

Funding Innovation - A Technology Value System



Funding Plant Breeding and Variety Development A Technology Value System

Background

It is well understood that in order to feed, clothe and fuel a growing world population the world's farmers will need to substantially increase crop production over the next few decades. They will have to do that while faced with growing challenges of climate change and increasing competition for land, water and other inputs, and the need to protect and improve the environment. With a land base and climate that is conducive to crop production agriculture, Canadian farmers are uniquely positioned to be leaders in the effort to "produce more with less", but it will require the development business models that enable and foster investment and innovation leading to a more productive agricultural sector.

In 2012 total investment in cereal plant breeding and variety development was \$40.2 million. Most of the investment was in the public sector, with Agriculture and Agri-food Canada leading the way. AAFC investment in plant breeding and variety development in 2012 was \$23.5 million. Producers invested \$8.3 million and private industry investment was \$8.4 million.

The Government of Canada has renewed its emphasis on innovation and competitiveness, but with a vision that is different than in the past - re-focussing federal investments to build a strong scientific foundation (e.g., through development of germplasm, mechanisms for resistance to disease and insects, etc.) while looking to producers and agri-business, alone or in partnerships with public institutions, to drive research priorities and deliver improved varieties based on market needs.

In 2012, private sector seed companies invested over 100 million in plant breeding and variety development in Canada. About 83% of that investment was in three crop kinds: canola, corn and soybeans where the private sector is able to realize a return on its investment. Because it is generally not able to recover its investments, Private sector investment in cereals, other oilseeds, forages and specialty crops has lagged. It is widely recognized that if the private sector and producers are to play an increasing role, a new business model is required to facilitate incremental investment in plant breeding and variety development for these crop kinds.

Beginning with an international symposium in April, 2013, a value chain group has been working to develop and propose a "Made in Canada" system that will generate funds for research, plant breeding and variety development to ensure continued innovation and long term sustainability of the agricultural sector

The Technology Value System concept was designed by a value chain working group representing farmers, the seed sector, private and public plant breeders and developers, grain and seed logistics and funding institutions. The Technology Value System is designed to "effectively capture funds from the value chain for investment in plant breeding and technology and variety development, in order to bring benefits to all stakeholders along the value chain."

The concept was designed to conform to the following principles which were developed by the value chain:

1. The Technology Value System has been designed for cereals (wheat, oats and barley), but is adaptable to any crop kind.
2. It is designed to as much possible, ensure that all who benefit, contribute; and all who contribute, benefit
3. The Technology Value System will encourage and promote competition along the value chain

4. The Technology Value System will, as much as possible, complement, and not duplicate the activities of provincial commissions, commodity groups and organizations.
5. The Technology Value System will be as simple as possible to administer, and will leave the smallest possible administrative footprint.

The Technology Value System

Over the past year, the value chain work group has assessed the systems used in many different countries around the world, and those systems operating or proposed in Canada.

The work group has developed the following concept:

A Technology Value System Underpinned by Federal Regulation

- The system will be defined and implemented in regulations under Plant Breeders' Rights legislation that conforms to the 1991 convention of the Union for the Protection of New Plant Varieties (UPOV) The royalty per tonne for each crop kind or class will be established in regulation as will – for the second option - the royalty refund on grain produced directly from legally purchased seed (first production from the seed).
- The system will apply to all cereal (wheat, oats, and barley) varieties that are protected by Plant Breeders' Rights under legislation that conforms to the 1991 UPOV convention. Varieties not protected by Plant Breeders' Rights, or by Plant Breeders' Rights established under previous UPOV conventions will not be included in the Technology Value System.
- Varieties protected by PBR under UPOV 1991 and commercialized before regulations establishing the Technology Value System are implemented, will be subject to the system once the regulations are in place.

The work group is considering 2 options for the Technology Value System:

FIRST OPTION

- A royalty collected at the point of delivery of grain of wheat, oats and barley protected by Plant Breeders Rights legislation that complies with the 1991 convention of the Union for the Protection of New Plant Varieties (UPOV). (end point royalty)
- The royalty will initially be fixed at \$1.50 per tonne of wheat, oats and barley
- The royalty will be collected at all delivery points (grain elevators, feed mills, flour mills, feed lots etc.)
- Producers will declare the variety of grain that they are delivering
 - At the direction of breeders, grain deliveries will be subject to random variety testing on delivery. Misdeclaration of a variety of delivered grain will be an infringement of the Plant Breeders' Rights, giving the breeder the ability to pursue punitive action and compensation through the legal system.
 - Breeders will agree that the facility/individuals receiving the grain deliveries will not be held responsible for any damages resulting from the misdeclaration of varieties, unless it is proven that the misdeclaration was willfully and in an informed manner, recommended or directed by the individual or facility receiving the grain deliveries.

- The funds collected will be returned to the owner of the variety or the owner of the Canadian marketing rights to the variety.
- The system will be administered by a national central agency appointed in regulation. The central agency will collect and distribute the funds from the end point royalty. The central agency could also, on behalf of breeders, monitor declarations and investigate breaches of Plant Breeders' Rights.

SECOND OPTION

The Technology Value System has two components:

1. A royalty collected at the point of delivery of grain of wheat, oats and barley protected by Plant Breeders Rights legislation that complies with the 1991 convention of the Union for the Protection of New Plant Varieties (UPOV). (end point royalty)
 - The royalty will initially be fixed at \$1.50 per tonne of wheat, oats and barley
 - The royalty will be collected at all delivery points (grain elevators, feed mills, flour mills, feed lots etc.)
 - Producers will declare the variety of grain that they are delivering
 - At the direction of breeders, grain deliveries will be subject to random variety testing on delivery. Misdeclaration of a variety of delivered grain will be an infringement of the Plant Breeders' Rights, giving the breeder the ability to pursue punitive action and compensation through the legal system.
 - Breeders will agree that the facility/individuals receiving the grain deliveries will not be held responsible for any damages resulting from the misdeclaration of varieties, unless it is proven that the misdeclaration was willfully and in an informed manner, recommended or directed by the individual or facility receiving the grain deliveries.
 - The funds collected will be returned to the owner of the variety or the owner of the Canadian marketing rights to the variety.
2. To comply with the UPOV Convention language that prohibits breeders from exercising their rights more than once in a production cycle (one generation from seed), producers who purchase seed legally as defined by the *Plant Breeders' Rights Act* will be eligible to receive a refund of the portion of the royalty collected at the end point that is commensurate with the first generation resulting from the purchased seed. Planting of grain saved for use as seed begins a new production cycle.

The system will be administered by a central agency, appointed in regulation. The central agency will collect and distribute the funds from the end point royalty, and will administer the refund system. The central agency will also, on behalf of breeders, monitor declarations and investigate breaches of Plant Breeders' Rights.

The work group believes that the concept described is the best fit with the principles designed by the large, value chain multi-stakeholder group that began this process in April, 2013. The work group recommends that an implementation work group be established to further develop the concept and how it could be implemented.