

**FOSTERING INNOVATION
IN CANADIAN AGRICULTURE**

The Role of Intellectual Property Protection

January 20, 2011

Fostering Innovation in Canadian Agriculture The Role of Intellectual Property Protection

Executive Summary

For many years, Canada has enjoyed a very positive national and international image as a provider of innovative products to farmers and consumers around the world. However the truth is that our agriculture and agri-food industry is falling behind its competitors for many crop kinds. A recent study puts Canada near the bottom of the list of competitors with respect to yield improvements in wheat, and the story is the same for many cereal and other crops. There is a direct correlation between productivity and investment in innovation, by both the private and public sectors in Canada.

Research and plant breeding are critical to innovation in agriculture and agri-products. Canadian agriculture and agri-products have benefited from both public and private sector research and plant breeding. It is important that both continue and that measures be implemented to encourage a positive and mutually beneficial public-private sector relationship

Seed is the primary driver of agricultural innovation and the agricultural economy. By creating an environment that enables and promotes investment in seed driven innovation, the government will be providing an economic stimulus to the entire agriculture and agri-products sector. That includes the development and implementation of an intellectual property tool box that gives both the public and private sectors the tools they need to generate funds for investment.

As major investors in innovation, CSTA's members require a commitment to improved intellectual property protection tools including

- Bringing Canadian Plant Breeders' Rights legislation into conformity with the UPOV Convention of 1991, by implementing the provisions of the convention in their entirety
- Developing, in legislation, a clear mission statement for the Plant Breeders' Rights Office which distances the PBRO from policy and implements a focus on the client.
- Improved recognition, communication, coordination and cross compliance between regulatory bodies and legislation such as the Seeds Act and regulations, specifically the seed certification system, and the Canada Grain Act.
- Establishment of a new Advisory Committee to monitor effectiveness of the process and report regularly to the Minister. The membership of the advisory committee must have sufficient representation of the clients of Plant Breeders' Rights – the applicants.



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The Canadian Seed Sector's Contribution to the Canadian Economy

The Canadian Seed Sector contributed \$3.95 billion to the Canadian economy in 2007, and employed over 14,000 Canadians.

The seed industry in Canada makes a very strong contribution to the economy – \$3.95 billion in 2007. A study recently commissioned by the CSTA also found that our industry employed over 14,000 Canadians in 2007. More than 3,000 were highly-skilled plant breeding staff including scientists, biotechnologists and technicians. In addition, a large number of these jobs are located in small regional centres and rural communities.¹

The Canadian Seed Trade Association brings together 132 member companies who are engaged in all aspects of seed research, production and marketing both domestically and internationally. Our membership ranges from those who sell garden seed and herbs to large western grain handlers; and from small family-run businesses to large multinational corporations.

In 2007 our member companies invested \$56.1 million in research and development. That is 6% of the total retail sales of these companies, and 26% of their combined operating budgets.

Success in Agriculture Starts with Seed

Not only does our sector make a substantial contribution to Canada's GDP and employment; it is a very strong contributor to the success of Canada's agriculture and agri-products industry. In fact, seed is the driver of success.

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- Plant breeding and research brings new technologies to farmers, and new attributes and quality to consumers. For example:
 - Innovation delivered through seed brought canola to Canadian agriculture and all of the food and feed benefits associated with it
 - Seed driven innovation has delivered crops that are increasingly resistant to diseases and pests. That, combined with herbicide tolerance, reduces crop risks, lowers costs for farmers, and reduces the pesticide load on the environment
 - Plant breeding and research is improving food quality for consumers, delivering beneficial fatty acids and anti-oxidants to improve health

¹ The Value of the Canadian Seed Sector to the Canadian Economy, June, 2008
Prepared for the Canadian Seed Trade Association by AgGenuity Consulting Inc. and AgBioT Research Consulting Ltd.

As an early adopter of innovation, Canada is positioned to be one of the leaders in the charge to feed the future world, but this can only be done in an environment that enables and promotes investment in seed driven innovation.

The United Nations has stated that in order to feed a quickly growing population, the world must double its food production by 2050. World agriculture is striving for that goal at the same time as it is faced with serious challenges including climate change, increasing competition for limited land and water resources, and declining supplies of fossil fuels. CSTA's members are committed to meeting those challenges through the development of innovation and technology to make better use of limited resources to produce more food on every acre.

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Creating an Environment for Innovation

Canadian agriculture and agri-products have benefited from both public and private sector research and plant breeding. It is important that both continue

In 2007, the private sector accounted for 39% of total investment in plant research and development in Canada.

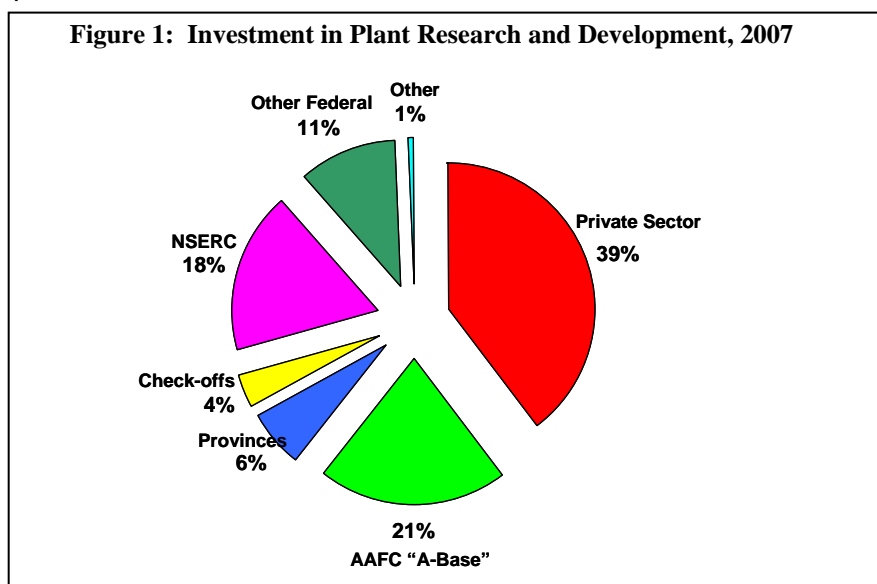
The private sector requires a positive environment to maintain and expand its investment.

Seed is the primary driver of agricultural innovation and the agricultural economy. By creating an environment that enables and promotes investment in seed driven innovation, the government will be providing an economic stimulus to the entire agriculture and agri-products sector.

Research and plant breeding are critical to innovation in agriculture and agri-products. Canadian agriculture and agri-products have benefited from both public and private sector research and plant breeding. It is important that both continue and that measures be implemented to encourage a positive and mutually beneficial public-private sector relationship.

A good example can be found in the canola industry. Canola was developed by the Research Branch of Agriculture and Agri-Food Canada, and now benefits from about 75% of total private sector research spending.

CSTA supports continued and increased funding for public sector plant breeding and research. However, as demonstrated in the graph below, the private sector is playing a very strong role in research and development, and requires a positive environment to maintain and expand that investment.



While the private sector is a very significant investor in plant breeding and research, as shown in Figure 2, that investment is concentrated in three crop kinds: canola, corn and soybeans.

By 2012, 95% of total private sector investment in plant breeding and research will be in canola, corn and soybeans.

Figure 2: Private Sector Investment in Plant Breeding and Research by Crop Kind

	1987		2001		2007		2012	
	\$M	%	\$M	%	\$M	%	\$M	%
Canola	7.1	50	30.5	67.3	41.9	74.7	80	75.2
Corn	2.8	19.7	7.9	17.4	4.8	8.6	9	8.5
Cereals	1.5	10.5	2.3	5.1	3.3	5.9	2.7	2.5
Soybeans	0.7	4.9	2.6	5.7	3.9	6.9	12.7	11.9
Forages	0.3	2.1	0.8	1.8	0.49	0.9	0.5	0.5
Special Crops	0.1	0.7	0.4	0.9	0.12	0.2	0.1	0.1
Garden Seed	0.1	0.7	0.0	0	0.0	0.0	0.0	0.0
Other	1.6	11.3	0.8	1.8	1.6	2.8	1.4	1.3
TOTAL	14.2		45.3		56.1		106.4	

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Figure 3

Hyland Seeds FT Wonder

Variety Development Cost - 9 years - \$926,814

	Year 1	Year 2	Year 3
Margin	\$1.92/25kg	\$1.84/25kg	\$1.90/25kg
Sales	176,000 units	10,546 units	32,000 units
Profit	\$337,920	\$19,405	\$60,800

Variety Development Cost \$ 926,814

Three Year Total Profit \$ 418,125

Three Year Net (\$508,689)

For crops with the highest share of private sector R&D investment – canola, corn and soybeans, the link between intellectual property protection and investment in new technologies is well recognized and accepted by most producers. There is a variety of options available to protect intellectual property and generate funds for investment such as hybridity, contracts, gene patents and technology use agreements.

Plant Breeders' Rights

The use of Plant Breeders' Rights for most crop kinds is very low (even when it is the only IP tool available), and where there are other options available, developers are clearly choosing to protect intellectual property outside of PBR.

However where that variety of options for the protection of intellectual property does not exist – primarily in open pollinated crops like cereals, forages and pulse crops, investment is not expected to increase at least in the shorter term. For these crops, the primary intellectual property protection tool is Canada's Plant Breeders' Rights legislation.

As shown in Figure 4, the use of PBR for most crop kinds is very low (even when it is the only IP tool available), and where there are other options available, developers are clearly choosing to protect intellectual property outside of PBR.

Figure 4 – Registrations vs. PBR Grants from Jan 1 2005- Dec. 31 2007

Crop Kind	Registrations	PBRs Granted	%
Barley	38	15	39%
Beans	21	3	14%
Canola	73	8	11%
Corn	N/A	8	-
Flax	4	4	100%
Forages	49	0	0%
Lentils	7	0	0%
Oats	28	14	50%
Peas	20	16	80%
Rye	2	0	0%
Soybeans	197	4	2%
Wheat	51	25	49%

The process for obtaining a PBR has not kept pace with changes in the plant breeding sector or with the rate of change in the market place. The time to obtain a PBR often exceeds the life cycle of the variety; and the reluctance to assist with communication, investigation and enforcement makes PBR an unattractive option for IP protection.

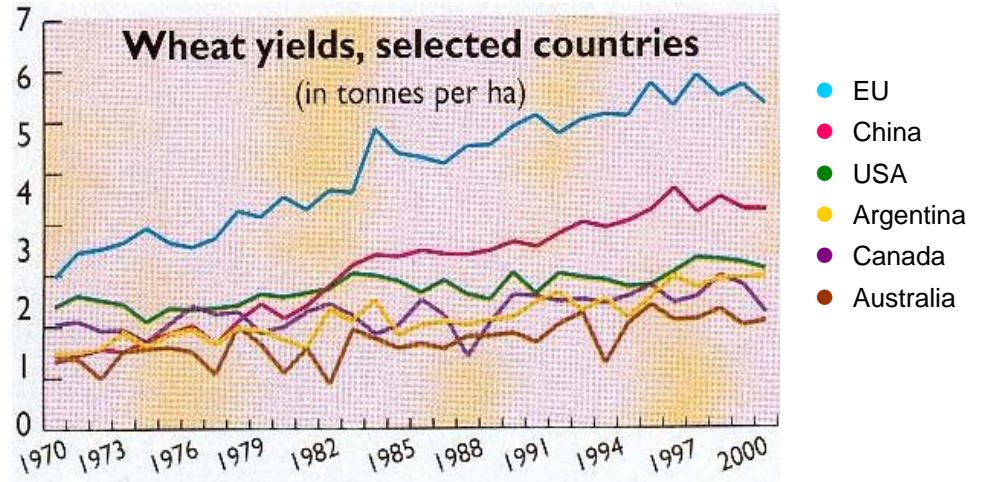
The reasons for this low use of PBR are many, but include:

- Canada's Plant Breeders' Rights legislation is out of date and as the result, the process for obtaining a Plant Breeders' Right certificate has not kept pace with the plant breeding industry and the pace of change in the market place.
- The time required to apply for and obtain a Plant Breeder's Right often exceeds the life cycle of the variety for which the right is sought.
- The availability and use of other intellectual property protection tools such as bag licenses, contracts such as technology use agreements; and identity preserved contract systems that offer premiums and incentives.
- A lack of willingness on the part of regulatory and other government agencies to inform and communicate the provisions of PBR to all stakeholders, and unwillingness to assist with enforcement.

A recent ISF study concludes that while Plant Variety Protection such as Plant Breeders' Rights, is the most common form of IP protection internationally, Canada ranks at the very bottom when it comes to generating funds for reinvestment. Wheat yields in Canada have shown the impact.

A study of wheat just completed for the International Seed Federation examined the efficiency of royalty collection systems in a number of ISF member countries. The study concludes that Plant Variety Protection under the International Convention for the Protection of Plant Varieties (UPOV) is the most common IP protection system internationally. It also places Canada at the very bottom of the list when it came to generating funds for reinvestment. The impact of this on wheat yields is shown in Figure 5

Figure 5



Source: USDA

Despite signing the UPOV 1991 Convention in 1992, Canada has still not ratified the convention by amending its Plant Breeders' Rights Act. Not only does this limit the tools that can be used to generate funds for investment by Canadians, it is impacting our ability to attract international investment.

Despite the fact that Canada signed the most recent convention of the Union for the Protection of Plant Varieties (UPOV) in 1992, our country has still not ratified the convention by amending its Plant Breeders' Rights Act to conform to the 1991 convention. Not only does this limit the tools that can be used to generate funds for investment by Canadians, it is impacting our ability to attract international investment.

The European Seed Association has identified Canada's outdated Plant Breeders' Rights legislation first directly to Canada's Minister of Agriculture and Agri-Food and the President of the Canadian Food Inspection Agency, and then to the European negotiating team for the Canada/EU Trade agreement:

*"This situation is particularly relevant to the business environment and bilateral relationship between the EU and Canada as a potential factor raising a barrier to trade in seeds, since many European seed companies would not sell their varieties in Canada if they cannot rely on effective IP protection."*²

² European Seed Association letter to Mr. Philippe Meyer, Directorate-General for Trade, European Commission January 18, 2010

In order to facilitate investment, and ensure that Canadian farmers can keep pace with their international competitors, Canada's Plant Breeders' Rights Legislation must fully comply with the 1991 UPOV Convention.

CSTA does not oppose including in Canadian legislation the option for a farmer's exception to the PBR to allow for farm saved seed to be used on the farmer's holdings, provided that it does not extend beyond its current application and provided that it is clearly preceded by the language in UPOV 1991 around the need to safeguard the legitimate interest of the breeder (including with remuneration).

In addition to complying with UPOV 1991, Canada's PBR legislation needs to

- *Set a mission and vision for the PBR office sets the mandate as implementation rather than policy, and which focuses on serving the needs of the client*
- *Improve coordination and cross compliance between PBR and other regulations and legislation*
- *Establish a new Advisory Committee which has in its membership sufficient representation of clients.*

In order to facilitate investment, and ensure that Canadian farmers can keep pace with their international competitors, Canada must bring its Plant Breeders' Rights into conformity with the 1991 UPOV Convention.

In order to ensure that Plant Breeders' Rights legislation provides the protection required to stimulate investment, it must fully comply with the UPOV Convention of 1991, by implementing the convention in its entirety. This includes the sections defining the breeders' right; essential derivation; products of harvested material; and provisional protection.

We submit that specific attention needs to be paid to the following provisions of UPOV 1991:

- **Legitimate Interests of the Breeder** – UPOV 1991 specifically refers to respecting the legitimate interests of the breeder, however it does not define the term. CSTA believes that PBR legislation should contain the following definition:

“Recognition and respect of the breeder's right to receive compensation for the initial and subsequent use of the innovation that reflects the value that the innovation brings to the purchaser/user.”

- **Farmers' Exception to the Plant Breeders' Right** – the UPOV Convention of 1991 allows for an optional exception to the Plant Breeders' Right to allow farmers to use the product of harvest of varieties covered by Plant Breeders' Rights for propagation on their own holdings. However the provision also states that the legitimate interests of the breeder must be safeguarded, including the payment of remuneration. If there is to be a farmers' exception in Canada's Plant Breeders' Rights legislation, the language of the UPOV must be included in its entirety. Additionally the farmers' exception must not extend to sectors of agricultural or horticultural production where such an exception is not common practice.

CSTA's Board has approved a detailed policy position on Plant Breeders' Rights, which is attached to this submission. In addition to specifying the details of compliance with UPOV 1991, CSTA's position outlines issues that are specific to Canada, which need to be included in a new Plant Breeders' Rights Act including:

- The development of a clear mission statement for the Plant Breeders' Rights Office which distances it from policy and implements a focus on the client.
- Recognition, Communication, Coordination and Cross Compliance between Regulatory Bodies and Legislation such as the Seeds Act and regulations, specifically the seed certification system and the Canada Grain Act.
- The establishment of a new Advisory Committee to monitor effectiveness of the process and report regularly to the Minister. The membership of the advisory committee must have sufficient representation of the clients of Plant Breeders' Rights – the applicants.

When considering new PBR legislation, CSTA supports a consideration of the fit of PBR with the mandate of the CFIA.

CSTA supports a thorough assessment of the “fit” for the Plant Breeders’ Rights Office with the mandate of Canadian Food Inspection Agency, and an assessment of potential relocations, including to the Canadian Intellectual Property Office of Industry Canada.

Conclusion

CSTA welcomes the commitment of the Government of Canada to innovation and investment, as outlined on many occasions but put very succinctly in a statement made by Honourable Tony Clement in December, 2010 when the government announced funding for Centres of Excellence for Commercialization and Research:

"Our government understands that an innovative society and economy depend on creative thinkers whose potential is encouraged and supported. That's why we are investing in the ideas, products and technologies generated by these Centres of Excellence to create jobs and businesses, help develop highly skilled people, strengthen our economy and position Canada for long-term prosperity."³

By creating a regulatory and intellectual property environment that will foster investment in innovation for Canadian agriculture and agri-products, the Government of Canada can foster improved productivity for farmers; facilitate the development of new and innovative products to benefit consumers and the environment; and ensure that Canada can lead the way to a healthier and more prosperous Canadian economy.

As major investors in innovation, CSTA’s members require a commitment to improved intellectual property protection tools including

- Bringing Canadian Plant Breeders’ Rights legislation into conformity with the UPOV Convention of 1991, by implementing the provisions of the convention in their entirety
- Developing, in legislation, a clear mission statement for the Plant Breeders’ Rights Office which distances the PBRO from policy and implements a focus on the client.
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- Establishment of a new Advisory Committee to monitor effectiveness of the process and report regularly to the Minister. The membership of the advisory committee must have sufficient representation of the clients of Plant Breeders’ Rights – the applicants.



CANADIAN SEED TRADE ASSOCIATION

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CSTA Policy on Plant Breeders' Rights July, 2010

Preamble

Plant Breeders' Rights was established in Canada in 1990, and has contributed to a positive investment climate. However, PBR in Canada has not kept pace with changes in technology and the marketplace. As the result, its usefulness, and thus its use in the field crop sector, continues to decline.

Consultation with Canadian private sector breeders has revealed that there are a number of reasons for the declining use of Plant Breeders' Rights as a tool for the protection of intellectual property in field crops, including, but not limited to:

- The process for obtaining a Plant Breeders' Right certificate has not kept pace with the plant breeding industry and the pace of change in the market place. The time required to apply and obtain a Plant Breeders' Right often exceeds the life cycle of the variety for which the right is sought.
- A lack of willingness on the part of regulatory and other government agencies to inform and communicate the provisions of PBR to all stakeholders, and an unwillingness to assist with enforcement.
- The availability and use of other intellectual property protection tools such as bag licenses, contracts such as technology use agreements; and identity preserved contract systems that offer premiums and incentives.

It is acknowledged that there are benefits to using Plant Breeders' Rights as tools of intellectual property protection. Benefits include:

- The variety rights holder has the ability to manage the import of varieties which are registered for sale in other countries as well as Canada, conferring the ability to monitor seed quality and manage direction of seed which could flow into identity preserved markets
- The existence of breeders' rights provides some security for potential investments in Canadian agriculture.
- Broader protection than is provided by contract law because Plant Breeders' Rights protects against non-contracted 3rd party infringements.

While some Canadian breeders will likely continue to make use of other intellectual property protection tools, others believe that with improvement, the system could be made more useful and encourage increased use.

Despite the fact that Canada signed the most recent convention of the Union for the Protection of Plant Varieties (UPOV) in 1992, our country has still not ratified the convention by amending its Plant Breeders' Rights Act to conform with the 1991 convention. Canada is one of the only developed countries that does not comply with the UPOV 1991, and it has affected our ability to attract investment. Following is CSTA's policy on Plant Breeders' Rights.

Amendments to the Plant Breeders' Rights Act

CSTA supports amendments to Canadian Plant Breeders' Rights to bring existing legislation into conformity with the 1991 UPOV Convention. Amending Canada's legislation to conform with UPOV 1991 will allow continued Canadian innovation in plant breeding, equipping farmers with the new varieties necessary for a prosperous future.

In order to ensure that Plant Breeders' Rights legislation provides the protection required to stimulate investment, it must fully comply with the UPOV Convention of 1991, by implementing the convention in its entirety. However there are specific provisions of the UPOV 1991 that are of particular importance to Canada's private sector and must be incorporated in Canada's Plant Breeders' Rights legislation.

1. UPOV Provisions

- A. **Defining the Breeder's Right** – Canada's legislation must incorporate the UPOV 1991 definition of the breeder's right in its entirety, ensuring that the following actions require the authorization of the breeder:
 - Production or reproduction
 - Conditioning for the purpose of propagation
 - Offering for sale
 - Selling or other marketing
 - Exporting
 - Importing
 - Stocking for any of the above purposes
- B. **Legitimate Interests of the Breeder** – UPOV 1991 specifically refers to respecting the legitimate interests of the breeder, however it does not define the term. CSTA believes that PBR legislation should contain the following definition:

“Recognition and respect of the breeder's right to receive compensation for the initial and subsequent use of the innovation that reflects the value that the innovation brings to the purchaser/user.”
- C. **Farmers' Exception to the Plant Breeders' Right** – the UPOV Convention of 1991 allows for an optional exception to the Plant Breeders' Right to allow farmers to use the product of harvest of varieties covered by Plant Breeders' Rights for propagation on their own holdings. However the provision also states that the legitimate interests of the breeder must be safeguarded, including the payment of remuneration. If there is to be a farmers' exception in Canada's Plant Breeders' Rights legislation, the language of the UPOV must be included in its entirety. Additionally the farmers' exception must not extend to sectors of agricultural or horticultural production where such an exception is not common practice.
- D. **Products of Harvested Material** – UPOV 1991 provides that “harvested material, including entire plants and parts of plants, obtained through the unauthorized use of propagating material of the protected variety shall require the authorization of the breeder, unless the breeder has had reasonable opportunity to exercise his right in relation to the said propagating material.” CSTA supports the inclusion of this provision in Canada's Plant Breeders' rights legislation to ensure that the costs of innovation are shared throughout the value chain.
- E. **Reasonable Opportunity** – CSTA believes that history and case law makes it clear that the definition of “reasonable opportunity” does not include the obligation to protect the variety in other countries.

- F. **Provisional Protection** – the provisions of the UPOV 1991 which safeguard the interests of the breeder during the period between the application for the grant of a breeder's right and the grant of that right must be incorporated into Canadian Plant Breeders' Rights legislation. This protection must at least entitle the holder of the equitable remuneration from any person who has carried out acts which would require the breeder's authorization once the right is granted.
- G. **Essential Derivation** – The 1991 UPOV introduces the concept of essential derivation and dependency from an initial variety. Amendments to Canada's Plant Breeders' Rights Act to incorporate language around essentially derived varieties are important to provide a balance between access to and protection of initial originators of germplasm. CSTA supports the broad principles for codes of conduct in essentially derived varieties that has been adopted by the International Seed Federation. http://www.worldseed.org/isf/on_intellectual_property.html

2. Amendments Specific to the Canadian Situation

In addition to amending the Canadian Plant Breeders' Rights Act to fully and completely comply with the UPOV Convention of 1991, there are amendments that are required to ensure that Canada's legislation provides the protection necessary to stimulate investment in innovation in Canada.

- A. **Mission and Vision Statement** – Plant Breeders' Rights Legislation, Regulations or Directives should require the development of a Mission, and Vision statement for the Plant Breeders' Rights Office (PBRO), which includes a commitment to encouraging innovation, investment and creativity in Canadian plant breeding, and to continuously strive to improve performance in keeping with the mission and vision.
- B. **Recognition, Communication, Coordination and Cross Compliance Between Regulatory Bodies and Legislation** – CSTA believes that Acts, Regulations and Directives that affect seed and seed innovation should complement and be cross compliant. Specifically:
 - i. **Crop Certificates and Plant Breeders' Rights** – Canada's Plant Breeders' Rights Act grants the exclusive right to the holder of the right, to sell, produce for sale, or transfer protected varieties. CSTA believes that the process of obtaining and receiving a crop certificate from the Canadian Seed Growers Association is the first step in preparing seed for sale. Therefore only the holder of the right, either by Plant Breeders' Rights or by license from the holder of the right, should be eligible to receive crop certificates for seed of a protected variety. The Canadian Food Inspection Agency and its authorized agent, the Canadian Seed Growers Association must ensure that crop certificates are issued only to applicants who have the right to the protected variety. Amendments to the Plant Breeders' Rights Act, and consequential amendments to the Seeds Act should include this requirement.
 - ii. **Reporting of Violations** – Regulations and/or directives from the Canadian Food Inspection Agency should require CFIA inspectors to note and report Plant Breeders' Rights violations, through the Plant Breeders' Rights Office, to the holder of the right.
 - iii. **Definition of Sale** - Amendments the Plant Breeders' Rights Act should include a definition of sale that specifies that testing and contract multiplication do not constitute a sale of a variety, nor does the resulting product from those tests. This change will harmonize the provisions of the Plant Breeders' Rights Act to those in the Seeds Act.

- C. **Plant Breeders' Rights and Hybrids** – Canada's Plant Breeders' Rights Act and Regulations should make clear that for the purposes of intellectual property protection, a hybrid is a variety. By repeated use of its parents, a hybrid can be reproduced, unchanged. Therefore the criterion of stability is fulfilled by a hybrid. Distinctness, uniformity and stability of the hybrid may then, be assessed either on the hybrid itself or on its parents and the formula that associate them.
 - D. **Reference Varieties** – Canada's Plant Breeders' Rights regime should include agreement that applicants will choose reference varieties for PBR purposes.
 - E. **Notice** – the requirements around Provisional Protection should be amended to recognize publication in the Plant Breeders' Rights Journal as notice, rather than requiring notice in writing.
 - F. **Advisory Committee** – Plant Breeders' Rights Legislation should require the Minister to establish an effective advisory committee to help to establish the PBRO mission and vision, monitor effectiveness of the process and report regularly to the Minister. The membership of the advisory committee must have sufficient representation of the clients of Plant Breeders' Rights – the applicants.
- 3. **Trial Examiner Services** – to increase efficiency and improve logistical planning, CSTA supports an assessment of the potential privatization of PBR trial examiner services. In particular, consideration should be given to authorizing officially recognized plant breeders to serve as PBR trial examiners.
 - 4. **PBRO Reporting Structure and Location** – CSTA supports a thorough assessment of the "fit" for the Plant Breeders' Rights Office with the mandate of Canadian Food Inspection Agency, and an assessment of potential relocations, including to the Canadian Intellectual Property Office of Industry Canada.

CSTA July, 2010