



Pulse crops breeding in Canada

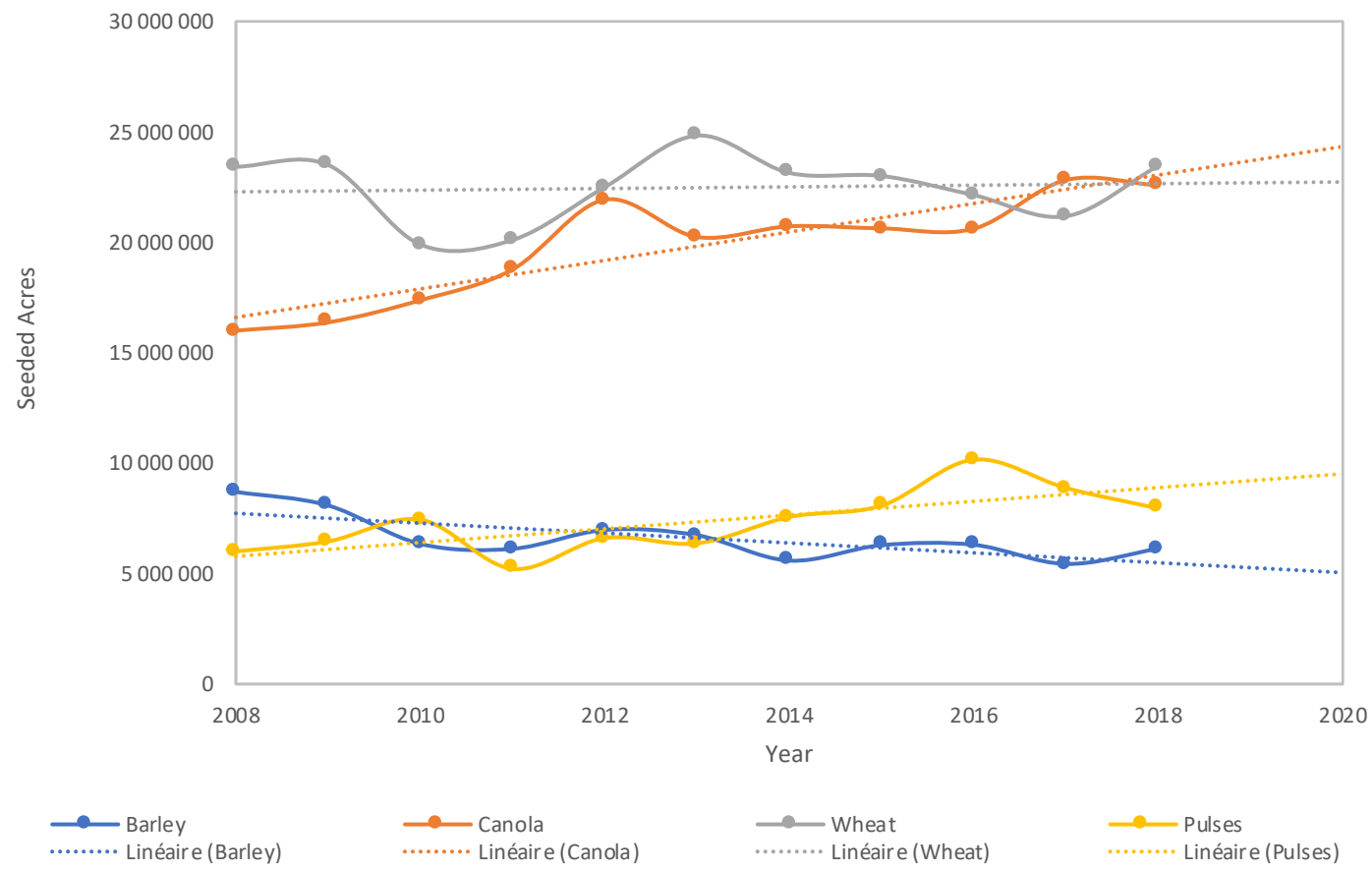
Richard Gray – University of Saskatoon

Conference « L'avenir des filières semences de légumineuses »
Paris – February 11th 2020

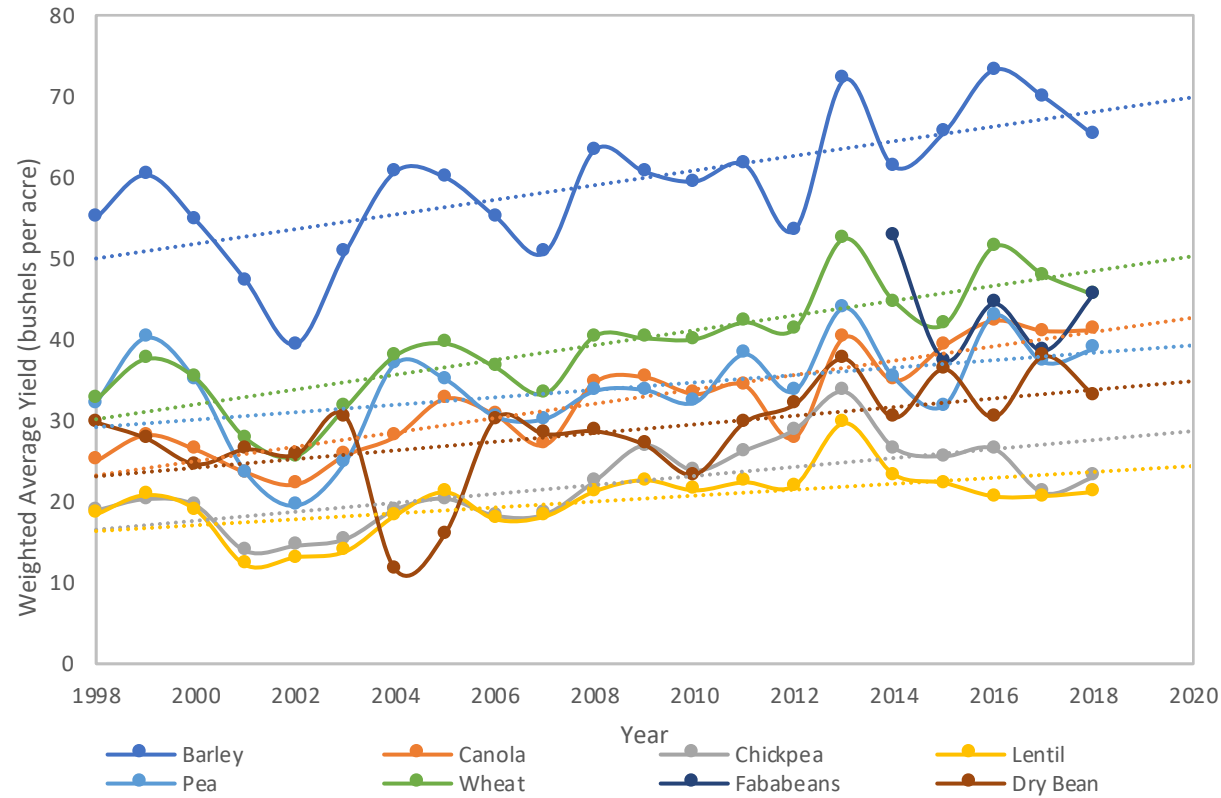
Context

- For pulse crops, most of the funding for breeding research is based on checkoff levy that is managed by province level pulse growers organizations
- In 2015 the Government of Canada passed the Agricultural Growth Act, which makes Canada compliant with UPOV 91
- Current debate about replacing / completing checkoff levy with EndPoint Royalties (cf. CRIV in France) or Farm Saved Seed Royalty (cf. UK)

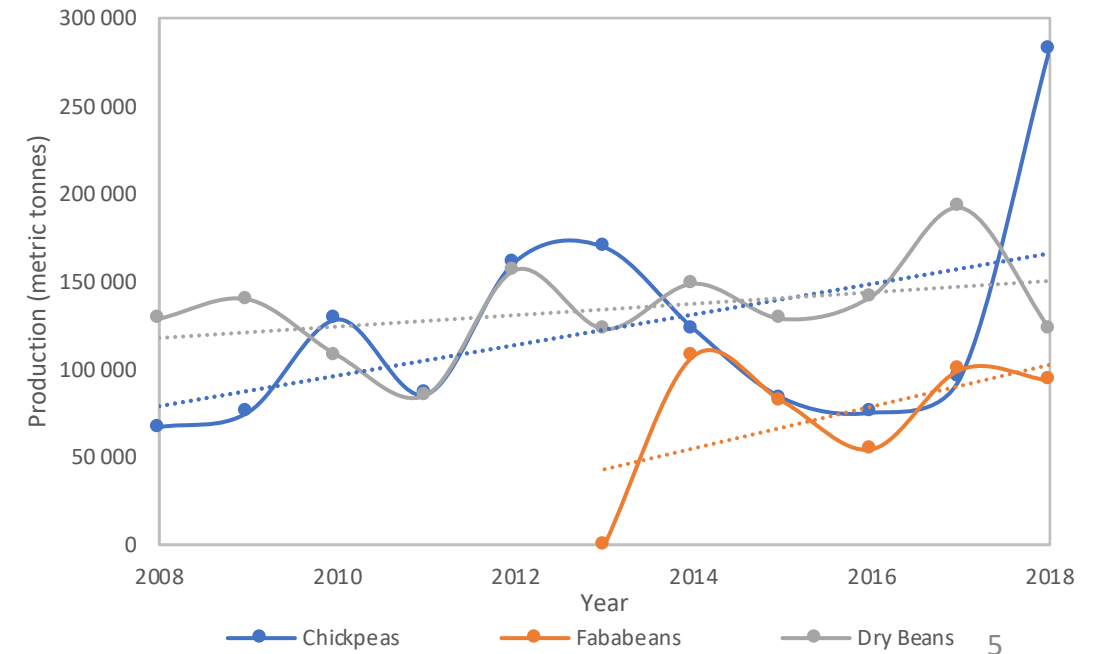
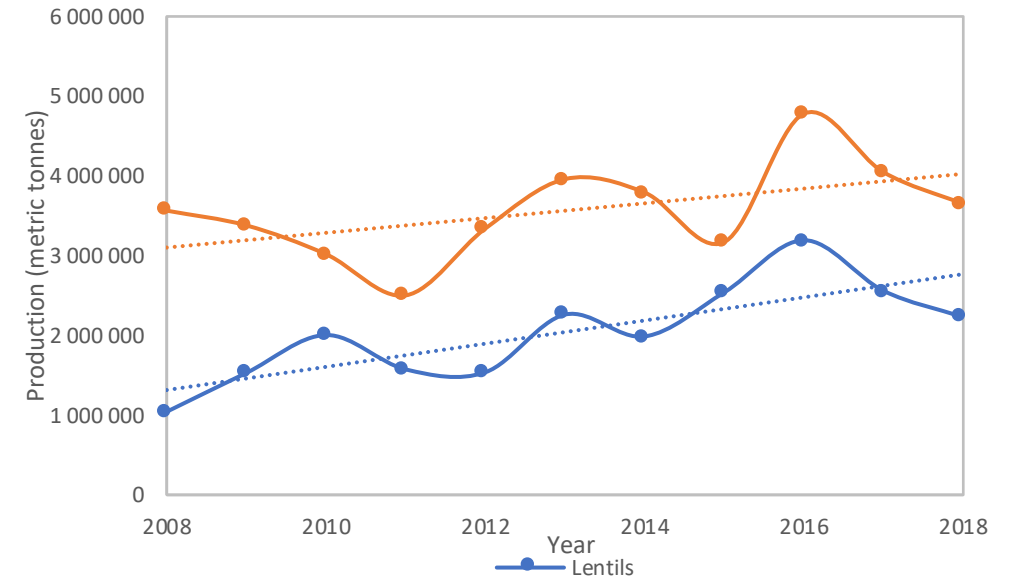
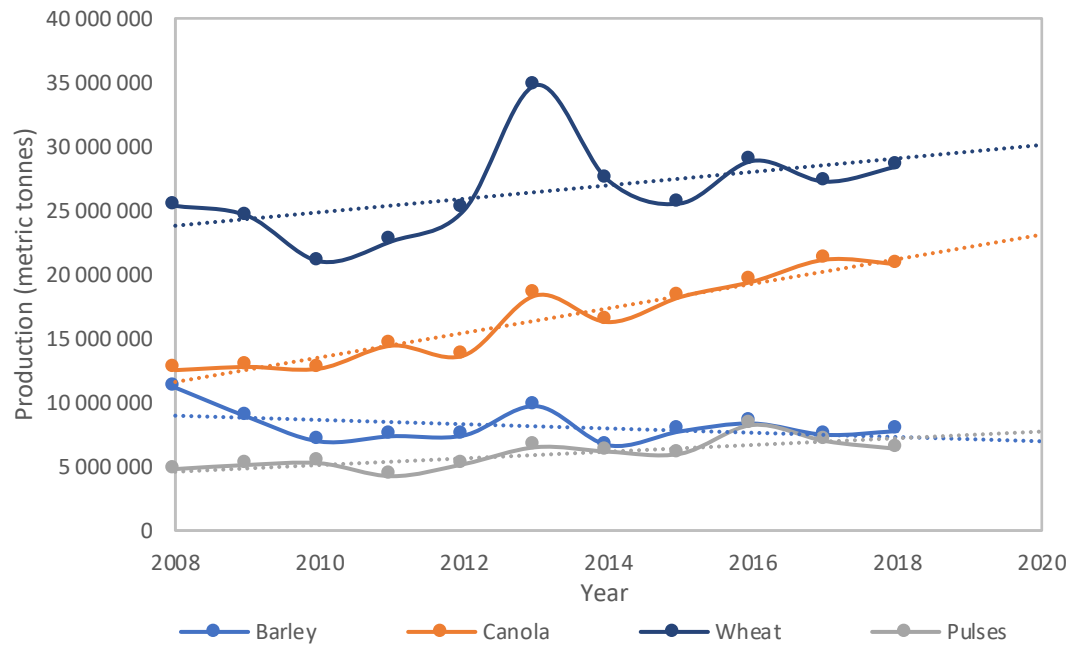
Acreage of main crops in Canada



Yield of main crops in Canada



Productions of main crops and pulse crops in Canada



The Saskatchewan Pulse Growers (SPG)

- Established in 1987. The SPG collects a nonrefundable 1% levy on the sale of production for pulse crops
- The revenue from the checkoff levy (17M\$ in 2018) is invested in research, development, extension and promotions activities.
- Exclusive relationship with the Crop Development Center (CDC) since 1997
 - CDC has been the only pulse breeder for the SPG
 - The CDC varieties (over 100 for pulse crop) are exclusively licensed to the SPG. These varieties are distributed by the SPG, royalty free, to producers. Private seed growers (farmers) compete for the multiplication rents.



Pulse crops acreages

Crop	Insured Acreage (average 2013-2017)	% of acreage with CDC varieties (average 2013-2017)	Main usages	Share that is exported
Lentils	2 771 027	99%	Food - dehulled	>95%
Peas	2 719 787	92%	Feed, Processed for protein, whole grain	>80+%
Chickpeas	88 919	90%	Food whole or humus	>90+%
Fababean	88 754	31%	Food (Export) or Feed protein	~ 70%
Dry Bean	136 391	4%	Food	

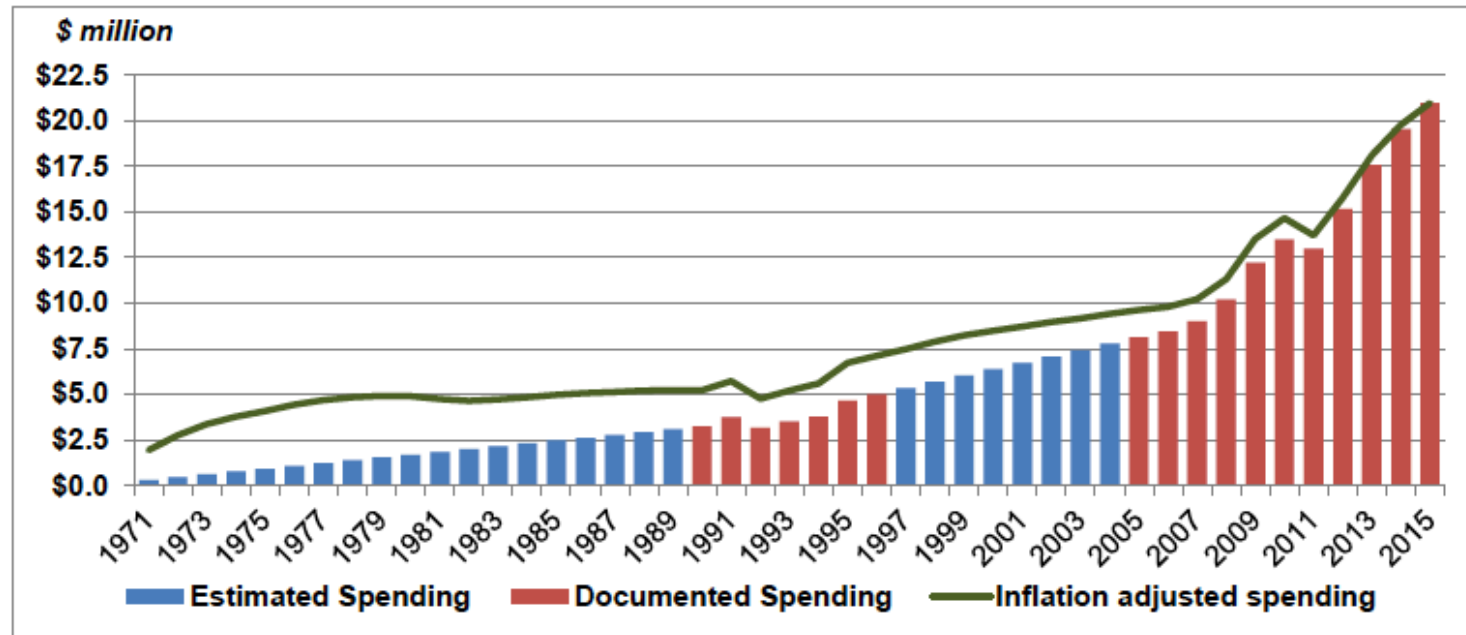
Seed from private companies

- There is some private presence in FabaBeans and Dry Beans. Seeds are marketed under a closed loop marketing agreements. Producers contractually agree not to save seed.
- BASF, which owns the Clearfield herbicide tolerant (HT) trait, earned revenue from the sale of the Odyssey herbicide. BASF also paid a royalty to the CDC, for incorporating the HT trait into their latest varieties.

The Crop Development Centre (CDC)

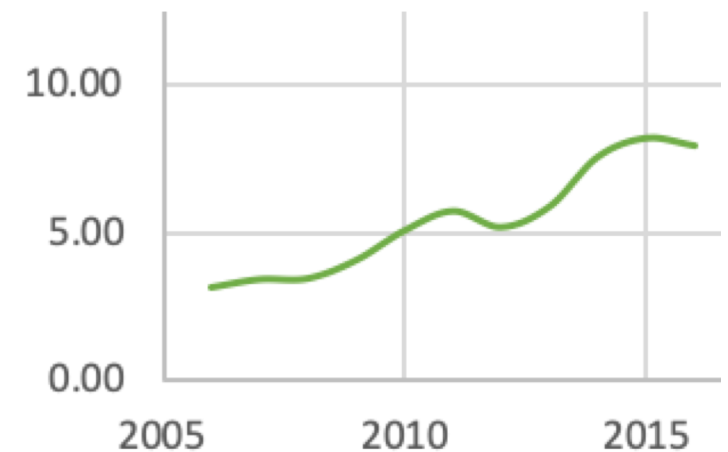
- Established in 1971, fully integrated with the Department of Plant Sciences at the University of Saskatchewan
- Missions : addressing the plant breeding gap in Saskatchewan. The mandate of the CDC is to increase the diversification of crops and their products for the farmers and agriculture industry in Saskatchewan.
- For Pulse Crops, the SPG is the biggest contributor (7M\$ in 2018) to funding research at the CDC (over the past five years).
Other sources : the Pulse Science Cluster (Canadian Agricultural Program+SPG+industry), NSERC grants, Agricultural Development Fund grants.

CDC expenditures on research and plant breeding



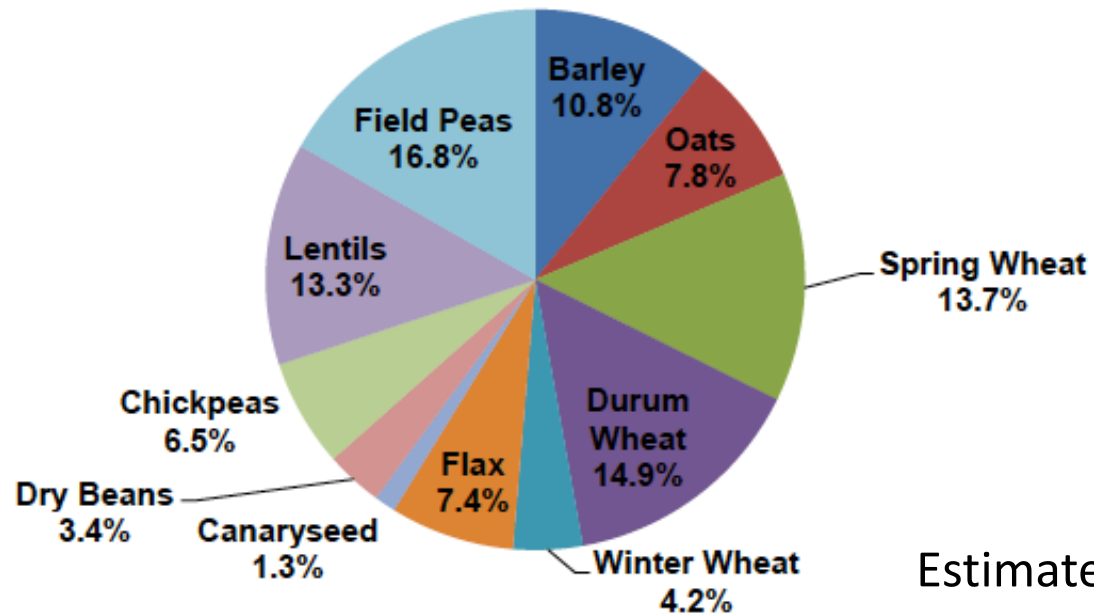
Total expenditures

Pulse crops research expenditures (million \$)

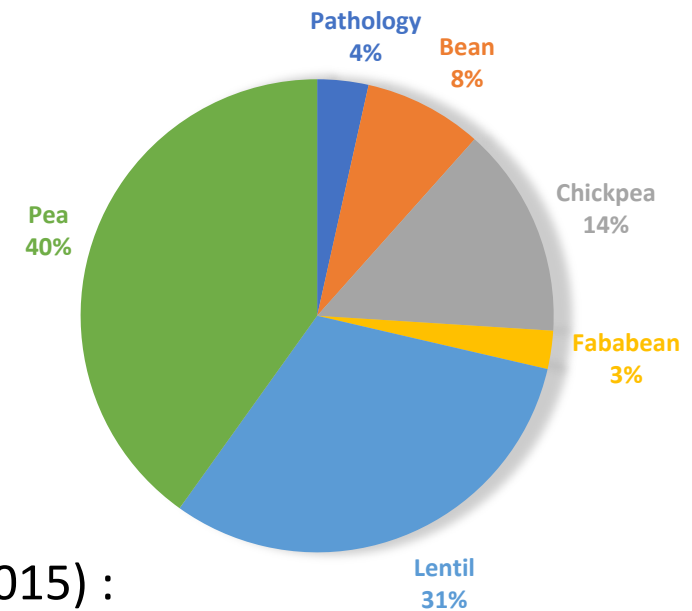


CDC expenditures per crop

All crops



Pulse crops



Estimated values (2015) :

- Pulse crops : 8.4M\$
- Peas : 3.5M\$
- Lentils : 2.8M\$

Change underway

- The CDC and SPG have just completed the negotiation of a new five-year breeding agreement
- There is no longer an exclusive partnership
- The CDC is now also working with some private firms to develop new varieties
- Many details of the new agreement are not yet public