

## Support Biotech in Agriculture

### Issue

Advancements such as biotechnology and in particular Genetic Engineering have enabled farmers to provide a safe, reliable and economic source of food to Canadian consumers. This science has greatly increased crop yields, while dramatically decreasing the overall pesticide load associated with growing crops. It has also facilitated the widespread adoption of reduced or zero-tillage thereby significantly increased soil and water quality while reducing carbon dioxide emissions.

The message largely being transmitted by activist groups to the populace regarding Genetically Modified Organisms (GMO) is of mistrust and fear and not at all backed by the scientific reality. This poses a significant threat to the agriculture industry and as a result, global food security. In fact, GMO technology is an invaluable tool for the agriculture industry with a myriad of associated benefits such as GMO Insulin and treatment for hemophilia. Despite strict regulatory oversight and innumerable studies verifying the safety of GMO foods, public perception is very poor and damaging the value of our world class agriculture products.

Farmers, who represent less than 1% of Canadian population, have difficulty in making their voices heard in society<sup>1</sup>. Urbanites and those removed from agriculture have difficulty gaining accurate information regarding how their food is grown and sufficient insight as to the vast complexities and technology advancements associated with modern agriculture. This has created a disconnect between the reality versus perception of modern agriculture, especially when it comes to GMO crops.

Thus it is important that The Chamber of Commerce recognize how vital biotechnology is to farmers, to agriculture, to agribusiness, to consumers, and to the Canadian economy.

### Background

GMOs are the evolution and usage of modern science to combine desired traits in plants. For thousands of years ago farmers realized they could vastly increase their yields by combining and focusing on certain traits of organisms. Only the most productive livestock would be allowed to reproduce and only the seeds from the largest and most productive crops would be planted the following season. Thus, the food we eat today is the result of thousands of years of genetically engineering organisms through selective breeding. The recent evolution of the very useful Canola from the far less useful Rapeseed is a perfect example of the incredible benefit selective breeding can have on agriculture<sup>2</sup>.

GMOs have resulted in a massive leap forward in modern agriculture by creating species of plants that increase yields, increase water efficiency, reduce the need for pesticides, reduced fertilizer, and even reduced tillage (a significant source of green house gas)<sup>3</sup>. Not only will GMOs play a major role in feeding a growing population reliant on very few food exporters, but they will also play a major role in reducing the environmental impact of agriculture.

There have been innumerable studies done over the past 25 years documenting that biotechnology does not pose an unusual threat to human health and that GM foods are completely safe. The American Association for the Advancement of Science made their official statement on genetically modified foods:

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<sup>1</sup> Census of Agriculture, number of farm operators per farm by age, <http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=0040239&pattern=0040200..0040242&tabMode=dataTable&srchLan=-1&p1=1&p2=50>

<sup>2</sup>McInnis, The Transformation of Rapeseed Into Canola: A Cinderella Story, Winning the Prairie Gamble: The Saskatchewan Story exhibit. 21 May 2004. Retrieved 21 January 2015. <http://wdm.ca/skteacherguide/WDMResearch/CanolaResearchPaper.pdf>

<sup>3</sup> Alberta Environmentally Sustainable Agriculture Council, Greenhouse Gas Emissions: Alberta's Cropping Industry, Number 5, November 2000. Retrieved 28 January 2015.

“The science is quite clear: crop improvements by the modern molecular techniques of biotechnology is safe ... The World Health Organization, the American Medical Association, the U.S. National Academy of Sciences, the British Royal Society, and every other respected organization that has examined the evidence has come to the same conclusion: consuming foods containing ingredients derived from GM crops is no riskier than consuming the same foods containing ingredients from crop plants modified by conventional plant improvement techniques<sup>4</sup>.”

Today’s Canadian GMO crops include corn, soybeans, sugar beets and canola, are of tremendous importance to the Canadian economy. Canola alone is now sown on over 20 million acres and provides a \$19 Billion contribution to the Canadian economy<sup>5</sup>. Since the introduction of GMO Canola in 1995 (comprising 90%+ of cdn canola), yields have climbed from 21 bushels per acre to over 41<sup>6</sup>. Soil erosion has decreased 66%, greenhouse gas emissions have decreased by 26%, and fuel usage has been reduced by 31%<sup>7</sup>. Since the introduction of GMO corn in Ontario, yields have climbed 69% while herbicide and insecticide use has dramatically decreased.

Additionally, there are many Genetic Engineered traits that will greatly enhance food quality such as the Arctic Apple which is engineered to resist browning<sup>8</sup>. The newly approved Innate Potato resists bruising, reducing waste, and has reduced levels of asprigine, a compound that increases levels of the likely carcinogenic acrylamide<sup>9</sup>. Despite the plethora of benefits many businesses refuse to use GMO products because of the public’s negative misconceptions. Canada has been a leader in the development and adoption of Genetic Engineering in agriculture resulting in her having a leadership role in the use of this technology globally. This has enabled Canada be one of six countries in the world capable of exporting food.

Food producers are continually stressed to keep up with demand from a growing population with a quickly rising middle class desiring more input intensive food. 75 years ago 1 farmer only made enough to feed 19 people. In 2010 that number rose to 155 people and the reason is the massive leaps forward in technology<sup>10</sup>. It’s imperative for the ongoing economic viability of the agriculture sector and the food security of our nation that genetically modified foods to be properly recognized as the safe and stable source of food that they are.

## Recommendations

That the federal government:

1. Encourage increased science-based communication and education of genetic engineering in agriculture when establishing relevant policies, regulations, and communications.
2. Support Health Canada’s stance that has declared Genetically Modified Organism foods are safe for consumption when developing relevant food policies, regulations and communications on a case by case basis.
3. Continue to support independent research of genetic engineering in agriculture.

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<sup>4</sup> “Statement by the AAAS Board of Directors on Labeling of Genetically Modified Foods.” American Association for the Advancement of Science [http://www.aaas.org/sites/default/files/AAAS\\_GM\\_statement.pdf](http://www.aaas.org/sites/default/files/AAAS_GM_statement.pdf) Retrieved on 30 January 2015

<sup>5</sup> “Industry Overview.” Canola Council. <http://www.canolacouncil.org/markets-stats/industry-overview/> Retrieved on 27 January 2015.

<sup>6</sup> Beckie, Hugh et al (Autumn 2011) [GM Canola: The Canadian Experience](http://www.canolawatch.org/wp-content/uploads/2011/10/20110309_FPJ_Aut11_Beckie.et_al_.pdf), Farm Policy Journal, Volume 8 Number 8, Autumn Quarter 2011. [http://www.canolawatch.org/wp-content/uploads/2011/10/20110309\\_FPJ\\_Aut11\\_Beckie.et\\_al\\_.pdf](http://www.canolawatch.org/wp-content/uploads/2011/10/20110309_FPJ_Aut11_Beckie.et_al_.pdf) Retrieved 21 January 2015.

<sup>7</sup> Ibid.

<sup>8</sup> “Arctic Apple Benefits.” Arctic Apples. <http://www.arcticapples.com/about-arctic-apples/arctic-apple-benefits> Retrieved 30 January 2015.

<sup>9</sup> “Acrylamide.” American Cancer Society. <http://www.cancer.org/cancer/cancercauses/othercarcinogens/athome/acrylamide> Retrieved 27 January 2015.

<sup>10</sup> Prax, V. (2010, April 28). American family farmers feed 155 people each- 2% Americans farm. Retrieved from <http://suite101.com/article/american-family-farmers-feeds-155-people-each-2-americans-farm-a231011>.