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Thank you, Mr. Chairman and members of the Committee for the opportunity to be here this evening.

It is fitting that we are here this evening to discuss innovation in agriculture when just yesterday the world welcomed its 7 billionth inhabitant. Much of the news over the past few days has been focused on the impact 7 billion people will have on the earth's resources, including our ability to feed them.

To provide the context for the sheep industry's position when it comes to developing new markets, enhancing agricultural sustainability and improving food diversity and security, I would like to take a few minutes to tell you about the Canadian sheep industry.

The Canadian Sheep Federation (CSF) is a national non-profit organisation that represents Canada's 11,023 sheep producers. All 10 Canadian provinces are members of the CSF along with three associate members; the Canadian Sheep Breeders' Association, the Canadian Cooperative Wool Growers and the Canadian National Goat Federation.

Canadian lamb production is centralized in Ontario and Quebec. These two provinces are home to 60% of Canada's ewe flock and together are responsible for 63% of the sheep and lambs slaughtered in Canada.

Statistics Canada indicates that farm cash receipts in 2010 totalled \$142 million, an increase of 6.5% from 2009. This number, however, does not appropriately represent the value of the lamb industry to the Canadian economy. If you include the value added to the imported product when it arrives in Canada and the distribution of that product, the industry is worth over \$600 million.

For the first time since the American border closed to Canadian sheep and lambs in 2003 Canada's sheep flock is showing signs of stabilizing. After losing over 100,000 breeding ewes between 2004 and 2009, 2010 saw the flock hold steady at 543,000 ewes. More encouraging is that the number of replacement animals has increased by 5.3% which indicates that producers may be holding back lambs to expand their flocks and production.

While Canada has always been a net importer of dressed meat, prior to the border closing in 2003 we were net exporters of live sheep and lambs. The export of live animals peaked in 2002 and if the border had not closed, it was projected that our exports would have increased by 72% in 2003 to over \$32 million. By comparison in 2010 Canada only exported \$250,000 worth of live animals. Our primary export market is the United States and while we can now export slaughter and feeder lambs south, we still, 8 years later, cannot export breeding stock to the US.

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Lamb consumption in Canada decreased by 8% in 2010. This decrease can, in part, be attributed to the drop in the amount of lamb supplied to Canadian consumers. Sheep and lamb production in Canada dropped by 3.5% in 2010 while dressed meat imports decreased 13.5%.

It is important to note that Canada only supplies 42% of its domestic market. The remaining 58% of the lamb consumed by Canadians, 15.7 metric tonnes, is imported from New Zealand, Australia, and the United States.

The decrease in the amount of lamb being supplied to the Canadian market is not surprising given that flocks worldwide have been shrinking. Over the past year the United States' flock shrunk by 2%, while New Zealand sheep numbers are down 2.1% and Australia has the smallest flock in 100 years, at 67.7 million head. The reduction in the sheep population globally can be attributed to increases in cost of production, weather-related factors such as drought, and within country competition with more profitable uses of land, be it other livestock, or urban sprawl. This is leading some to speculate that the global shortage of lamb is the tip of predictions for coming food shortages.

That said, the reduction of sheep numbers globally offers an opportunity for growth in the Canadian sheep industry. Increasing the supply of lamb is an important strategy for the CSF as well as improving international market access. The importance of increasing the supply of lamb cannot be overstated. World demand for food is projected to double by 2050 and in order to meet this demand agricultural productivity will need to increase by 1.75% annually above the current rate of 1.4%. Additionally, as Canada's population becomes more diverse, it will become increasingly more important that a diverse selection of food is made available; including lamb and sheep milk products.

Agriculture and Agri-Food Canada estimates that by 2017, immigrants to Canada will come from cultures where lamb and mutton are important for food security and constitute 26% of their total meat consumption. The result of this immigration trend will be a 30% increase in the demand for lamb in Canada by 2020. This increase in demand is remarkable when compared to other meats. Lamb is the only red meat whose demand is steadily increasing.

Canada currently is in an advantageous position. Higher market prices for sheep and lamb over the course of 2010 and 2011 are setting the industry up for expansion. However, this expansion, in order to be sustained, needs to be supported by significant investments into research and innovation that will enable the sector to develop new markets, enhance sustainability and productivity, and improve food diversity and security.

There are two kinds of sustainability that the sheep industry is concerned about; industry sustainability and environmental sustainability. For the Canadian Sheep industry, re-accessing old and developing new markets is part of our industry sustainability objective. We need access to markets that have been closed to our breeding stock for the past eight years; primarily the United States and Mexico. While Agriculture and Agri-Food Canada's Growing Forward 2 Discussion Paper may refer to the US market as "mature" for other livestock, for the sheep industry it is not. And while we as an industry support "science-based trade", if there is not consistent and adequate investments made into science relating to animal health and food safety, our ability to access markets will be diminished.

In 1968 the Animal Research Centre in Ottawa (or Arcott) started a research project to see if sheep production could be increased and intensified. The result was the production of three composite sheep breeds; Outaouis, Canadian and Rideau Arcotts. In 1989 Agriculture and Agri-Food Canada released these breeds for sale to the industry and the Rideau Arcott has become the most popular of the three. This maternal breed was developed to offer high fertility, good milking and mothering characteristics, excellent body confirmation and good growth rates. Since its introduction, this breed has gained international interest for its prolificacy and ability to raise multiples on its own, significantly improving ewe and flock productivity. This is a great example of a Canadian research success story and part of the reason why, prior to 2003, international interest in Canadian sheep genetics was increasing.

Before moving on, you might be interested to know that the reason why the Arcott breeds were released to the industry was because the federal government cut research funding for sheep and closed the federal sheep research station in Ottawa. Fortunately, the Quebec government took over the research station in La Pocatiere. However, without any federal involvement, nor seeming interest, in sheep research, the work that is done is quilted together by sheep organisations, universities and provincial initiatives. This often leads to duplication of resources.

Since markets remain closed to live small ruminant genetics, an alternative for the industry would be to access genetic markets through the use of new reproductive technologies. This would also allow producers in Canada to raise their breeding programs to a higher level. Research dollars are needed though to expand the use of genetic technologies such as artificial insemination and embryo transfer in the small ruminant industry.

The sheep industry is a great example of an industry that can increase production through the use of on-farm efficiencies. Prolific breeds, such as the Rideau Arcott, or a Romanov-Dorset cross, can easily provide producers with 2 lambs per ewe, however on average Canadian producers are marketing 1.25 lambs per ewe per year. If Canadian producers increased the number of lambs marketed per ewe per year to 2, it would increase the supply of Canadian lamb on the market by 59%. To help producers market 2 lambs per ewe per year, there is a need for research into reducing lamb mortality. Currently there is no comprehensive work being done on lamb mortality and corresponding methods to improve lamb survival.

Additionally, there needs to be more research done on production-related issues such as flock health, nutrition, management and investments made into the technology transfer required to implement changes on-farm. A great example of a production limiting issue for producers would be parasitic infestations. Canadian sheep producers are faced with having to manage parasites with limited access to medications and an increasing rate of parasite resistance. Couple this with a growing consumer demand for local and organically produced food, and this is where an increased investment into animal production research could help ensure Canadian sheep producers are able to access new and emerging markets, while simultaneously addressing animal health and welfare issues. In fact, any research that focuses on helping producers manage animal health problems will benefit the Canadian sheep industry. One of the major hurdles the industry faces is its inability to access medications. Not only is this a production limiting issue, but it also has the potential to be an animal welfare issue.

The industry would also benefit from research relating to improving flock management systems and producer business management skills. There needs to be an investment into research that provides the entire agricultural supply chain with new technologies that will help them increase productivity and decrease costs. For example, there needs to be continued investment into traceability so that it works - for everyone. Traceability should not just be about putting a tag in an animal's ear. If the investment is made, traceability has the potential to be about innovation, new ideas, new technology and new tools for producers, processors and retailers to help them decrease costs and increase productivity.

Ruminant production lends itself well to helping ensure Canadians have a secure, environmentally sustainable food supply. Not only can sheep graze lands that are not suited for crop production for human consumption, but grass based meat production is sustainable and improves soil structure and quality. Ruminants are able to convert solar energy in forage to high quality human food. There does, however, need to be more pasture based research both in terms of management, and species breeding and selection for our changing climate. Since most of the yield work is done on single forage species, there is also a need for research on forage mixtures that complement each other and finding the right grasses and legumes that work together to produce the maximum yield throughout the year. Research could then expand into the possibility of producing lamb with omega 3 and 6 fatty acids. This could be branded and provide the industry with a new market opportunities.

With feed costs being highly variable, and the largest expense in livestock production, the industry needs grazing research to be conducted to ensure its viability and sustainability. Unfortunately, this is not the kind of research that private companies want to spend money on and even if they did, they are not known for sharing their results.

Sheep producers have the ability to have a diverse income source from sheep; meat, milk and wool. There is a lot of potential for research related to dairy and wool that would help improve sheep producers' profitability. Sheep products also have the ability to meet consumer demands for environmentally responsible products and healthy food. There is very little original sheep milk or dairy research carried out in Canada. Yet sheep dairy milk has higher levels of conjugated linoleic acid, has a higher calcium content and three times more whey protein than cattle milk. Money should be invested into researching the health benefits associated with consuming sheep dairy products.

Currently most of the Canadian wool is sold as raw wool into China. With a growing interest in sustainable living, there could be research done on alternative uses for wool, such as the use of wool for home insulation.

As stated earlier, to feed a growing population, agricultural productivity will need to increase by 1.75% annually. However, agricultural productivity is affected by natural resource constraints such as the decline in per-capita arable land, primarily due to population growth and urbanization, and competition for water use. Canada though has an abundance of land and water. According to the report *Feeding a Future World*, published by the Population Information Program, at the John Hopkins School of Public Health, Canada is one of only a handful of countries, including Australia and the United States that currently have the sufficient cropland to meet most of their own current food needs and probably will for many decades to come. The document goes onto say that these countries could probably produce

enough to meet the food needs of all food-deficit countries, if those countries could afford to buy the food. It should be noted that the document says that Canada "...could probably produce enough ...food...", but without committing to long-term investments in agriculture the ability to be self-sufficient in food production is not a given.

Through research into new reproductive technologies and innovation in terms of how to access live genetics, the Canadian sheep industry can develop new markets. Investigating production-related issues such as lamb mortality, access to medications, ways to deal with anthelmintic resistance and research into flock management systems, the industry can enhance agricultural sustainability. And by capitalizing on the ability of ruminants to convert solar energy into a high quality protein source and conducting research on sheep dairy products and alternative uses for wool, the sheep industry improves food diversity and security both nationally and internationally.

In order to be able to capitalize on the incredible opportunity facing the industry though, the following recommendations are being made:

1. The federal government needs to ensure that long-term predictable research funding commitments for the sheep industry are made.
2. The sheep industry needs funds to develop a comprehensive national plan that incorporates provincial initiatives, with strategic approach on selecting research priorities and on how research money is allocated.
3. The current system of allocating and delivering research funding on a 5year basis needs to be re-examined. Significant delays in the Growing Forward program delivery produced a 2 year funding gap and then a 3 year window to perform and complete what would have been a 5 year research plan. This limits the achievements that can be realized and makes it difficult to attract research talent. It also reduces returns on research investments.
4. The current funding structure, requiring industry matching funds needs to be re-examined. This practice makes it impossible for smaller industries to have a science cluster like other commodities. As such, funding programs have to be designed to have the flexibility to allow smaller industries the opportunity to access funds that allow them to research and implement projects that increase their sector's productivity, profitability, efficiency and diversity.
5. Technology transfer needs to be well funded. Support needs to be available for producers to help them implement changes on –farm to increase their productivity and profitability. There is no point in doing research if it cannot be extended to the farm and implemented.