, Mr. Shipley. It's very timely that you're here today, especially since you're the author of this study.

I want to start off with Mr. Casey with regard to new technologies being developed. We talk about that public confidence, but whose role should it be? Should it be solely the role of government to provide that confidence?

I'll give you examples. When we approve new technologies through PMRA, if it's on the GMO side, we get one side complaining. If we don't approve it, we get the other side complaining. Both sides are not helping to provide that confidence in the system. How do we provide more transparency in that system?

Mr. Andrew Casey: Certainly transparency is key. Is it up to government only? No, absolutely not. The government plays a very important role once this technology gets to a point where you're ready to put it into the population. Then, yes, you have a regulatory responsibility to take a look at that, and that's really important.

However, ultimately what's going to put everybody's minds at ease is science. It has to be science-based. If you have the testing to show that it's safe and efficacious, just as you do with drugs, it's the same concept with these types of changes. If the science backs it up, that has to give people reassurance. I don't know how else to do it.

If we live our lives in fear of what may happen, I'm not so sure I'm going to drink this water. I could tell you that eating broken glass may make you better. Science tells me that eating broken glass is not good for me, but it might make you better. I don't know. However, you're not going to go out and eat broken glass just because it may make you better.

It's the same thing the other way around. Science tells us that it's all safe. If the science is rigorous and solid, I think we should go with the science.

Mr. Francis Drouin: Great, thanks.

[*Translation*]

The gentlemen who are with us through video conference spoke earlier about social pressure.

I'd like to spend a few moments on the glyphosate issue in the United States, and the pressure that is exerted on us as MPs, once this type of issue winds up before the courts. In this case, I know that Monsanto will appeal and that other cases may go before the courts. This will put even more pressure on us, because the legal system will be involved.

How can we communicate this to the population with transparency, in order to avoid this social pressure when it comes to new technologies?

Mr. Jean-Marc Ruest: I agree totally with Mr. Casey. It's impossible to be mistaken if the regulation rests on recognized scientific principles. However, as soon as there is any subjectivity or viewpoints that are not science-based, to what extent can you regulate?

If we really want investment in research and technology, we have to be sure that decisions are objective and based on scientific principles, and not on subjective sociopolitical conclusions that would be too vague to be a basis for regulation.

If we had used that type of conclusion in the past, perhaps there would be no planes in the sky today, since people would not believe that the planet is round and would be afraid of falling off the edge of the world.

Voices: Oh, oh!

Mr. Francis Drouin: And on this topic, do you sense a movement in the industry toward transparency on scientific issues when new technologies are being developed? I think that the Bayer company seems to be heading in that direction, and wants to publish scientific data on its new products. Does that seem to be the trend in that area?

Mr. Jean-Marc Ruest: The fact of being on a whole new battlefield makes things difficult. It is difficult to defend yourself in the world of social media, where a simple sentence from a television or film star recorded in a sound clip can have a lot of influence. We would like to reply to it by presenting scientific arguments, but that sort of information is not easy to convey in a few lines in a tweet.

Our industry is dealing with another challenge: when we try to respond, we are attacked right away and accused of speaking for our commercial interests without any concern for the well-being of society.

That is where our government and regulatory agencies may have a role to play, by agreeing to debate the issue, on condition that the science and underlying facts are presented. If someone then chooses to not consume a certain product, it will be up to him to do that, but there is no need to call into question the safety of the entire production.

● (0935)

Mr. Francis Drouin: Mr. Dugré, do you have something to add?

Mr. Simon Dugré: I'd like to talk about the social acceptability of these products. Indeed, this reconciliation with science is necessary. The consumer can indeed be quick to tweet out his thoughts. We have to maintain his democratic right to do so, while providing him with the necessary scientific knowledge. As I said in the very beginning of my statement, we have to integrate social innovation and technological innovation right from the outset when we create new products or improve existing products.

What is difficult at this time is that there are few if any programs that allow us to do that. For instance, one of the only social innovation programs at SSHRC or NSERC was not renewed this year. Over the past three or four years, there were investments of close to $27 million, but this has just come to an abrupt end.

In the current circumstances, we would need to strengthen that type of program instead.

The Chair: Thank you, Mr. Dugré.

Thank you, Mr. Drouin.

[*English*]

Mr. Longfield, you have six minutes.

Mr. Lloyd Longfield (Guelph, Lib.): Thank you, Mr. Chair.

Thank you all for your presentations today.

I have a limited amount of time. I wanted to start with Mr. Casey. I'm very interested in the discussion around mustard seed and pressing the seeds to get fuel for jets. I've been following that over the summer. In fact, over the last few years, the University of Saskatchewan has done some great work in this area around fuelling vehicles as well. On the sustainability of that fuel source and the amount of fuel that could be available—we are putting a price on pollution and returning money to people who are working on reducing their carbon footprint—this looks like an amazing opportunity for us.

What type of volume or what kind of transition time are we talking about to get to this type of solution?

Mr. Andrew Casey: From that sense, I don't know the answer to that. It's early stages. I was remiss not to point it out. You may have seen it just last week, but United Airlines sent a plane from San Francisco to Munich—

Mr. Lloyd Longfield: Yes, I saw that.

Mr. Andrew Casey: —and 30% of the fuel on that flight was Agrisoma fuel. Earlier in the year, Qantas Airways did likewise from Melbourne to Los Angeles, and I think it was the same mix.

There are a couple of challenges for sure. One is whether you can produce enough to meet the growing demand. I suspect you could probably not produce enough oilseed to meet the demand from aviation. Maybe you can buy off sectors of it, for sure, and then the technology could be used for other fuels as well. As you pointed out, it could be used for cars, and there's also another company that's just making a lubricant type of oil using the same sort of technology.

For sure, the challenge is going to be how much feedstock you can produce to meet the growing demand, especially as global fuel prices go up and the demand becomes insatiable. That will be the challenge.

Mr. Lloyd Longfield: At the same time, Bombardier is developing fuel-efficient transport planes, which combine reduced fuel consumption with giving us an alternate. That is an example of the carbon economy transition we're working on. To change behaviour, you have to change the economics. You have to put a price on pollution, and you have to look at how you incent the development of some of these scientific opportunities.

Mr. Andrew Casey: That's right. When it comes to aviation, it's unlikely the airlines are going to pay more unless there's an incentive to do so. The incentive can be public reputation, and there's certainly a price that you can put on that. However, when you move into the world of carbon taxes and other things, that's probably what's going to drive the market to an extent at some point in time.

Mr. Lloyd Longfield: Right. Mr. Ruest, I think you're bang on the mark that regulations get in the way of export development because of non-scientific pressures being put onto the market.

We toured a Syngenta farm this summer. We had an all-party tour, with one of our senators also attending. We take product off the market, like the neonics or the glyphosates, but we don't have solutions in place for replacement, or the cost and time required to develop alternate solutions. Could you comment on your company's investments in the areas of fertilizing and protecting crops?

● (0940)

Mr. Jean-Marc Ruest: We're not in the development of products per se. We are a retailer of those products to our farm customers, so I guess we have a frontline view of how producers use those products. We offer agronomic services as well, to assist producers in the development of their crops.

The point you make is a very valid one though. If we deregister these products that are in wide use and are critical to farming practice as we currently know it, what then? The pests they're intended to control, whether they're insects or weeds, will grow and propagate themselves, so something will have to be done. There needs to be an analysis then of what product will be used and what the consequence will be of that new product or practice. It may mean further passes on a field with a less efficient product, thereby increasing carbon emissions. Are we in a better place then?

Mr. Lloyd Longfield: I'm thinking of the Eureka Project—I believe that's what it's called—at the University of Manitoba, where there's a cluster of businesses. I said Syngenta but I should have said Bayer. Bayer, and now Monsanto as part of Bayer, are developing solutions in conjunction with companies such as yours. We need to have the innovations happening both from the seed providers and the farmers and the crop protection companies. It's all hands on deck to develop these solutions, and then to mix metaphors, we pull the rug out from under them with some kind of non-scientific regulation being put to bear.

Mr. Jean-Marc Ruest: I couldn't agree more.

Mr. Lloyd Longfield: Okay, so we have some challenges. This committee is really promoting agriculture and protecting our export development and our technology, and then we have the health committee, to name another committee, that has different agendas in terms of approvals and regulations. We have to have some very difficult discussions if we're going to get from A to B in terms of export. Then finally there is the social innovation with Mr. Dugré and the building of public trust, which is really one of the main solutions we have to develop.

The Chair: Thank you, Mr. Longfield.

We have two minutes for Mr. Dreeshen.

Mr. Earl Dreeshen (Red Deer—Mountain View, CPC): Thank you very much, and welcome to our guests.

One of the issues, and the main thing we're talking about, is the difference between physical science and political science. A physical scientist is never going to say there's a zero per cent chance, and of course that's when the political scientist jumps in. That is one of the concerns. How do we get this message past our anti-GMO activists or the anti-modern agriculture advocates? We know there are dollars on their side putting pressure on that as well.

Neonicotinoids are certainly an issue. In Alberta, that's exactly what you want to have coating your canola, and that's exactly where you want to have your bees, so that they help in the production, yet we have changes that are completely destroying that technology, which is a great tool.

We have all of this new technology. We have blockchain technology, which we haven't talked about. We have CRISPR technology, which is associated with it. How do we get ahead of that, to make sure the messages we have are going to get through to the general public?

I'll ask Mr. Casey and then perhaps Mr. Ruest.

Mr. Andrew Casey: There are a couple of pieces there that I would like to discuss. One is the opposition, as I'll call it. Instead of the “anti” group, I'll call it the opposition.

I came to BIOTECanada from the forest products industry. That's where I was for eight years, doing policy and trade at the Forest Products Association of Canada. Environmentalists played a huge role in improving the Canadian forest products industry's environmental performance. They're the ones who held the industry's feet to the fire and told them to do better. The industry then figured out it was a competitive advantage to be better from an environmental standpoint. They improved their practices to the point where Canada is one of the leading forest products producers in the world, from an environmental performance standpoint.

I wouldn't want to denigrate the opposition to a point where we don't have it. There is still a very important role to be played there in terms of raising the questions that need to be answered. It ups the game for our regulators as well, such that they have to be as diligent as possible.

It ties to a point that Mr. Ruest made earlier, as well as to my answer to Mr. Breton. It's about this investment piece. If we stick our heads in the sand and say we can't do it because of what may happen.... Other countries are well aware of this economic opportunity and are developing their technologies as well. They're supporting their industries. They have bioeconomy strategies in place to support their industries. That's where the investment will go. It will go to those countries. We will continue to produce oilseeds and grains just as we always have, but we'll miss out on that piece. How do we create companies here? The investment is not going to be here.

Unlike other industries, like forestry, mining, and oil and gas, a lot of this technology that we're talking about is on computers. It could be moved anywhere in the world. If we're not bringing the investment here, that technology will go where the investment is and where the people are. That will be a huge loss, because we'll miss out on the economic benefits of commercializing that here. If we get the regulatory process right and a bioeconomy strategy right, we could be a leader in that space.

● (0945)

The Chair: That's it for time, so thank you, Mr. Dreeshen.

Mr. Earl Dreeshen: All right. Thank you very much.

[*Translation*]

The Chair: Thank you for having joined us, Mr. Ruest, Mr. Casey and Mr. Dugré.

We will now suspend the meeting to prepare for the second part.

● (0945)

(Pause)

● (0950)

[*English*]

The Chair: Order. We'll get going on the second round.

For the second hour today, we have with us Mr. Howard Mains, Canadian public policy adviser, Association of Equipment Manufacturers. Also, from the Saskatchewan Association of Rural Municipalities, we have, by video conference, Mr. Ray Orb, president.

Thank you for being with us today.

Mr. Mains, do you want to open it up? You have seven minutes for your opening statement.

[*Translation*]

Mr. Howard Mains (Canadian Public Policy Advisor, Association of Equipment Manufacturers): Thank you very much.

● (0955)

[*English*]

Thank you, Mr. Chair and honourable members of the committee, for allowing the Association of Equipment Manufacturers to appear this morning at this committee.

As an introduction, allow me to say a few words about the member companies of the Association of Equipment Manufacturers. AEM represents the manufacturers of equipment that is used in the construction, utilities, mining, forestry and agricultural sectors.

I was speaking with a few of your members, and we've met with members over the years. For example, in the riding of Guelph, our members include Skyjack, with 500 employees; Blount, with 500 employees; and Hitachi, with 150 employees.

I was checking out some websites this morning. I'm glad to note that the honourable member from Vancouver Island was sitting on a member company tractor. We won't name names.

Voices: Oh, oh!

Mr. Howard Mains: Also, the member from Glengarry—Prescott—Russell was standing in front of a milking parlour that I think was made by one of our member companies.

The important thing to note is that the equipment manufacturers manufacture equipment that is used in many sectors, but in particular, today I wish to talk to you about the agricultural sector. I do have a study. It's only in English yet. I can pass it to the clerk later on, but it's only in English. It goes into great detail about the macro issues that are before the sector. Collectively, AEM member companies support around 150,00 jobs in Canada—that's direct employment—and contribute about $44 billion annually to the Canadian economy.

This morning I wish to touch upon three things: first, the importance of trade as an engine of growth for agriculture; second, the innovative achievements of Canadian equipment manufacturers; and third, the challenges facing equipment manufacturers and farmers today in areas such as access to rural broadband.

Technology plays an important role in increasing sustainable measures in agriculture and environmental protection. AEM is supportive of the government's goals announced in budget 2017 to reach $75 billion in agri-food exports annually by 2025. As well, the 2016 advisory council report led by Dominic Barton identified agriculture and agri-food as a sector of great economic growth potential.

At a Canada 2020 event this past June, Dominic Barton shared McKinsey analytics research identifying a number of growth opportunities where agribusiness investment is likely to focus. The four areas of greatest growth opportunity include protein in Asia, functional foods, aquaculture and agricultural equipment. Given these global growth opportunities, agricultural equipment and the agriculture sector as a whole will continue to be key for future Canadian economic growth.

The council recommendations also advised the government to begin developing strategies to clear a path for growth of high-potential sectors like agriculture. In our view, to achieve these goals, the Government of Canada must be committed to setting strategic goals for 2025 for the ministers of agriculture; health; international trade; innovation, science and economic development; and environment and climate change. Across departments, well-defined and measured performance targets, such as employment and exports, will be necessary for these goals to become a reality. Indeed, performance measurement is one of the principles of the Canadian government's policy on results directive.

AEM member companies operate and export globally, and I would note that in Guelph, Skyjack, when we were visiting there, exports to 142 countries, I believe. Therefore, international trade and continued regulatory alignment between Canada and the United States continues to be a priority for AEM members. AEM continues to be a strong supporter of NAFTA and is advocating for a modernized agreement in both the United States and Canada.

AEM continues to spearhead industry efforts to discourage tariffs, which harm not only manufacturers but also our customers. It is of vital importance to our industry that farm equipment works seamlessly across the Canadian-American border, and that manufacturers are able to freely export products to other markets.

I will now turn to innovations in equipment manufacturing. Innovative technologies integrated into farm equipment have helped increase agricultural productivity while making the industry more sustainable than ever. Canadian farmers rely on the equipment designed and developed by AEM members for access to clean technologies and innovative tools to reduce greenhouse gas emissions from agricultural production.

Members of this committee will have seen first-hand during their tour of the CNH Saskatoon plant how this investment in innovation makes its way to the shop floor and into equipment. Modern manufacturing processes now allow for the production of equipment that is unique to the individual farmer's needs. As we enter the next phase of farming, which is often referred to as farming 3.0, precision agriculture, big data and artificial intelligence will be critical and revolutionary.

Recently, AEM commissioned a study analyzing the future trends of agriculture over the next 10 to 25 years. The current environment is ripe for digital transformation. Pressures to increase food production will continue to increase, farmers need to adapt to changing clients, and consumers want to know more about their food. It is an exciting time to be in agriculture.

Although it can be difficult to predict exactly what the future of agriculture will look like, we can agree that it will be different from today and certainly different from the time when I was farming 35 years ago.

● (1000)

The Chair: We're out of time, and if I don't cut you off here I'm going to run short on questions, but I'm sure you'll have a chance to talk about your product as we go.

Now we have Mr. Ray Orb by video conference for up to seven minutes.

Thank you.

Mr. Ray Orb (President, Saskatchewan Association of Rural Municipalities): Thank you.

Good morning. I'd like to thank the standing committee for the opportunity this morning to discuss technology in agriculture that can support Canadian exports—in our case, Saskatchewan exports.

My name is Ray Orb. I am the president of the Saskatchewan Association of Rural Municipalities, known as SARM. Incorporated in 1905, SARM has been the voice of rural Saskatchewan for over 100 years. We represent all 296 rural municipalities in our province. Our RMs cover 53% of the province's land mass. Our smallest rural municipality serves a population of 76, while our largest serves over 8,000. We work on behalf of our member municipalities to help identify solutions to the challenges in rural Saskatchewan.

As an association, we are mandated to work in agriculture, and agriculture is an important sector in our province. Saskatchewan is a key producer of Canada's wheat, oats, flaxseed and barley, and is also home to grain farms, cattle ranches, and dairy production. Our province also boasts a thriving microbrewery industry. According to a recent report by Economic Development Regina, craft beer was a multi-million dollar industry in Saskatchewan in 2017 and is expected to be on the rise, and that's not surprising. Agriculture is a way of life in our province.

Our landscape has changed over the course of the last century. Advancements in technology have created a huge opportunity for farmers, ranchers and rural Saskatchewan, but right now most of rural Saskatchewan does not have the broadband infrastructure to support technology and technology adaptation. Rural broadband is an essential investment that would allow farmers and ranchers to capitalize on technological advances. For our producers looking to compete in the global marketplace, broadband, smart phones and technologies are critical.

We see huge opportunity for technology in the agriculture industry —for example, in precision farming. Precision farming provides diagnostics and sensor technologies that ensure just the right amount of input from water, fertilizer, medicines and crop protection products. This enhances crop quality and animal welfare and improves yields. Precision agriculture better targets inputs and increases yields, and it allows for better planning and decision-making. Without reliable broadband service, it is impossible for producers to use these technologies to their fullest extent.

An additional opportunity for technologies in agriculture exists with GPS capacity and capabilities. GPS-controlled tractor steering and optimized route planning minimize soil erosion and compaction while improving crop yields, but we have yet to see mainstream use of autonomous self-driving tractors. The first hands-free crop has already been grown in a project in the United Kingdom. Also in the U.K., livestock farmers are already benefiting from technology that can help them optimize their cattle's diet and monitor fertility and calving actively, so that both beef and dairy herds will be healthier and more productive. Mortality rates during calving could be reduced by up to 80%.

Again, it comes back to the need for reliable high-speed Internet access in rural areas that would have farmers and ranchers connected to their farms, each other and the globe. If agriculture producers had access to existing agronomic tools tailored to individual farms and fields, it would allow them to get forecasts and agronomic insights to make sustainable decisions and their operations seamless.

Another area important to agriculture and technology is plant science: the study of plant systems. Western Canada has a short, dry growing season, which makes efficient plant growth critical to prairie producers. The University of Saskatchewan's department of plant sciences is the only plant science department in Canada capable of offering such diverse experience in plant studies.

Scientists at the department of plant sciences and the crop development centre conduct research to develop new crop varieties that will thrive under prairie growing conditions. Current innovation studies include the creation of tools that protect crops from insects, weeds and diseases, as well as developing stronger, healthier, and more useful varieties of crops.

● (1005)

The university works with institutions such as the plant biotechnology institute at the National Research Council, the Agriculture and Agri-Food Canada research station, the protein, oil and starch pilot plant, and the Canadian Light Source, all of which allow for interdisciplinary research to support innovation. These types of innovations help farmers to sustainably grow healthy foods both for Canadians and for other countries, which feeds the world and drives economic growth.

It all comes down to good connectivity. Without a reliable, consistent and affordable high-speed Internet connection, these technologies are just not available. In 2016 it was reported that 82% of Canadians had access to broadband. The remaining 18% were largely in rural communities, leaving many producers without reliable access.

As the chair of the rural forum of the Federation of Canadian Municipalities, I note that the FCM has long advocated for increased federal involvement in developing the telecommunications infrastructure that is critical to the vibrancy of Canada's rural communities. Broadband Internet access has become fundamental to modern life and has the power to transform rural Canada. Modern networks contribute to economic growth by improving productivity, providing new services, supporting innovation and improving market access, especially in the agriculture industry.

The Chair: Unfortunately, Mr. Orb, we're out of time, so I'm going to have to cut you off. I'm sorry about that. You'll have a chance, of course, to reply to some of the questions from our members.

We'll start with Mr. Bev Shipley for six minutes.

Mr. Bev Shipley (Lambton—Kent—Middlesex, CPC): Thank you, Howard and Ray. It's good to see both of you again.

I want to follow up on where Mr. Orb was leading. In terms of high-speed Internet, we know it's an issue. We're into an agriculture industry where we have a generation of young people who see and are enticed by the incredible opportunities in this industry, not just in the primary production but in the breadth of the industry as a whole.

Mr. Mains, part of what you're talking about is that follow-through, not only on what the farmers use but where our products go and how you handle that in terms of processing equipment.

In terms of the producers who cannot have the high-speed Internet, in my area, which is very heavily agricultural, I have producers in dairy who are spending $30,000 to $40,000 because they can't put the innovation in unless they run cable up, the high-speed cable. In terms of farmers who are in the cash crop industry, what are they to do? That's the other issue. We have this gap in time.

What can the industries do, Mr. Mains, in terms of the production of this high-tech industry we're talking about? How do we close that gap? Any ideas...?

● (1010)

Mr. Howard Mains: Based on conversations I've had with colleagues in the United States, I can say that you would be surprised by some of the states and counties south of the border that also don't have the access to broadband that they need. This is the problem that Mr. Orb has pointed to. It's a huge problem, and it's going to become a greater one for the—

Mr. Bev Shipley: Can equipment become more sensitive to help take low-speed and process it better? That technology is going up and the injection of high speed is slow.

Mr. Howard Mains: Yes, you're absolutely right. The typical combine, after a day in the field, will generate five gigabytes of data. That has to be uploaded if the farmer wishes to manage that data. It's not very efficient to put it on a stick and take it back to the farm, right? That doesn't quite work. This is a problem that is certainly being compounded.

I'm sure the manufacturers are trying to figure out the most efficient way to have that information transmitted through wireless technology from the cabs of the machines in terms of how that works, but also in terms of how it then gets onto the network and eventually back to the farm office. That is something that there's going to have to be a lot of investment in over the next few years.

Mr. Bev Shipley: Mr. Orb would likely agree with your issue.

One of our earlier witnesses talked about investor confidence. We have manufacturers invested in this incredible technology—precision farming, precision manufacturing and processing, precision robotics—but we need to be able to generate the investor confidence to continue to manufacture that.

Are we on a level field with our competitors in Europe and the U.S.? You've talked a bit about that, Mr. Mains, in terms of the lack of high speed in certain areas. Are we in a competitive position with respect to other countries, though?

Mr. Howard Mains: I wouldn't have the answer to that. I can certainly get back to you on it. I can tell you that the farm of the future will be a race over who is going to be the data manager. Mr. Orb has spoken about that. There may be studies by the CWTA—the Canadian Wireless and Telecommunications Association—and their 5G Canada council. They may have research pertaining to that.

Mr. Bev Shipley: Mr. Orb, do you have any comments?

Mr. Ray Orb: Really, it will take more federal funding. The federal government has gone through the connecting Canadians program, and that has almost run out. We'll be asking the federal government to look at some kind of a new program.

We need a couple of things. We need to improve the backbone—the cable delivery of high-speed Internet in rural areas. We also need that last mile, to make sure that farm residences can hook up to that site. That's very important.

Our technology isn't that bad in this country. For instance, my neighbour bought two combines that were manufactured in Germany. They're compatible with the software we have here, and they're able to download. The problem is they don't have enough capability. We need probably 25 gigabytes of download speed and almost the same upload speed to be able to transfer that data on the farm to keep track of the crop yields.

It will take more funding, but also strategic partnerships in the provinces themselves. We need to talk to the Internet service providers to make them understand that it's not just urban Canada but also rural Canada that's important.

● (1015)

The Chair: Thank you, Mr. Orb, and thank you, Mr. Shipley.

We'll go now to Mr. Peschisolido for six minutes.

Mr. Joe Peschisolido (Steveston—Richmond East, Lib.): Thank you, Mr. Chair.

It's great to have Mr. Shipley back here, and I'd also like to welcome Mr. Duguid to our committee, as well as Mr. Mains and Mr. Orb.

This has been a fascinating study, and kudos to Mr. Shipley. I'd also like to do a shout-out to Mr. Longfield for all the wonderful work he's done on this study. We all work hard, and we all work well, but Mr. Longfield, you in particular have done a lot of work and spent some quality time on this file. I think agriculture is going to be better moving forward.

Mr. Mains and Mr. Orb, I was struck when you said that farming is a way of life and is the future of agriculture. Can you elaborate on where you see agriculture going, and how the federal government can help both of you and your organizations in implementing that vision?

Mr. Howard Mains: It would be helpful to look forward into what the future will bring. Mr. Orb spoke about robotic tractors. There's a company in Saskatchewan in that space. Mr. Drouin, I'm sure there are dairy farms with robotic milkers in your constituency. We are in that phase.

The next phase of what's called farming 3.0 is where we start to see data analytics. Mr. Orb talked about satellite imagery and being able to analyze that to get a better understanding of crop yield on a county-by-county or township-by-township basis. There's new technology around wireless field sensors for fertilizer. You can put these sensors in a field and measure the nitrogen, phosphorus and potassium—NPK—on a 24-7 basis.

What that all points to, though, is that in the future the farmer becomes more of a data manager. He's not so much an equipment manager or a crop manager; he's a data manager.

It all comes back to the point that Mr. Orb and Mr. Shipley made, which is about access to the pipeline for data. That is where the federal government, working through both its regulatory and policy roles, has a fairly important role to play. The industry committee issued a report in April that spoke to this.

Mr. Joe Peschisolido: Mr. Orb, please go ahead.

Mr. Ray Orb: I'd just like to say that I agree with the gentleman's comments as well. Of course agriculture—and I think we all realize this—is a huge contributor to the GDP, more so in provinces like Saskatchewan, because we have almost half of the arable land of the entire country in our province. But it's also a contributor to the national GDP, and I think it's a very reliable contributor because it's fairly stable.

Our producers have become very efficient. Even in the years of drought, such as what we just went through in Saskatchewan and parts of Alberta this year, producers are still able to produce crops. They're very efficient because they have access to a lot of the modern technology. The problem is that they need to be able to handle it. I compare it to pumping water through a hose. You can have a large volume of water, but if you don't have a good hose, a good delivery system, you're going to have a lot of problems with it.

I think we need to be able to increase that connectivity. It seems like the best bang for your buck for any program, federally or provincially, is to be able to use that funding very efficiently. I think it would actually increase economic development throughout Canada.

Mr. Joe Peschisolido: You talked about precision farming. Can you elaborate a little on what that is and why it's, I'm assuming, a good thing, and how we can, once again, be helpful to you?

● (1020)

Mr. Howard Mains: There's a great example in the report that I'll circulate through the clerk, which shows a vision of a technology-using machine. The developer is a company called Blue River. It's now owned by John Deere. It's a pesticide sprayer, and what it does, especially in the high-value crops, like lettuce—that's the crop that you'll see in the photographs—is to apply herbicides or fungicides or insecticides. As it's going down the field, it identifies the lettuce plants, and then, if it's putting on a herbicide, it identifies the weeds. It puts the herbicide on the weeds, and only the weeds, where it's needed. That's an example of precision farming.

Another example of precision farming—and again they talk about it in the report—is that right now we are able to map fields down into areas that are smaller and smaller and smaller, but as we move out, we're actually going to be getting to plant by plant by plant. Today when farmers here in Ontario are applying nitrogen fertilizer to their corn, there is a camera on the boom of the sprayer that measures the greenness of the plant. If it's greener, it needs less nitrogen; if it's a bit off the green, it needs more nitrogen. It's taking those measurements five times a second, and it's doing that across 60 feet. For 60 feet, five times a second, with the tractor travelling about five miles an hour, you can figure out that it's probably covering a couple hundred plants. In the future it will be one plant.

That's what the future is bringing us. It's bringing us agriculture in certain crops where precision agriculture is applying either the fertilizer or the pesticide or the other crop inputs on a plant-by-plant basis. That's what I'll call the extreme example of precision agriculture.

Mr. Joe Peschisolido: Mr. Orb, would you like to talk about precision farming?

Mr. Ray Orb: I'm not an expert on it. I'm of the generation that is not as savvy about the new technology, but I know if I spoke to my son about this, he could certainly fill you in.

Voices: Oh, oh!

Mr. Ray Orb: I don't now about this.

Mr. Joe Peschisolido: I look forward to speaking with him as well, Ray.

Thank you, Mr. Chair.

The Chair: Now we go to Mr. MacGregor for six minutes. Thank you.

Mr. Alistair MacGregor: Thank you, Chair.

Mr. Mains, I'll start with you.

As a committee and as politicians, I think we find it easy and convenient for us to look at the negatives of a situation, whether or not it's the regulatory environment. Aside from that, we do have companies, successful companies, that are operating in Canada and we do see start-ups. For your member companies, can you just tell us some of the biggest reasons they choose to set up shop in Canada? What are some of the positives that we, as a country, are currently exhibiting? Where can we, as a committee, maybe emphasize those positives in our recommendations to the government?

Mr. Howard Mains: There's a couple of areas that are important. One is access to skilled labour. When you talk to a company, whether that's MacDon in Winnipeg or companies elsewhere in the country, it's about access to skilled labour, whether they are the engineers that design the equipment, the welders that fabricate the equipment or other lines across the workforce.

Probably the number one priority is access to skilled labour. I think you hear that across industries, but it is certainly a critical factor for the manufacturing sector. We have grown up in an era where we want to have our kids go off to university, not to the skilled trades colleges to learn about the skilled trades that are required to build equipment. That's the number one issue. I'll leave it at that.

Mr. Orb may have a comment on why CNH decided to expand up in Saskatoon.

● (1025)

Mr. Alistair MacGregor: Yes.

Mr. Ray Orb: Obviously the climate is an attraction to companies like that, and of course they'd be a base, because a lot of their sales would be in western Canada, so that would make sense.

I'd like to make one comment about some of the smaller businesses that are looking to set up in rural Canada. They've cited to us more than once that they need high-speed Internet to be able to be competitive, and not only competitive within the province but competitive globally. That is a real issue, because there are a lot of people who would like to move out of the big city or the suburbs where they're already congested in terms of expanding their companies. They'd like to get out into a rural area. I think that makes perfect sense. Because of that, we need to be able to deliver better services as far as Internet goes.

Mr. Alistair MacGregor: Mr. Mains, I think that over the past several decades the machine shop floor has changed dramatically. Now, besides fabricators, you have programmers and computer scientists. You mentioned in your opening comments how in addition to precision agriculture we also are going to be seeing machines using artificial intelligence and machine learning. Can you talk a bit about that with some examples of how a piece of equipment operating out in the field can take some real-time data analysis and maybe change how it behaves in relation to the crops it's looking after?

Mr. Howard Mains: That's right. A great example of that is the precision farming systems with GPS technology that we see in farm equipment today. I'm sure that just about every combine that rolls across the Prairies has GPS systems in it now.

One of the things I try to do is to get out and spend time with farmers. One of the farmers that I did a ride-along with this spring, in his cab as he was planting soybeans, ran a little plot. It was a 100-acre field and he ran this little two-acre plot inside the field where he decreased the seed count by 20%. That was all programmed into the computer.

When you see that technology first-hand, you can see how farmers are taking on that technology and applying it. When he goes through the field this fall to harvest the soybeans, he can see in that little plot that he put in whether the yield dropped by 20% or stayed the same, and he'll see whether or not there was an economic benefit. There are astounding numbers of areas where we see precision agriculture being applied.

There's another example that I really was surprised about. We hosted a field day for the Pest Management Regulatory Agency back in August. We had 40-odd people from the PMRA visit a farm. We had two sprayers and two planters. One of the planters was controlled by an iPad. Instead of a dedicated computer in the cab of the tractor, hitched by wires, for that planter, the farmer was able to control it on an iPad, including the seed rate and the fertilizer rate. I don't think Steve Jobs thought that was ever going to be the case.

Mr. Alistair MacGregor: In the few seconds I have left, Mr. Orb, when you're talking to the next generation of farmers in the rural municipalities around Saskatchewan, in addition to the concerns about rural broadband, what are some of their concerns that they're outlining to you about getting into agriculture and making their businesses successful?

The Chair: Can you do that very quickly, Mr. Orb?

Mr. Ray Orb: Of course. In 30 seconds, getting into agriculture is a very expensive proposition, but many of the younger farmers now may be farming with their parents, using that as a succession plan.

I think younger farmers are very savvy about new technology. I just want to make mention of a company in Saskatchewan—not to advertise for them—called Seed Hawk that manufactures seeders. It is a planter. I haven't seen it yet, but they have developed an autonomous seeder that can go out and plant the crop by itself.

I think in rules of efficiency—

The Chair: Sorry, Mr. Orb.

Mr. Ray Orb: Thank you.

● (1030)

The Chair: We'll have to cut you off there.

Mr. Longfield, you have six minutes. Thank you.

Mr. Lloyd Longfield: Thank you.

Mr. Orb, that's one of my favourite examples of the business that Norbert has developed there around autonomous vehicles. I saw the demonstration a couple of years ago, and I understand this company is moving along.

I want to focus on the role of the municipalities and the three orders of government working together, especially when it comes to broadband. In southwest Ontario, we have the SWIFT project, where the western wardens caucus has put together a not-for-profit that's received $180 million from the federal and provincial governments, $300 million total investment starting next year to cover 350 communities, including first nations, to create 3,000 points of presence.

When you're talking with the other municipal organizations across Canada, are there examples like that out west, or are you following the example in southwestern Ontario?

Mr. Ray Orb: We certainly looked at that example, and I have met many of those wardens and listened to them describe what they have done in creating good solid partnerships. I think Alberta also has some good examples of what they're doing, especially in southern Alberta, according to people who I have met and listened to as well.

I think it's somewhat different in every province. In Saskatchewan, of course, SaskTel has a monopoly, and they have done a better job. They are doing, I believe, quite a good job delivering high-speed broadband into the rural areas. There are a lot of different models. I think it all comes down to some federal funding, and I think the connecting Canadians program was the one that those partners used in Ontario.

Mr. Lloyd Longfield: Yes, we do need provincial funding, and we also need to have private partners. Everybody has to work together.

Also, this summer, I pulled together a meeting with the western wardens again and Community Futures. We also had John Nater, the Conservative member from Perth—Wellington. It was a non-partisan meeting. We talked about the role Community Futures can play across Canada in rolling out investment dollars as well as in mentorship programs for young entrepreneurs who could be looking at developing export markets.

Are you working with Community Futures? Do you see that as a further opportunity out west?

Mr. Ray Orb: My organization is not working directly with them, but I know that there are some rural municipalities and some urban municipalities that are working with them. They see it as a good program.

Mr. Lloyd Longfield: Yes, it's really all about partnerships. The federal government can't lift it all alone, especially getting into the smaller communities.

Thank you, Mr. Orb. I'll pivot over to Mr. Mains.

There's the Linamar-MacDon partnership now in place, the $1.2-billion purchase that Linamar made in Winnipeg, looking at joining manufacturing 4.0 with agriculture 3.0. MacDon is also creating product for John Deere under licence. There are export opportunities around manufacturing and some of these manufacturing opportunities from, in this case, automotive parts going into agricultural equipment manufacturing to combine the intelligence that's being developed on manufacturing 4.0.

Could you comment on that? Have you been following that? It looks like an exciting opportunity for western Canada.

Mr. Howard Mains: I was last through the MacDon plant about four years ago. Mr. MacDonald took me and somebody from John Deere through the plant at the time. I've not been there since, but certainly it's welcome to see an investment like that. As you've stated, they've carved out a niche in terms of the equipment attachments that they produce and also the swathers that they produce. They've carved out a niche that is world leading, and it's very nice to see but I'm not able to comment any further since I've not been in the plant.

Mr. Lloyd Longfield: In terms of your members, this is an example where the University of Guelph is now working with the University of Manitoba, Conestoga College and potentially Red River College, looking at developing a workforce with some joint opportunities from the automotive sector to the agriculture sector.

In terms of the role the federal government might play in incenting these types of partnerships to develop, we're in some new territory here.

Mr. Howard Mains: Yes, and it all comes back to ensuring that you have the right skills on the production line.

A year or two ago, we had a John Deere dealer in town for a meeting, and we were talking about corn and soybean planters. He said at that time they were taking delivery of 40 planters. He said that 39 of them were different, and the only reason that two were the same was that one farmer was buying two.

This all goes back to the workforce and the process we have to have to support the manufacturing process, because the equipment is so customized now.

● (1035)

Mr. Lloyd Longfield: Thank you for that.

Mr. Orb, we've just announced $208 million for the western diversification fund. Are you currently working with FedDev agencies for these types of projects as well?

Mr. Ray Orb: We're not working on it ourselves, but we're aware of that program. We see it as a valuable program to be able to improve that kind of technology. I haven't toured the MacDon plant, but I did tour the Honey Bee plant in southwestern Saskatchewan where they're manufacturing headers. The technological improvements are just amazing.

The Chair: Thank you, Mr. Orb.

Thank you, Mr. Longfield.

[*Translation*]

Mr. Drouin, you have six minutes.

[*English*]

Mr. Francis Drouin: Thank you, Mr. Chair.

I want to thank Mr. Mains and Mr. Orb for being with us. It's nice to see you again, Mr. Orb.

I feel your pain with the lack of access to the Internet. You drive half an hour away from Parliament Hill in a circle, and you will see the lack of access to the Internet. I know that part of the issue is that the demand for access has grown exponentially over the last 10 years. Systems have been built, and not to video-stream on your cellphones.

Talk to me a bit about SaskTel. I was in Saskatoon two weeks ago meeting with some folks, and they say they are using their telephones to download as opposed to using their Internet connections. You've mentioned that SaskTel is doing some great work. What types of partnerships are they growing? How do we relate that back to helping our agricultural companies export?

Mr. Ray Orb: SaskTel, of course, has a monopoly in Saskatchewan. There are some other service providers, mostly by satellite. To my knowledge, SaskTel doesn't have a lot of partnerships. They are announcing this on their own. They are using some of the federal funding to be able to do that, but that's more for hard-wire delivery to homes and residences. Urban Saskatchewan is the place they're touching on mostly, but unfortunately it doesn't often go too far out of the towns and villages or the cities into the rural areas. That's a bit of a problem.

More people are relying on the cellphone towers, using their cellphones and the apps on them. That's unfortunate. The phones have more capability than they had even a few years ago. Still, people need to be able to use their laptops and their iPads to be able to adapt to the modern technology. It's still problematic in Saskatchewan.

Mr. Francis Drouin: I think it took 60 years to build the telephone infrastructure in Canada, so obviously we want to shorten that cycle for Internet because Canadians will be screaming. But we need to leverage those dollars, as my colleague Mr. Longfield said. I think there's a lack of $10 billion of investment in Canada, with regard to making sure that everybody would have access to Internet.

I completely agree with you, and it's not just a Saskatchewan problem. It's a rural Canada problem.

Mr. Mains, you made a comment that's really interesting to me, whereby farmers will become more data managers as opposed to being in their barns and their fields. I have had those conversations with older farmers and they've told me I'm crazy, but I've seen it with my own eyes. Just on the dairy robotics, I was helping a farmer transfer some cows and all we had to do was to get them used to the robot and essentially they were trained. The farmer barely has to step into the barn once the cows have been trained to go to the robots. The only issue is that some cows bully other cows and stop them from going to the milk robot, but they're working on that.

Speaking of data, and you've mentioned aggregation of data, what do you see as the role of the government to help with that particular file? I've heard some farmers complain that some companies will hold on to their data and they don't have access to that data. Should the government play a role in that space in aggregating all that data? It is information could help in future studies and future technology development.

● (1040)

Mr. Howard Mains: When I was in Saskatchewan earlier this year for a round table meeting with the ministers of agriculture out there about other matters, we got into a discussion about data. The ownership of and access to that data are an emerging issue. There are a couple of models that are flowing out. There's what I would call the private sector model and a co-operative model.

The report I referred to, which I'll share with the committee via the clerk, speaks to who will own that relationship in the future. One of the things this report speaks to is that it may very well be that there's a new entrant. If you take a look at whether its Uber in the car-sharing economy or Amazon in the retail economy, it may very well be that there's a new entrant in that whole data field, because there's an extraordinary amount of data that's going to be generated. As I said, a combine generates five gigabytes today. In the future, it's exponential.

In terms of the role the federal government can play, there are certainly provisions under PIPEDA that protect the privacy interests of the owners of the data. That already exists. I'm not sure what other provisions may be required of the federal government, but it's something we all need to keep an eye on because it's huge.

Mr. Francis Drouin: On the pharmaceutical side, we see a bit of the open science movement, where pharmaceuticals have realized that gathering the basic data costs a lot of money and they all share a common—

The Chair: Mr. Drouin, we're out of time. Thank you so much.

[*Translation*]

Mr. Berthold, I will allow you to ask one last question.

[*English*]

Mr. Luc Berthold: Mr. Mains, I just have one question.

We talked a lot about agriculture products for exportation, but what about manufacturing equipment and exportation? Can you just address that part of it, in terms of where we stand?

Mr. Howard Mains: The Canadian manufacturers of agricultural equipment tend to be very successful. When you go to a website for MacDon, for example, or others, the website is in two languages, English and Russian.

Mr. Luc Berthold: For me as a French speaker....

Voices: Oh, oh!

Mr. Howard Mains: I'm sorry, but when they see the market, that's where the market is.

Mr. Luc Berthold: I would like you to provide us with some data about what you expect in the future for the exportation of manufacturing equipment from your sector, please.

[*Translation*]

The Chair: Thank you, Mr. Berthold.

[*English*]

I just want to remind members that on Tuesday morning we will have drafting instructions for the report. You will get the email for that, so let's be ready for that one. At or around 9:45 we'll do committee business, so we can talk about everything you want to go over. You will also get that notice.

On Thursday we'll have the first witness for the mental health study, so I'll remind you of that also. Thank you so much to our witnesses, Mr. Orb and Mr. Mains, for being here.

[*Translation*]

Thank you, everyone.

See you next time.