

**Innovation in Agriculture
The Contribution of the Canadian Seed sector**

Executive Summary

The Seed Sector is an Important Part of Canadian and Saskatchewan Agriculture

- The Canadian seed sector generates \$770 million in combined domestic and export sales every year
- Canadian seed is exported to approximately 70 countries, generating \$188.7 million
- Over 13,000 Canadians are employed in the development, production and distribution of pedigreed seed.

Innovation is the Past, Present and Future of Agriculture

- Agricultural productivity growth consistently outstrips that of the manufacturing and business sectors. The contribution of the seed industry through the development of new varieties is one of the most important drivers of productivity; protection from risk (weather, insects and weeds); and market opportunities.
- The participation of new, low cost competitors in international bulk commodity markets will continue to drive prices down, seriously affecting the income situation of Canada's export market dependent farmers. Canada can and will continue to compete in these markets, but success will depend on advances that continue to help farmers reduce costs and risks, and that improve productivity. Innovations provided by plant breeding to offer specific qualities will open up new, higher value market opportunities for Canadian farmers, increasing their returns.

The Canadian Seed Sector Invests in Innovation

- As a global industry, plant innovators return more than 13% of their turnover to research and development. That compares with only 5% reinvestment by the automotive sector and 1% by the food processing industry
- Canadian private companies invest about \$70 million annually, more than our share of the global seed trade.

Continued Investment in Innovation Requires a Supportive Regulatory and Policy Environment

- A regulatory and policy environment that supports continued seed industry innovation:
 - Includes a streamlined regulatory system that ensures consistency between acts and regulations affecting variety registration and commercialization
 - Encourages and promotes the use of certified seed. Certified seed delivers consistency, purity, traceability and risk protection. CSTA supports the development and implementation of a tax credit for farmers who use certified seed.
 - Provides variety developers with tools to protect their intellectual property.

Innovation in Agriculture The Contribution of the Canadian Seed Sector

Introducing the Canadian Seed Industry

4,000 seed growers produce over 1.2 million acres of pedigreed seed annually. The industry generates over \$770 million in sales annually and seed companies employ over 9,600 people.

The Canadian Seed Trade Association

Every year, over 1.2 million acres of pedigreed seed crops are produced in Canada by over 4,000 experienced seed growers. The Canadian seed industry makes a very important contribution to the agriculture sector and to the economies of Canada and its provinces. The industry generates more than \$770 million in sales annually. In addition to the 4,000 growers, Canadian seed companies employ an estimated 9,600 Canadians. The seed industry also makes a strong contribution to Canada's export balance. About 25% of the seed produced in Canada – 26,000 varieties of 181 species -- is exported to over 70 countries. Exports of Canadian seed are valued at over 188 million.

The Canadian Seed Trade Association (CSTA) represents a broad cross-section of Canadian businesses that are engaged in all aspects of seed research, plant breeding, production and marketing, both domestically and internationally. Membership ranges from those who market garden seed and herbs to large western grain handlers, and from small family-run businesses to large multinational corporations. Our members' seed products include about 50 principal crops, including: grains and oilseeds, special crops, forage and turf grasses, flowers, vegetables, fruits.

Contributions by the Seed Sector to Innovation in Agriculture

Growth in agricultural productivity has outstripped even that of the manufacturing and business sectors over the last forty years – the result of new technologies, superior products and novel production methods.

Agriculture has led the Canadian economy in productivity growth. With the adoption of new technologies, superior products, and novel methods of production, agricultural productivity growth in Canada has outstripped even that of the manufacturing and business sectors over the last forty years. And the real value of production in Canadian agriculture has tripled over the last 45 years.

Many of the advances in the industry have been the direct result of plant breeding.

Many of the advances in Canadian agriculture have been the direct result of plant breeding.

For example:

- Over the last 60 years, the efforts of North American corn breeders have been rewarded by a 4-fold increase in corn.
- The development of Marquis Wheat by Charles Sanders has been given as much credit as the transcontinental railroad for opening up the west for agriculture, because it was the first wheat with an early enough maturity to be reliably grown on the prairies.
- Between 1976 and 2006 wheat yields have increased on average 22%; and canola yields have grown by 25%. Virtually all of that increase has been the result of genetic improvement.
- Canola is a prime example of innovation in Canada. Since its development in 1974, Canola now makes the largest contribution to western Canadian crop receipts.

Canada continues to enjoy a global reputation as a leading supplier of high quality food and grains. This reputation is partly due to our vast land base, good soils and favourable climate, but the innovations delivered by plant breeding also make a very strong contribution.

Delivering the Value

New varieties bring value to farmers, both directly and indirectly. Higher yields as noted above, improved stability, better disease resistance and earlier maturity all add dollars directly to farm bottom lines. Products of modern biotechnology also deliver value directly to producers. Herbicide tolerance and insect resistance traits reduce crop risks from weed competition and insect damage, reducing costs to the farmer and reducing the pesticide load on the environment.

New plant varieties bring value directly to producers through lower costs, better yields and reduced risks; and indirectly through improved market access and delivery opportunities.

New varieties can also deliver value that open market opportunities for farmers. For example, varieties with better milling or malting attributes, those that produce more oil, or deliver better feeding value can result in more delivery opportunities or price premiums to farmers.

There is a growing demand for products with very specific characteristics to suit special needs of processors, industrial users or consumers. Growers that are able to participate in these special, identity preserved value chains realize significant price premiums and access opportunities.

The Importance of Innovation in the Future

The entrance of new, low cost producers into international commodity markets will continue to contribute to a downward trend in bulk commodity prices.

Similar to the experience in Canada, agriculture the world over has seen dramatic productivity and production increases. While developed countries like Canada continue to improve in productivity, new players like Brazil, Argentina and Malaysia have come on to the scene as much lower cost producers. For example, the unit cost of soybean production in Argentina is less than half that of canola in Canada. The increased presence in the international market of these low cost producers will result in a continued downward trend in bulk commodity prices.

Canada does and will continue to compete in these markets, but our success will depend on advances in the industry that help farmers reduce costs and risks, and that continue to improve productivity,

Growing wealth in emerging markets, combined with increasing demand for specific health and other qualities, as well as increased demand for biologically produced fuels, fibres and plastics, present tremendous opportunities for Canadian agriculture. Innovation delivered by the seed industry will help Canadian agriculture to capture those opportunities.

Canada does and will compete in these markets, but our ability to be successful will depend on advances in the industry that continue to help farmers reduce costs and risks and continue to improve productivity.

New crop varieties that are increasingly resistant to diseases and pests, increased drought and salinity tolerance and which make better use of nutrients are on the horizon for Canadian farmers.

Changing world demand opens tremendous opportunities for Canadian agriculture. Burgeoning middle classes with rising disposable incomes, in emerging markets like China and India, will demand a greater range of higher quality products consistent with their newfound economic status. Consumers, wherever they may be, will increasingly seek more from their food.

They will be seeking higher quality and specific attributes that best fit their philosophies and lifestyles. They will look to food to deliver health benefits, such as beneficial fatty acids and antioxidants. They will seek out foods that are hypoallergenic; that can reduce the effects of aging; or fight cancer.

Plant breeding has been improving food characteristics of crops for centuries, and we now have the technology required to deliver varieties that will meet changing demands of consumers, processors and others along the value chain, and increase the returns to the entire sector.

Bio-products also present tremendous potential for agriculture in Canada. Agricultural products have always been used for industrial and energy purposes, but the demand for renewable sources of energy, fibres and plastics has never been higher. Also with crude oil prices continuing to rise, the focus on bio fuels as alternatives to petroleum products is increasing. These opportunities may just be the tip of the iceberg – if there is an environment in Canada that fosters innovation.

Investment in Innovation

Opportunities presented by innovation are only possible because of large investments in research and development.

The opportunities identified in this submission are and will be available because of heavy investment in research and development by both the private and public sectors.

Public sector breeding was once the dominant source of new varieties in Canada, but public funding has been cut to the point where the focus of public funding is now more on crops where there is little or no private investment.

However, the public sector still has a strong role to play, often forming partnerships with the private sector to commercialize new innovations. Innovations developed by these partnerships will also require an environment where commercialization can be successful.

The return to research and development by plant innovators is more than twice that of the automotive industry and over 10 times that of the food processing sector.

Private sector plant innovators make research and development a priority for their spending. As a global industry, plant innovators return more than 13% of their turnover to support future innovation. That compares to only 5% re-investment in research by the automotive sector and 1% re-investment in research by the food processing sector.

The global investment by private companies in research and development translates to about 1 billion dollars annually. In Canada the investment is about \$70 million, which is larger than our share of global seed trade. Canada has been seen as a good place to invest research dollars in the past, but there is growing uncertainty around possible new investments.

Fostering Innovation

In order to maintain the substantial value delivered to the Canadian agriculture industry by seed sector innovations, governments need to create an environment that allows for commercialization and protection of new products.

Continued investments in innovation in the seed sector requires:

- *A streamlined regulatory system based on sound science*
- *Policies and programs that encourage the use of certified seed*
- *Recognition that intellectual property rights are a global mechanism to reward and encourage investment*

It is well understood and agreed that a critical key to the successful future of Canada's agriculture and agri-food industry is innovation. Plant breeding and the Canadian seed industry make a substantial contribution to innovation in Canadian agriculture, delivering value directly to Canadian farmers.

However, there is a real risk that without a regulatory framework that allows for commercialization and protection of these new products, the investments and commitments to innovation could be lost to Canada.

An environment that supports continued seed industry innovation is one that:

- Includes a streamlined regulatory system that ensures consistency between the Acts and regulations affecting variety development and commercialization
- Includes federal and provincial policies and programs that encourage the use of certified seed. Certified seed is assured to be clean and varietally pure. Because it can deliver specific qualities and attributes, it provides access to new markets; and it is a key factor in traceability.
- Promotes the use of certified seed through incentives in risk management programming, and through the tax system. CSTA urges governments to work with us to develop and offer a tax incentive that will encourage producers to use certified seed.
- Recognizes that intellectual property rights are a global mechanism to reward and encourage investment - by protecting developers of new varieties from the copying and sale of their varieties by others who have not made the tremendous investments in time and finances to develop the varieties.

Conclusion

The Canadian seed industry has been a driver of innovation in the Canadian agriculture and agri-food sector. The contribution to productivity, pest and disease control, and environmental protection has been significant, and the future looks even brighter.

With the right regulatory environment, the development of new varieties can be the foundation of tremendous opportunities in food, feed, pharmaceutical and industrial uses for Canadian produced product.

On behalf of its members, the CSTA looks forward to a strong and productive working relationship with the government of Canada, to promote innovation to benefit the entire agriculture and food industry.