

Why Use Organic Seed?

Michael Bomford, PhD
Kwantlen Polytechnic University
Sustainable Agriculture
and Food Systems



Depressing Statistics

1. Crop genetic diversity is declining rapidly, as is diversity of wild relatives of crops with genes that could help us adapt to a changing environment
2. Three companies control most of the world's commercial seed supply
3. Most small farms depend on off-farm income to subsidize the money-losing agricultural enterprise



Crop genetic diversity

- The act of sowing, harvesting, and saving seed has long enriched the genetic diversity of crops
- Locally-bred seed is often best adapted to local conditions
- Thousands of plant species have been used for food, but 103 species provide 90% of human food supply
- Three-quarters of crop genetic diversity has been lost in last century
 - 97% of varieties listed in old USDA catalogues now extinct
 - 90% of Germany's historical crop varieties lost
 - 75% of Italy's historical crop varieties lost
 - Two varieties account for 90% of rice grown in Philippines
 - 75% of rice in Sri Lanka, 74% of rice in Indonesia, and 62% of rice in Bangladesh descends from single maternal parent



Stolton et al., 2006



Seed Industry: Corporate Consolidation

- Three corporations control most (53% in 2011) of the world's commercial seed supply
- Economists consider a de facto cartel to exist when four or fewer enterprises control more than half of sales in a given sector



World's Top 10 Seed Companies, 2011

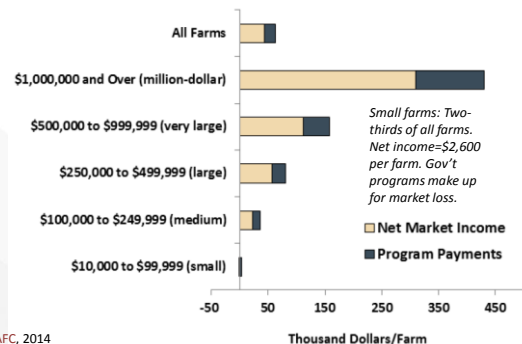
Rank	Company	Seed Sales, 2011 US\$ millions	% Market Share
1.	Monsanto	8,953	26.0
2.	DuPont Pioneer (USA)	6,261	18.2
3.	Syngenta (Switzerland)	3,185	9.2
4.	Vilmorin (France) (Groupe Limagrain)	1,670	4.8
5.	WinField (USA) (Land O Lakes)	1,346 (est.)	3.9
6.	KWS (Germany)	1,226	3.6
7.	Bayer CropScience (Germany)	1,140	3.3
8.	Dow AgroSciences (USA)	1,074	3.1
9.	Sakata (Japan)	548	1.6
10.	Takii & Company (Japan)	548	1.6
Total Top 10		25,951	75.3

Source: ETC Group, Phillips McDougall

Source

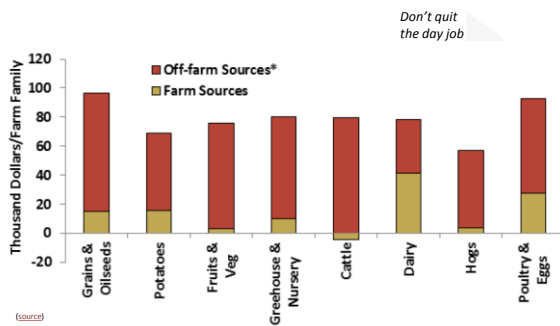


Net income by Farm Revenue Class (Canada, 2011)

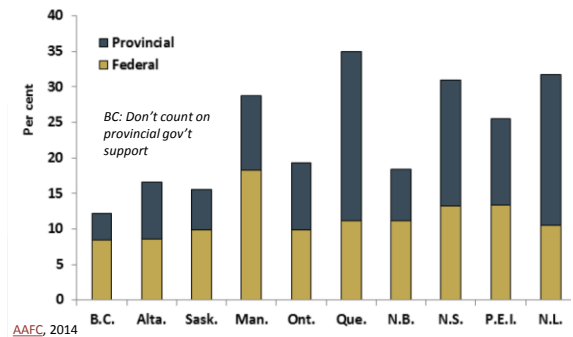


AAFC, 2014

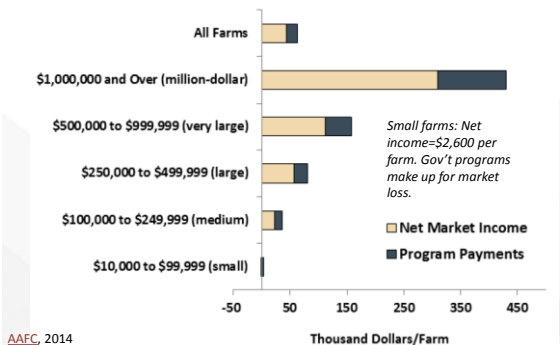
Average Farm Family Income by Farm Type, 2009



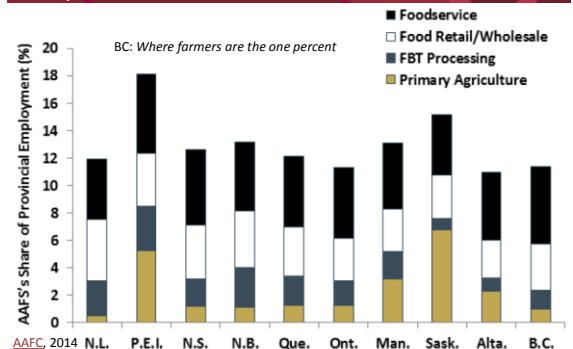
Total Gov't spending on agriculture as a share of sector GDP by province, 2012-13



Net income by Farm Revenue Class (Canada, 2011)



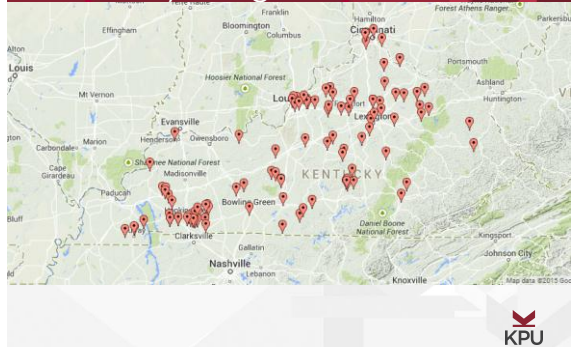
Jobs in Agri-Food Sector by Province, 2012



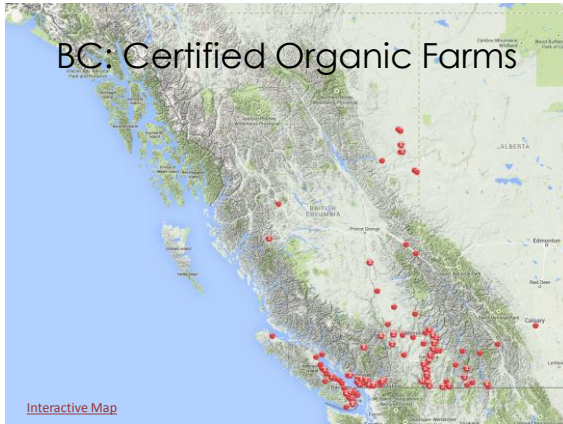
West Virginia & Kentucky



Kentucky's Organic Farms, 2012



BC: Certified Organic Farms



Kentucky vs. BC

	Kentucky	BC
Population	4 million	4 million
Farms	80 thousand	20 thousand
Certified organic farms	120	600
Independent organic / heirloom seed companies	0	15+



BC takes seed seriously

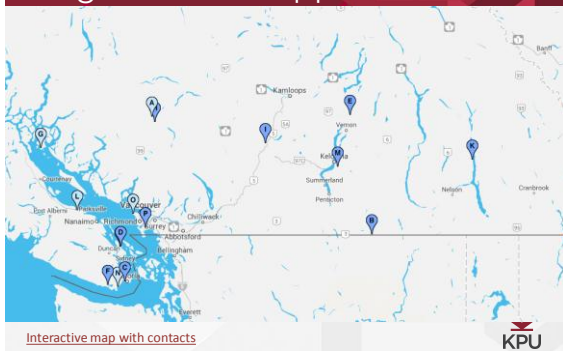


Small farm independence

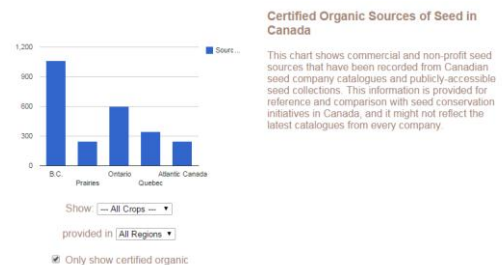
- Only 10-20% of seed used in developing nations comes from formal sector (i.e. seed companies, governments, or institutional suppliers)
- 80-90% is saved, exchanged, or sold at local markets
- Independence from formal sector maintains genetic diversity and locally adapted varieties... particularly important in face of changing climate



Southern BC: Hotbed of Organic Seed Suppliers



BC: Hotbed of Organic Seed



Seeds of Diversity, 2014



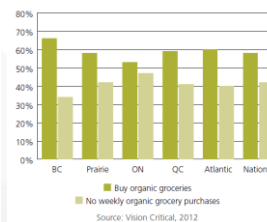
An estimated 40% of sales at BC farmers' markets are from certified organic vendors in comparison to just 10% of Ontario farmers' market sales.

The BC Organic Market, OTA, 2013



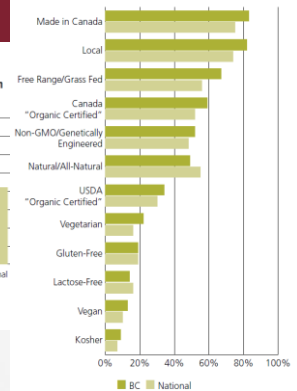
Organic sales

Percent who buy organic groceries weekly by Canadian region

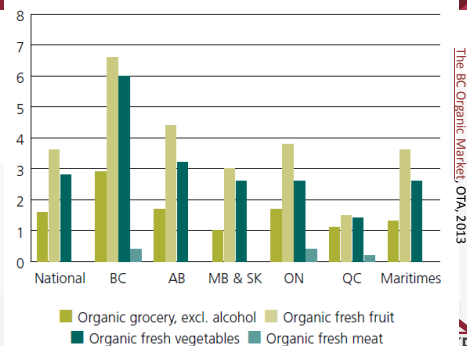


The BC Organic Market, OTA, 2013

Percent reporting the claim influences their likelihood of buying a product



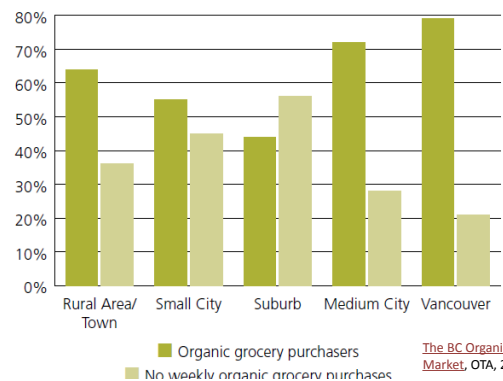
Market share of organic categories by region
Grocery banners, mass merchandisers and drug stores, 2012



The BC Organic Market, OTA, 2013



Geographic distribution of BC organic grocery buyers



The BC Organic Market, OTA, 2013

Canadian Organic Standards

5.3 Seeds and Planting Stock

5.3.1 The operator shall use organic seed, bulbs, tubers, cuttings, annual seedlings, transplants and other propagules produced in accordance with this standard.



Canadian Organic Standards

5.3.2 Exceptions or Conditions

5.3.2.1 A variety of non-organic untreated seed and planting stock or seed treated only with substances in accordance with this standard may be used provided that the organically produced seed or planting stock variety

- is not available from the enterprise;
- is not commercially available, and a reasonable search involving potential, known organic suppliers has been conducted.

5.3.2.2 Non-organic perennial planting stock may be used provided that the organic products were harvested after such plants have been maintained in accordance with this standard for at least one year...

5.3.2.3 Plant varieties, seeds, seed inoculant, germ plasm, scions, rootstocks or other propagules developed through the use of genetic engineering are prohibited...



BC: New Certification Requirement

Plans underway to grow B.C. organic sector



VICTORIA - The Ministry of Agriculture is consulting with the organic sector about developing a three pillar approach to strengthen the awareness and reputation of B.C.'s organic foods, locally, across Canada, and around the world.

[...]

The proposed change will require all products marketed as "organic" in B.C. to be certified under either a provincial or national certification program. Operators producing and selling their organic products strictly within B.C. will require provincial certification. B.C. companies with customers in other provinces or countries will require certification by a federally accredited certification body, just as they do today.

View on Flickr

Economy Sentinel, January 24, 2015 9:00 AM

Facebook Twitter Email Print

Source



Vegetable seed costs

- Minor cost of production, relative to land, labor and equipment
 - New carrot enterprise budget from KPU calculates seed cost of \$10 for 100' bed
 - Total cost of production for same bed of carrots: \$178
 - Total income from bed of carrots: \$296
 - Profit for 100' bed of carrots: \$118
- Organic standards require use of organic seed, if commercially available
 - Untreated seed is OK otherwise
 - GMO seed is never OK
 - Pelletized seed is OK if pellet material is approved
 - Higher price is not an acceptable reason for buying untreated instead of organic
 - Need for a particular variety is an acceptable reason
 - Lack of availability of sufficient quantity of organic seed is an acceptable reason (You don't have to try to plant an acre with seed packets)



Pricing: Much cheaper in bulk



Boiero Pelleted Seed

For ease of planting, nothing beats seeds that have a coating that makes each one bigger and easy to handle. Space the seed 2cm (1 inch) apart to make thinning a breeze! Sized for precision seeding. Nantes type.
Matures in 75 days, (hybrid seeds)
CR284 A (2g) approximately 140 seeds
CR284 B (10g) approximately 700 seeds
CR284 C (100g) approximately 7000 seeds
CR284 D (500g) approximately 35000 seeds
CR284 E (2000g) approximately 140000 seeds



Item No.	Product	Weight	Est. Seed Ct.	Price	Qty.
CR284A	Boiero Pelleted Seed (Available)	2 g	140	3.39	
CR284B	Boiero Pelleted Seed (Available)	10 g	700	5.99	
CR284C	Boiero Pelleted Seed (Available)	100 g	7000	29.99	
CR284D	Boiero Pelleted Seed (Available)	500 g	35000	69.99	
CR284E	Boiero Pelleted Seed (Available)	2000 g	140000	249.99	

\$1.70/g
2.4 c / seed

12.5 c/g
0.18 c / seed

Add to Cart



Pricing: Organic Premium



Item No.	Product	Weight	Est. Seed Ct.	Price	Qty.
CR284A	Boiero Pelleted Seed (Available)	2 g	140	3.39	
CR284B	Boiero Pelleted Seed (Available)	10 g	700	5.99	
CR284C	Boiero Pelleted Seed (Available)	100 g	7000	29.99	
CR284D	Boiero Pelleted Seed (Available)	500 g	35000	69.99	
CR284E	Boiero Pelleted Seed (Available)	2000 g	140000	249.99	

Don't want to pay a premium?
Grow your own!



Treated Seed



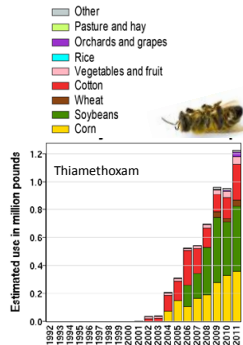
Image Source: www.crop-seeds.com

Treated Seed

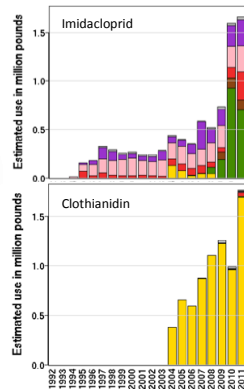
- Chemical treatment to outside of seed
- Usually antimicrobial or fungicidal. Sometimes insecticidal.
- Typically combined with brightly colored dye to discourage consumption
- Pros:
 - Concentrated, localized application of pesticides, resulting in very little active ingredient in environment
 - Most buried, reducing movement of pesticides
- Cons
 - Bird kills
 - Bee kills
 - Treated seed prohibited in organic production



Neonicitinoid use



USGS, 2013



Neonicotinoids

- Relatively new (~20 years)
- Common seed treatment on GMO (and non-GMO) corn, soybean, cotton
- Already most widely-used class of insecticides and use still increasing
- Systemic: Transferred through plant to pollen and nectar
- Impair honeybee and wild pollinator foraging, development, memory & learning, immune response, hive hygiene
- Effect amplified by other agrochemicals



J.P. van der Sluijs et al. 2013.



Why buy local organic seed?

- Keep \$ circulating locally. Support local growers.
- Germplasm adapted to your region and growing conditions.
- Promote regional independence and crop genetic diversity.
- Avoid harmful pesticide treatments.
- Tap into strong regional demand for locally-grown organic products.
- Holistic perspective. Support the type of production that your customers support.



Resources

- Farm Folk / City Folk: [Seed Resources](#)
- [Bauta Family Initiative on Canadian Seed Security](#)
- Canadian Organic Growers: [FindOrganicSeed.ca](#)
- [Seeds of Diversity](#)
- Contact me
 - Michael Bomford
michael.bomford@kpu.ca
www.kpu.ca/agriculture

