

# 1. Crop Industry Profile (Current Operating and Regulatory Environment)

## Soybean: Biology of the Species

Source: Condensed from OECD ENV/JM/MONO(2000)9 11

### Section I - General Description Including Taxonomy and Morphology, and Use as a Crop Plant

Cultivated soybean, *Glycine max* (L.) Merr., is a diploidized tetraploid ( $2n=40$ ), in the family Leguminosae, the subfamily Papilionoideae, the tribe Phaseoleae, the genus *Glycine* Willd. and the subgenus *Soja* (Moench). It is an erect, bushy herbaceous annual that can reach a height of 1.5 meters. Three types of growth habit can be found amongst soybean cultivars: determinate, semi-determinate and indeterminate. Determinate growth is characterized by the cessation of vegetative activity of the terminal bud when it becomes an inflorescence at both axillary and terminal racemes. Determinate genotypes are primarily grown in the southern United States (Maturity Groups V to X). Indeterminate genotypes continue vegetative activity throughout the flowering period and are grown primarily in central and northern regions of North America (Maturity Groups 000 to IV). Semi-determinate types have indeterminate stems that terminate vegetative growth abruptly after the flowering period. None of the soybean varieties are frost tolerant, and they do not survive freezing winter conditions.

Soybean is grown as a commercial crop in over 35 countries. The major producers of soybeans are the United States, China, Democratic People's Republic of Korea and Republic of Korea, Argentina and Brazil. Soybean is grown primarily for the production of seed, has a multitude of uses in the food and industrial sectors, and represents one of the major sources of edible vegetable oil and of proteins for livestock feed use.

A major food use in North America and Europe is as purified oil, utilized in margarines, shortenings and cooking and salad oils. It is also used in various food products, including tofu, soya sauce, simulated milk and meat products. Soybean meal is used as a supplement in feed rations for livestock. Industrial use of soybeans ranges from the production of yeasts and antibodies to the manufacture of soaps and disinfectants.

Soybean is commonly considered one of the oldest cultivated crops native to North and Central China.

### Section II - Agronomic Practices

Soybean is a quantitative short day plant and hence flowers more quickly under short days. As a result, photoperiodism and temperature response is important in determining areas of cultivar adaptation. Soybean cultivars are identified based on bands of adaptation that run east-west, determined by latitude and day length. In North America, there are thirteen maturity groups (MG), from MG 000 in the north (45° latitude) to MG X near the equator. Within each maturity group, cultivars are described as early, medium or late maturing.

### Section III - Centers of Origin of the Species

*Glycine max* belongs to the subgenus *Soja*, which also contains *G. soja* and *G. gracilis*. *Glycine soja*, a wild species of soybean, grows in fields, hedgerows, roadsides and riverbanks in many Asian countries. Wild soybean species are endemic in China, Korea, Japan, Taiwan and the former USSR, but do not exist naturally in North America.

## Section IV - Reproductive Biology

Soybean is considered a self-pollinated species, propagated commercially by seed. Artificial hybridization is used for cultivar breeding. Soybeans exhibit a high percentage of self-fertilization, and cross pollination is usually less than one percent.

### Canadian Seed production

**Table 1. Provincial Annual Inspected Seed Production area (hectares)**

Source: Canadian Seed Growers Association (CSGA)

Province	PEI	NS	NB	QC	ON	MB	SK	AB	BC	CANADA
1996	67	24		6,254	32,359					38,703
1997	75	22		7,923	41,896	16				49,933
1998	65	25		9,753	49,987	173				60,003
1999	61			10,237	49,997	130				60,426
2000	64			9,473	46,685	652				56,874
2001	71	8		11,824	71,555	2,250				85,707
2002	20	9		9,146	56,909	3,322				69,406
2003	18			9,634	49,082	4,371				63,105
2004	66			11,811	57,174	6,784				75,835
2005	93			12,615	56,359	8,158				77,225
2006	109			12,330	54,802	11,571				78,812
2007	158			11,197	48,183	8,289				67,827
2008	298		5	13,966	50,582	8,456	218	74		73,599

According to Table 1, soybean seed area planted in Canada has been increasing to approximately 75,000 hectares to match the production area. Ontario area is variable to flat with regional increases noted in Quebec and Manitoba.

**Table 2. Seed for Sowing Imports**

Soybean for Sowing Imports from All Countries [Crop Year(July - June)]									
HS CODE: VALUE (\$ Can)					QUANTITY (KGM)				
1201.000010	2004/05	2005/06	2006/07	2007/08	2004/05	2005/06	2006/07	2007/08	
TOTAL:	3,049,187	6,739,633	4,323,990	7,005,354	3,423,912	8,289,219	4,813,913	9,048,691	
United States	2,944,178	6,665,802	4,217,527	6,778,613	3,272,558	8,167,518	4,645,305	8,852,766	
Chile	32,070	20,389	30,236	201,654	38,306	21,166	25,054	152,712	
Argentina	57,246	52,841	72,449	19,547	101,755	99,779	138,524	35,661	
China	9,684	0	0	100	5,906	0	0	90	
Japan	5,969	150	0	3,662	5,337	296	0	4,756	
Egypt	0	0	3,652	0	0	0	4,900	0	
Costa Rica	40	445	27	1,751	50	454	42	2,677	
Brazil	0	0	53	0	0	0	50	0	
Thailand	0	6	34	0	0	6	32	0	
Myanmar	0	0	12	27	0	0	6	29	

Table 2 shows that virtually all imports of seed are from the United States with the exception of importations of counter season production. The imports from United States are significant as this will be seed from many of the newest varieties. This will be discussed further in the section on variety development.

**Table 3. Seed for Sowing Exports**

Soybean for Sowing Exports to All Countries [Crop Year(July - June)]								
HS CODE:	VALUE (\$ Can)				QUANTITY (KGM)			
1201.0010	2004/05	2005/06	2006/07	2007/08	2004/05	2005/06	2006/07	2007/08
TOTAL:	7,365,133	6,459,592	3,901,743	8,352,444	9,688,089	11,109,954	6,292,949	13,531,878
United States	6,000,294	5,760,328	3,315,526	6,585,039	8,054,751	10,331,187	5,574,281	11,276,700
Italy	245,607	439,200	3,355	278,331	423,150	495,830	2,250	247,665
Czech Republic	581,698	55,056	19,244	0	479,946	39,839	11,486	0
Ukraine	0	0	116,100	515,875	0	0	95,000	258,453
Japan	175,971	49,371	78,596	258,560	350,800	103,650	186,670	521,320
Belgium	0	0	0	424,488	0	0	0	973,700
Romania	0	0	154,982	160,459	0	0	171,460	138,600
Germany	174,084	18,789	90,081	19,417	139,241	9,796	43,111	10,496
France	51,193	27,830	0	2,399	60,530	19,726	0	1,959
Malaysia	56,638	0	20,724	0	122,850	0	61,865	0
Singapore	4,978	5,183	1,343	60,884	3,651	2,100	500	58,817
Austria	0	54,004	9,251	0	0	18,002	3,126	0
Slovakia	20,243	11,024	7,186	23,014	13,665	6,628	3,220	13,121
China, P. Rep.	46,421	0	0	0	20,000	0	0	0
Cuba	0	0	43,560	0	0	0	38,556	0
Surinam	0	19,278	19,491	0	0	41,918	40,824	0
Trinidad-Tobago	8,006	19,529	0	0	19,505	41,278	0	0
Hong Kong	0	0	0	17,313	0	0	0	26,100
Netherlands	0	0	13,686	0	0	0	39,600	0
Saudi Arabia	0	0	8,618	0	0	0	21,000	0
Taiwan	0	0	0	4,565	0	0	0	3,697
Chile	0	0	0	2,100	0	0	0	1,250

Canadian soybean seed exports to the United States and Japan are consistent and regular. As can be seen in Table 3, soybean seed is also exported to a large number of other countries, but the volume is variable from year to year.

## Section V Soybean Crop Production Area

### Soybeans in Canada

*Source: Ontario Soybean Council*

Soybeans are primarily grown in Ontario, Quebec and Manitoba, with some production in Atlantic Canada and Saskatchewan. Until the 1970s, soybean production was limited to southern Ontario. Advancements in soybean breeding have resulted in the development of shorter-season varieties that are suitable for eastern Ontario, Quebec and Manitoba. As shown in Figure 1, the majority of Canadian soybeans are grown in Ontario and Quebec, between the Great Lakes and St. Lawrence River basin.

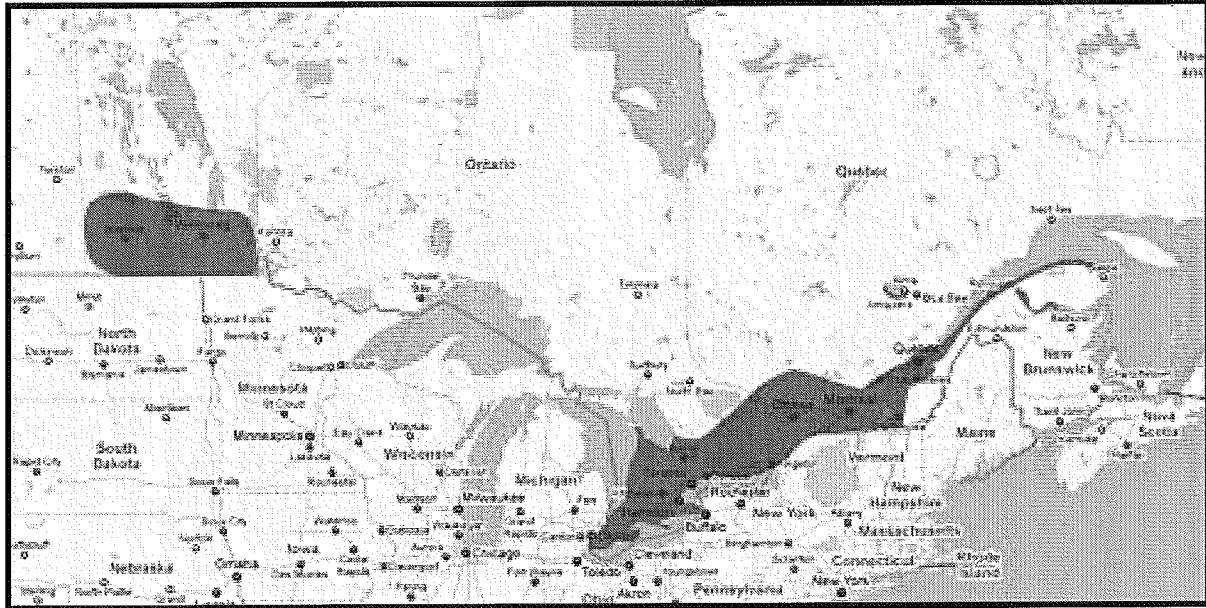


Figure1. Areas of soybean production in Canada

The temperate climate and fertile soils found in this area are key components in producing the highest quality soybeans for food uses. Canada accounts for less than 2 percent of the world’s total soybean production, but is an important supplier of specialty, high quality food grade soybeans. Approximately 35 percent of Canada’s production is destined for premium export markets such as Japan and Europe.

In 2006, soybeans were Canada’s fifth most valuable field crop—after canola, wheat, potatoes, and corn—with farm cash receipts amounting to \$680 million. Exports of Canadian soybeans contributed to the value of soybean receipts. During the 2006-07 crop year (September 1-August 31), over 1.7 million tonnes of soybeans were exported.

### **Soybeans - - a sustainable crop**

In Canada, soybeans are typically grown as part of a crop rotation (corn-soybeans-wheat). There are a number of benefits to growing crops in rotation, such as:

- Reducing disease, pest and weed pressure
- Protecting against erosion and building soil structure
- Good crop rotations will provide consistent yields
- Increased profit potential for producers

In addition, many growers also use no-till or minimum tillage in their operations. In Canada, approximately 55 percent of soybeans are no-tilled. An additional 15-20 percent is minimum tilled. Minimal tillage and no-till management practices are helpful in promoting soil health. These management practices reduce erosion and increase organic matter and the presence of earth worms.

Another advantage of soybeans is that similar to legumes. Soybeans can “fix” the nitrogen they need from the air. Microbes that colonize the roots of the soybean plant take nitrogen from the air and convert it into a form the soybean can use to grow. This means that soybeans require little in the way of purchased nitrogen fertilizers, which is advantageous to producers.

### **Identity Preserved Systems**

Identity preserved (IP) is a process that ensures the purity or identity of soybeans with unique attributes. This process ensures quality measures are documented from seed through to export. IP soybeans can be segregated by variety, quality, or specialty trait such as high protein, high sugar or isoflavone content.

In Canada, the Canadian Identity Preserved Recognition System (CIPRS) provides assurance to domestic and international buyers regarding quality attributes. Operated by the Canadian Grain Commission (CGC), CIPRS is a comprehensive system covering all aspects of soybean production and processing from purchasing seed through to export. In addition, the CGC accredits third party audit firms to evaluate company IP systems. CIPRS gives buyers a paper trail providing full traceability back to the producer and the seed used.

Canada’s unique elevator system plays an important role in supplying food grade soybeans to the world. Elevators contract soybean growers to produce soybeans with the specialty traits required by their international customers. Based on the needs of the customer, the elevator determines the production standards and practices that need to be followed by the grower. These standards and practices are detailed in the IP contract. The elevator works closely with the growers throughout the growing season to ensure the highest standards are met.

Upon delivery to the elevator, the soybeans are graded and tested for presence of GMOs (genetically modified organisms). It is very important that each farm delivery is tested. If no GMO contamination is found, the soybeans are binned separately to prevent contamination between different varieties and commercial soybeans until they are ready for export.

The Canadian Grain Commission (CGC) supports the Canadian soybean industry by providing technical quality analysis for the new soybean crop through an annual harvest survey that assesses overall crop quality. Soybean samples for the survey are obtained from producers across Quebec, Ontario and Manitoba. The Canadian Soybean Council (CSC) works with the CGC to coordinate producer participation in all soybean producing regions to ensure good representation of overall soybean quality in the survey. In addition, elevators and export companies are approached to submit samples. The results gathered from the harvest survey illustrate the processing qualities of both food grade and crush soybeans. The survey is important to identifying the effect weather conditions have on the processing qualities of soybeans from one year to another.

As is shown by Figure 2, the soybean crop in Canada is a “Plant Breeding Success Story”. Initially due in large part to the plant breeding program at Agriculture Canada Ottawa, followed by outstanding achievements by University of Guelph and several private breeding programs, earlier maturing soybean varieties have effectively created a new crop for central and eastern Ontario. By the early 1980s the area planted was less than 400 hectares and by 2008 the area tripled to more than 1.2 million.

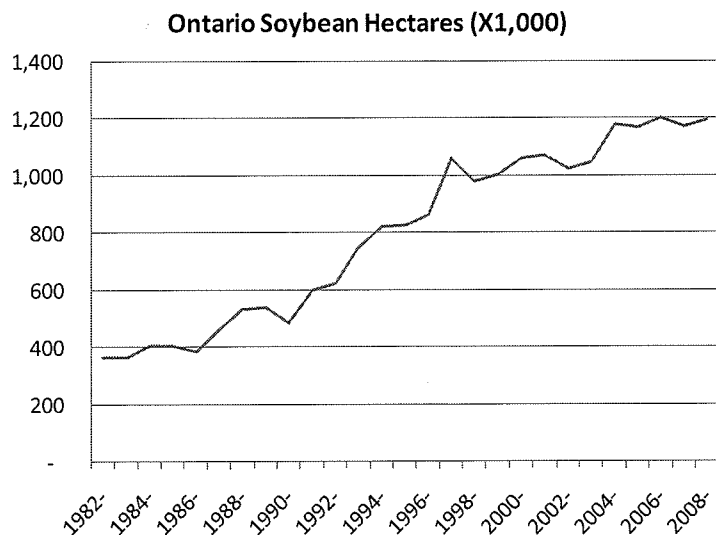


Figure 2 Ontario Soybean area Planted

Table 4 shows the continuing expansion of the crop into Quebec and now into Manitoba.

Table 4. Area Planted to Soybeans by Canadian Province (hectares X 1000)

Source: "Field Crop Reporting Series" Catalogue 22-002, Statistics Canada

Year	Manitoba	Ontario	Prince Edward Island	Quebec	Central Canada	Maritimes	Western Canada	Canada
2000/01	0	904.5	2.2	154	1058.5	2.2	0	1060.7
2001/02	20.2	900.4	2.8	145.5	1045.9	2.8	20.2	1068.9
2002/03	52.6	835.7	3	132.5	968.2	3	52.6	1023.8
2003/04	89	805.3	2.3	150	955.3	2.3	89	1046.6
2004/05	44.5 (r)	930.8	3.2	199	1129.8	3.2	44.5 (r)	1177.5 (r)
2005/06	42.5	936.8	4	186	1122.8	4	42.5	1169.3
2006/07	141.6	862	4.6	193	1055	4.6	141.6	1201.2
2007/08	91.1	900.4	4.5	175.5	1075.9	4.5	91.1	1171.5
2008/09	111.3	847.8	7.3	229	1076.8	7.3	111.3	1195.4
2009/10	176	971.2	11.3	240.5	1211.7	11.3	176	1399

Ontario's seeded soybean acres in 2009 have risen 14.3% over 2008, to reach a new high of 971 thousand hectares, according to Statistics Canada's 2009 June Farm Survey. The Ontario area seeded to soybeans has increased from 847.8 thousand hectares in 2008. The previous Canadian record set was 936 thousand hectares planted in 2005.

**Table 5. Soybean Supply and Disposition**

Canada: Soybean Supply and Disposition (Historical - 1982-1983/2008-2009f) 12-Dec-08												
Crop Year	Seeded Area (kha)	Harvested Area (kha)	Yield (t/ha)	Production (kt)	Imports	Total Supply (kt)	Exports	Food & Ind Use	Feed, Waste, Dock. (kt)	Total Dom. Use	Carry-out Stocks (kt)	Avg. Price \$/t
1982-	364	364	2.33	848	419	1,356	117	1,043	14	1,081	157	246
1983-	364	364	2.02	735	280	1,172	61	937	13	978	132	344
1984-	405	405	2.26	917	228	1,278	124	928	-20	937	218	270
1985-	405	405	2.5	1,012	175	1,404	173	894	194	1,114	118	243
1986-	385	385	2.49	960	217	1,295	147	953	14	1,032	115	232
1987-	461	461	2.75	1,270	151	1,536	188	958	218	1,212	136	309
1988-	533	533	2.16	1,153	159	1,448	294	855	99	990	164	310
1989-	540	540	2.26	1,219	287	1,670	193	1,102	151	1,286	191	237
1990-	484	484	2.61	1,262	164	1,617	213	936	218	1,193	210	225
1991-	598	598	2.44	1,460	72	1,743	252	975	283	1,301	190	228
1992-	643	622	2.34	1,453	226	1,869	211	1,000	494	1,544	114	265
1993-	752	748	2.6	1,945	57	2,116	492	1,060	415	1,530	94	309
1994-	821	821	2.74	2,254	67	2,415	542	1,122	527	1,704	168	272
1995-	826	824	2.79	2,298	70	2,536	599	1,220	494	1,773	164	357
1996-	876	862	2.52	2,170	232	2,565	478	1,424	512	2,007	80	382
1997-	1,062	1,060	2.58	2,738	149	2,967	769	1,583	361	2,010	188	333
1998-	981	980	2.79	2,737	254	3,178	876	1,576	444	2,088	215	266
1999-	1,004	1,004	2.77	2,781	455	3,450	949	1,712	426	2,249	252	256
2000-	1,069	1,061	2.55	2,703	431	3,386	747	1,650	692	2,454	185	256
2001-	1,082	1,069	1.53	1,635	982	2,802	501	1,671	352	2,129	172	269
2002-	1,030	1,024	2.28	2,336	651	3,159	723	1,762	419	2,291	145	308
2003-	1,051	1,047	2.17	2,268	587	3,000	914	1,500	319	1,947	140	395
2004-	1,229	1,178	2.59	3,048	393	3,581	1,122	1,610	457	2,190	270	248
2005-	1,176	1,169	2.7	3,161	339	3,771	1,316	1,493	338	1,959	495	220
2006-	1,214	1,201	2.89	3,466	240	4,201	1,600	1,535	511	2,171	430	262
2007	1,180	1,172	2.3	2,696		3,502		1,348				432
2008	1,202	1,195	2.79	3,336	300	3,758	1,725	1,400	231	1,763	270	350-450

Source: Statistics Canada, Cereals and Oilseeds Review Series, Cat. No. 22-077

Table 5 is a twenty five year history of the supply and disposition of the soybean crop. Despite a significant increase in seeded area, Canada consistently imports a supply of oilseed soybean for crushing.

Yields have increased or remained stable even though more of the crop is grown in shorter season areas of Canada.

Exports of soybean crop have grown ten fold to more than 1.7 million tonnes and are largely attributed to growth in the specialty or food grade soybeans. Table 6 is a summary of export destinations.

Table 6. Canadian Soybean Exports (Tonnes)  
Source: Statistics Canada, Ontario Soybean Growers

Country/Region	2001/02	2002/03	2003/04	2004/05	2005/06
Brunei Darussalam	0	0	0	19	19
China	3,367	2,254	15,299	13,001	7,617
Hong Kong	22,800	21,252	20,215	19,146	21,754
Indonesia	26,386	41	611	154	43,081
Japan	126,619	140,149	252,814	267,830	322,739
Korea, North	0	0	0	1,307	0
Korea, South	0	0	118	576	0
Malaysia	101,698	119,758	96,849	98,152	138,627
Philippines	4,275	0	4,132	9,026	12,253
Singapore	12,322	14,656	16,130	13,730	16,906
Taiwan	352	417	2,847	4,237	6,724
Thailand	3,986	6,370	4,656	4,077	7,805
Viet Nam	0	0	0	140	86
<b>Asia Total</b>	<b>302,445</b>	<b>311,988</b>	<b>413,672</b>	<b>431,396</b>	<b>577,611</b>
Austria	44	6	52	0	0
Belgium	18,299	12,524	91,093	63,323	130,677
Denmark	16	13,000	19,351	0	0
Finland	0	0	0	0	20,302
France	15,086	33,918	1,386	78,731	50,952
Germany	29,377	467	34,864	14,996	66,284
Ireland	0	0	0	44	78
Italy	8,656	29,547	1,025	1,295	4,450
Netherlands	3,105	34,178	138,346	95,880	63,756
Norway	0	0	0	0	0
Portugal	0	102	20	27,511	107,378
Serbia and Montenegro	0	0	0	0	21
Spain	157	40,123	10,053	17,136	17,008
<b>Western Europe Total</b>	<b>74,738</b>	<b>188,088</b>	<b>300,454</b>	<b>298,915</b>	<b>460,906</b>
Africa	17,248	424	491	18,039	24,388
Latin America/Caribbean	15,334	1,544	399	539	568
Eastern Europe	541	1,660	2,504	5,426	3,665
Middle East	755	61,764	63,404	234,870	192,797
Oceania	168	431	1,856	470	490
South America	40	39	0	77	292
United States	60,224	131,395	129,175	91,798	45,913
<b>Northern America(exc.US)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>26,159</b>	<b>128</b>
<b>Total Exports</b>	<b>501,389</b>	<b>723,195</b>	<b>913,019</b>	<b>1,107,689</b>	<b>1,306,759</b>

## **Section VI The Regulatory Environment - Registration testing and merit assessment requirements**

Currently oilseed type soybeans are subject to Variety Registration, and are listed in Schedule III, Part I which is described as:

*Part I (status quo): The registration of new varieties of crop kinds in Part I would require pre-registration testing and merit assessment to determine whether the variety performs as well as or better than reference varieties. This part is intended for crop kinds for which there is a continuing need for stringent government oversight to ensure that varieties meet minimum performance standards.*

The Ontario Oil and Protein Seed Crop Committee (OOPSCC) is a subcommittee of the Field Crops Research and Services Committee which reports to the Ontario Agricultural Services Coordinating Committee (OASCC).

OOPSCC consists of the Planning and Assessment Sub-Committee (research) and the Variety Sub-Committee. The Ontario Soybean Tests are conducted annually by a combination of private and public tests by research institutions in Ontario through OOPSCC. The purpose of these tests is to obtain agronomic, pest, disease, and quality information for use in supporting the registration of new soybean varieties and in preparing a performance report of varieties.

The Ontario Oil and Protein Seed Crop Committee (OOPSCC) has members from the following public and private groups:

- Canadian Grain Commission (CGC)
- Canadian Seed Trade Association (CSTA)
- Commercial Plant Breeders (CPB of CSTA)
- Kemptville Campus of the University of Guelph (KCUG)
- Ontario Agricultural College, University of Guelph (OAC)
- Ontario Oilseed Crushers' Association (OOCA)
- Ontario Seed Growers Association (OSGA)
- Ontario Soil and Crop Improvement Association (OSCIA)
- Ontario Soybean Growers (OSG)
- Plant Industry Branch - OMAFRA (PIB)
- Research Centre, Harrow - Agriculture & Agri-Food Canada (GPCRC)
- Research Centre, Ottawa - Agriculture & Agri-Food Canada (ECORC)
- Ridgetown Campus of the University of Guelph (RCUG)
- Variety Registration Office - Canadian Food Inspection Agency (VRO)

The Manitoba Pulse Growers Association participates with OOPSCC to coordinate trials in Manitoba and jointly supports varieties for national Variety Registration that are adapted for Manitoba

Réseau des plantes oléo protéagineuses du Réseau de Grandes Cultures du Québec (RGCQ) is recognized as a variety registration recommending committee in Québec.

As of September 2009, the CFIA website lists 679 soybean Variety Registrations in Canada. All varieties were granted a national registration.

In the past five years (August 31, 2004), 279 soybean varieties have been granted Variety Registration and added to the list. Twenty varieties were supported by RGCQ or its predecessor and the remaining 259 were supported by OOPSCC. A significant number of varieties are de-registered and removed from the list each year but, overall, the list continues to grow with more varieties in the new shorter season growing areas.

### Costs of pre-registration testing and merit assessment

The cost of submitting an application for Registration is set in Appendix XI of the Regulations at \$875. This fee is used to cover the Variety Registration Office administrative costs for filing an application and it is the same for all Parts of Schedule III. Changing the crop placement to a different Part will not change the cost of filing. Fees collected by CFIA do not make a contribution to the cost of variety testing.

As is the case for all Registrations, the data that was submitted by a Recommending Committee for supporting the registration of a Variety is not publically available from CFIA. Publication of data and on-going testing following grant of a Variety Registration is not considered within the mandate of CFIA. Changing the placement of crop kinds to a different Part in Schedule III will not change the funding available from CFIA for publication of data because no funding is currently provided other than lists of approved varieties on the CFIA website. The information that is available in the marketplace is assembled from other sources and published by private and provincially funded organizations.

### Post-registration variety performance testing data

**2009 REPORT**

Ontario Soybean Variety Trials For 2008-2009

by the Ontario Oil & Protein Seed Crop Committee

Research conducted and reported by:

- Ontario Agricultural College, Research Centre, Perth
- University of Guelph, Agricultural Sciences, Guelph
- Harvest-COOP, Ottawa
- Ontario - EDREC

Ontario

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**MANITOBA PULSE GROWERS ASSOCIATION Fall 2008**

**Pulse Variety Evaluation in 2008**

This publication features the results from MPGA sponsored trials.

**REVISED**  
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The results of this publication are made possible with your continued support through your MPGA membership. The financial support we are able to offer is provided by the Government of Manitoba through the Pulse Growers Association (PGA) and the Manitoba Crop Variety Evaluation Trust (MCVET) which provides the seed and the land for the trials.

**New for 2008**  
To demonstrate the yield stability of a variety in the wide row width broadcast, Rowcrop trials were conducted. The trials have been reported on in Table 1 and 2.

**How Check varieties have been selected**  
For this season, the MPGA Rowcrop trials were conducted. The MPGA Rowcrop trials were conducted in 2007 for the first time. The MPGA Rowcrop trials were conducted in 2007 for the first time. The MPGA Rowcrop trials were conducted in 2007 for the first time.

**KEY - APPLICABLE TO ALL TRIALS**

Agonomic Traits	Disease Traits
<b>Plant Height</b> 1 = 1.00 m tall 2 = 1.25 m tall 3 = 1.50 m tall 4 = 1.75 m tall 5 = 2.00 m tall	<b>Leaf Blight</b> 1 = 0% leaf blight 2 = 1-10% leaf blight 3 = 11-20% leaf blight 4 = 21-30% leaf blight 5 = 31-40% leaf blight 6 = 41-50% leaf blight 7 = 51-60% leaf blight 8 = 61-70% leaf blight 9 = 71-80% leaf blight 10 = 81-90% leaf blight 11 = 91-100% leaf blight
<b>Plant Density</b> 1 = 100 plants/m <sup>2</sup> 2 = 125 plants/m <sup>2</sup> 3 = 150 plants/m <sup>2</sup> 4 = 175 plants/m <sup>2</sup> 5 = 200 plants/m <sup>2</sup>	<b>Ascochyta Blight</b> 1 = 0% ascochyta blight 2 = 1-10% ascochyta blight 3 = 11-20% ascochyta blight 4 = 21-30% ascochyta blight 5 = 31-40% ascochyta blight 6 = 41-50% ascochyta blight 7 = 51-60% ascochyta blight 8 = 61-70% ascochyta blight 9 = 71-80% ascochyta blight 10 = 81-90% ascochyta blight 11 = 91-100% ascochyta blight
<b>Seed Weight</b> 1 = 100 g/m <sup>2</sup> 2 = 125 g/m <sup>2</sup> 3 = 150 g/m <sup>2</sup> 4 = 175 g/m <sup>2</sup> 5 = 200 g/m <sup>2</sup>	<b>Root Rot</b> 1 = 0% root rot 2 = 1-10% root rot 3 = 11-20% root rot 4 = 21-30% root rot 5 = 31-40% root rot 6 = 41-50% root rot 7 = 51-60% root rot 8 = 61-70% root rot 9 = 71-80% root rot 10 = 81-90% root rot 11 = 91-100% root rot

**KEY - APPLICABLE TO ALL CHARTS**

CV = Coefficient of Variation. The results of a trial are reported as a CV unless otherwise stated.

LSL = Least Significant Difference. The probability that the difference between two different treatments is due to chance is 5%.

NS = Not Significant. The difference between two treatments is not statistically significant.

**Résultats des essais de maïs-grain et de cultivars de plantes oléoprotéagineuses 2006**

**Recommandations de cultivars de céréales 2007**

Aussi disponible en français

**CEROM**  
Centre de recherche en riziculture

Figure 3. Title pages: Ontario, Manitoba and Quebec Soybean crop reports

It must be clearly stated that Variety Registration regulations do not require post - Registration testing. Support for registering a variety cannot be withheld until conditions unrelated to Registration requirements are met.

Data submitted by a Recommending Committee for supporting the Registration of a Variety is not publically available from CFIA. Publication of data and on-going testing following grant of an unrestricted Variety Registration is not considered within the Seed Act and Regulations or mandate of CFIA. This is widely misunderstood and it is worthy of repeating.

Having said this, seed suppliers and agronomists recognize that considerable information is required. The information that is available in the marketplace is assembled from other sources and is published by private and provincially funded organizations.

Buyers of seed want data that compares promising new varieties to known varieties that are adapted to their region. Provincial Agriculture Ministries do a good job, given very limited resources, of providing variety comparison guides for soybean varieties and other agronomic information on their provincial agriculture websites or in print format. Larger “field scale” comparisons cannot be planted, if it constitutes a seed sale, until after the variety has been registered.

There is an extensive amount of post-registration testing conducted by the crop committees. This information is published in printed and website format. Title pages of publications from Ontario, Manitoba and Quebec are shown above as Figure 3. Each publication ranges from 25 to 75 pages.

Private suppliers of soybean seed also publish a large number of comparison guides and variety factsheets.

As mentioned in the introduction, soybean is a quantitative short day plant and hence flowers more quickly under short days. As a result, photoperiodism and temperature response is important in determining areas of cultivar adaptation. Soybean cultivars are identified based on bands of adaptation throughout North America that run east-west. Soybean variety developers and their agronomy representatives play a key role when a soybean producer is deciding which varieties are adapted to their farm.

Ongoing or post-Registration testing is critically important but it simply does not apply to Variety Registration or the placement of crop kinds within Schedule III. This is a critical point because, depending on the funding available from various sources, federal, provincial and regional testing is expected to continue regardless of changes to crop placement. If anything, committees that do allocate resources for Registration testing, may be able to reallocate those resources to more post - Registration testing.

### Typical Canadian Soybean Seed Sources (Certified seed)

**Table 7. Soybean Variety Distributors**

Source: CFIA website

ADVANTAGE SEED GROWERS & PROCESSORS INC.	Lucknow, ON
BRETT-YOUNG SEEDS LTD.	Winnipeg MB
C & M SEEDS	Palmerston, ON
CENTRE DE RECHERCHE SEMICAN ATLANTIC	Plessisville QC
COUNTRY FARM SEEDS LTD.	Blenheim, ON
CROPLAN GENETICS	Cambridge, ON
DOW AGROSCIENCES CANADA INC.	St. Mary's, ON
HENDRICK SEEDS, INKERMANN, ONTARIO	Inkerman, ON
HURON COMMODITIES INC.	Clinton, ON
HYLAND SEEDS	Blenheim, ON
LA COOP FEDEREE, SAINT-HYACINTHE	Saint-Hyacinthe, QC
MAIZEX INC.	Tilbury, ON
MONSANTO CANADA INC., GUELPH	Guelph, ON
NORTH STAR GENETICS MANITOBA	Fannystelle, MB
PIONEER HI-BRED LTD.	Chatham ON
PRIDE SEEDS	Chatham ON
PRO SEEDS OF CANADA	Woodstock ON
QUARRY GRAIN COMMODITIES	Stonewall MB
SECAN ASSOCIATION	Ottawa, ON
SEED-LINK INC.	Lindsay, ON
SEMENCES PROGRAIN INC.	St-Césaire, QC
SYNGENTA SEEDS CANADA INC.	Arva, ON

## Soybean Variety development

Table 8 provides a detailed analysis of the soybean Variety Registration applications submitted in the past five years. A total of 279 registrations were granted with 33 (12%) from public breeding programs and 246 (88%) from private programs.

In North America, soybean cultivars are identified based on bands of adaptation that run east-west and many varieties are well adapted to both Canada and northern United States. The area planted to soybeans in United States is approximately 31 million hectares or 30 times Canada's production. Canadian producers benefit from variety development programs in the United States with a total of 143 varieties (51%) originating from private breeding programs that resided in the United States. This is significant because improved, or new, varieties can be introduced to American soybean producers and seed multiplication can begin without the added step of Canadian Variety Registration testing. The gap in time between when Canadian and American soybean growers have access to new varieties has been recognized by members of the OOPSCC committee and the number of station years required for support for registration has been significantly reduced.

The Ontario committee has supported 268 varieties (96%) and Quebec supported 11 (4%) varieties all with national registration.

Table 8. Number of Variety Registrations from Soybean Breeding Programs & Supporting Committee

Source: CFIA Variety Registration Office

	<u>Sept 2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>Aug 2009</u>	<u>Total</u>	
Canada								
Public <sup>1</sup>	4	6	9	4	4	3	30	11%
Private <sup>2</sup>	4	14	18	20	25	8	89	32%
<b>Total</b>	<b>8</b>	<b>20</b>	<b>27</b>	<b>24</b>	<b>29</b>	<b>11</b>	<b>119</b>	<b>43%</b>
USA								
Public		1					1	0%
Private	6	26	59	23	13	16	143	51%
<b>Total</b>	<b>6</b>	<b>27</b>	<b>59</b>	<b>23</b>	<b>13</b>	<b>16</b>	<b>144</b>	<b>52%</b>
Foreign								
Public					2		2	1%
Private					13	1	14	5%
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>15</b>	<b>1</b>	<b>16</b>	<b>6%</b>
Overall								
Public	4	7	9	4	6	3	33	12%
Private	10	40	77	43	51	25	246	88%
<b>Total</b>	<b>14</b>	<b>47</b>	<b>86</b>	<b>47</b>	<b>57</b>	<b>28</b>	<b>279</b>	<b>100%</b>
Supporting Committee								
Ontario	14	43	84	43	56	28	268	96%
Quebec	0	4	2	4	1	0	11	4%

Public<sup>1</sup> Developed at Agriculture & AgriFood Canada (AAFC) or in association with a Canadian university.  
 Private<sup>2</sup> Country determined by the residency of the breeding program named on the Variety Registration application  
 Source: CFIA Variety Registration Office, August 2009

The outstanding contribution to Canadian soybean production has been recognized with three Canadian public and private soybean breeders being presented with of the CSTA / Germination *Plant Breeder and Genetics Award* ( Harvey Voldeng 2002, Alejandro Hernandez 2007, Don McClure 2009).

The future of soybean variety development continues to look promising in Canada. Table 9 summarizes the results of a survey of Canadian Seed Trade Association (CSTA) members. In 2007, the private sector invested \$3.9 million in soybean variety development which is an increase from less than one million two decades earlier. It was projected that this annual investment would triple to over \$12 million by 2012.

**Table 9.** Canadian Private Sector Investment in Plant Breeding  
Source: CSTA Survey, 2007

	1987	2001	2007	Projected 2012
Corn	\$2.8 million	\$ 7.9 million	\$ 4.8 million	\$ 9 million
Canola	\$7.1 million	\$30.5 million	\$41.9 million	\$80 million
Cereals	\$1.5 million	\$ 2.3 million	\$ 3.3 million	\$ 2.7 million
Soybeans	\$0.7 million	\$ 2.6 million	\$ 3.9 million	\$ 12.7 million
Forages	\$0.3 million	\$ 0.8 million	\$ 0.49 million	\$ 0.5 million
Special Crops	\$0.1 million	\$ 0.4 million	\$ 0.12 million	\$ 0.1 million
Garden Seed	\$0.1 million	0	0	0
Other	\$1.6 million	\$ 0.8 million	\$ 1.6 million	\$ 1.4 million

**Identity Preserved Soybean Crop Production**

Although this report is focused on the Variety Registration crop placement of oilseed type soybeans, it would not be complete without a comment on the success of specialty or food grade soybean production.

The following is cited from the Ontario Soybean Council:

*“Created in consultation with global buyers, Canada offers the world’s most integrated system of identity preservation with an unmatched record of delivering specific soybeans to specific purchasers. Three quarters of our soybean exports to Asia are now classified as identity-preserved, shipped via containers or in bulk as required by the customer.*

*Operated under the leadership of the Canadian Grain Commission, the Canadian Identity Preserved Recognition System (CIPRS) is strengthened with independent third party audits and certification. Standards protect purity at all points, including the seed producer, the soybean farm, and the elevator and shipping system. In addition, soybeans are sampled and analyzed at key steps along the way, and identity-preserved soybeans are stored in separate, rigorously managed bins.*

*Soybeans which cannot be traced to the purchase of Certified seed, and soybeans which fail purity and quality tests, are not allowed into the Canadian identity-preserved system.”*

**2. Issues to be addressed**

The removal of merit assessment requirements required by placement oilseed type soybeans in Schedule III, Part I will reduce the regulatory burden and associated costs for public and private developers of new soybean cultivars. This is particularly important for soybeans because approximately 50% of new soybean varieties originate from USA soybean breeding programs and Canadian soybean growers need access to new varieties to be competitive.

### 3. Proposed Changes

Oilseed type soybeans should be moved from Schedule III, Part I of Regulations to Schedule III, Part III

### 4. Impact Assessment of Proposed Changes

Movement of oilseed type soybeans to Schedule III, Part III would:

- Lead to a more timely availability of new cultivars to producers across Canada. Not only is this important to maintain competitive yields but Canadian producers need timely access to the newest varieties with tolerance to new disease threats such as Asian soybean rust.
- Provide the ability to quickly adapt to changing markets and other agronomic considerations.
- Have no impact on buyers of common seed and may increase the use of certified seed by those who want seed of new varieties.
- Allow seed multiplication to start sooner in Canada because a change in placement would remove the uncertainty of obtaining support for Registration from a provincial Registration Recommending Committee.
- Not change the post - registration yield information currently gathered in some regions by federal, provincial, regional institutions, and by the private sector. This information, plus that from other sources, is readily available for a seed buying decision from provincial and private websites and publications. This will continue to be available and is independent of species placement in Schedule III.
- Still require CFIA Variety Registration approval for oilseed soybean varieties. The introduction of new varieties will continue to be regulated under Schedule III, Part III and varieties can continue to be de-registered “for cause” by the Registrar.
- Have no effect on other regulatory requirements. All soybean varieties (oilseed type and specialty) will continue to be regulated by:
  - Soybean plant pests of quarantine significance are regulated by the Plant Protection Act and regulations.
  - Biosafety and the introduction of Plants with Novel Traits are regulated under Part V of the Seed Regulations.
  - Soybeans and soybean products that are defined as novel feeds are regulated by the Feeds Act and Regulations
  - Soybeans and soybean products that are defined as novel foods are regulated by the Food and Drugs Act and Regulations
  - “Pedigreed” seed production is regulated under Section 10 of the Seed Regulations and Schedule II
- Not change the quality and disease data that is currently generated by the variety applicant, the OOPSCC or a combination of the two. For applicants that currently arrange to generate the dataset, there will be no change to the role of OOPSCC due to the placement from Part I to Part III.