

Briefing to the
House of Commons Standing Committee
on Agriculture and Agri-Food

December 2010



Genetically Engineered Organisms:
The Need to Consider Potential Economic Harm
Prior to Commercial Release

Summary

Genetically engineered organisms put Canada's export markets at risk.

Canadian exports are at risk when Canada approves genetically engineered (GE) organisms that are not also approved in our export markets. The risks of contamination and the associated financial costs will dissuade international customers from buying Canadian products in favour of sources from other countries.

- 1. Alfalfa:** Export markets for conventional non-GE alfalfa, and the future of the entire organic food and farming system in North America, are under direct threat from the possible commercial introduction of GE alfalfa.
- 2. Wheat:** Canada's international wheat export market would be cut by 82% if GE wheat was introduced. The future of organic and non-GE grain farming in Canada is under threat as farmers have already lost organic canola, suffered GE contamination of flax, and face the possible introduction of GE alfalfa and the possible future introduction of a GE wheat.
- 3. Pork:** Domestic and international markets for Canadian hogs, pork and pork products are under threat from the possible approval by Health Canada of the GE pig called "Enviropig."
- 4. Salmon:** The aquaculture industry in Canada does not support the introduction of GE salmon, which threatens the market for farmed salmon.

Definition of Genetic Engineering

The terms genetic engineering and genetic modification are commonly used interchangeably to describe recombinant DNA (rDNA) technology. rDNA technology is regulated in Europe as GM and in the US as GE. In Canada, the technology falls under the broader category of "Plants with Novel Traits" and "Novel Foods". The Canadian Food Inspection Agency (CFIA) however provides the following definition: "An organism is considered genetically engineered if it was modified using techniques that permit the direct transfer or removal of genes in that organism. Such techniques are also called recombinant DNA or rDNA techniques."

Genetic Engineering in Canada

The first genetically engineered crop – a herbicide tolerant canola – was approved in 1995. Four GE crops are currently grown in Canada: soy, canola, corn, sugarbeet (white sugarbeet for sugar processing). These are genetically engineered for herbicide tolerance and/or insect resistance.

GE Contamination in Canada

The experience of Canadian farmers over the past 15 years confirms that contamination from GE crops is inevitable. Contamination from GE crop plants or other GE organisms can happen through any number of means including insect or wind pollination, seed mixing, and human error. This contamination puts Canadian exports at risk of rejection by those countries that have not approved those same GE crops and foods for human and environmental safety.

1. Contamination from approved GE crop plants is a reoccurring, predictable problem that can have a serious impact on the ability of farmers to sell into certain markets:

- **GE canola** contaminated non-GE canola to such a degree that, most, if not all, pedigreed seed growers in Saskatchewan could not warrant their canola seed as GE-free and most, if not all, grain farmers could not warrant their canola crop as free of GE contamination, even if it was planted with GE-free seeds. This indicates that even certified or pedigreed seed cannot be protected from contamination. Prairie organic grain farmers consequently lost organic canola as a market and rotation crop.

In 2002, Saskatchewan organic grain farmers tried, for six years, to establish a class action suit to get financial compensation from Monsanto and Bayer for loss of organic canola.
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2. Contamination can occur from GE crop plants that have been removed from the market for the very purpose of stopping this contamination:

- In September 2009, the European market for Canadian flax (60% of our global market) was closed due to the discovery of contamination with a **GE flax**. Contamination reached 36 countries, none of which had approved the GE flax. Ten years earlier, flax farmers foresaw this destruction of their European market if GE flax was grown in Canada and successfully requested the deregistration of the GE flax called "Triffid", approved in 1996. Since 2001, it has been illegal to sell the GE flax for seed in Canada but this was not enough to stop GE contamination and prevent its related economic harm.

3. Contamination from experimental-stage, unapproved GE organisms raises health and environmental concerns, as well as economic and social concerns:

- In 2002, 11 GE "**Enviro-pig**" piglets from the University of Guelph were accidentally sent to a rendering plant and turned into animal feed instead of being destroyed as biological waste. The GE pigs were not approved for animal feed but contaminated 675 tones of poultry feed. The then University VP of Research said, "Things you don't expect to happen can happen."

4. Contamination from experimental field trials has the potential to contaminate and devastate entire sectors:

- Because **alfalfa** is pollinated by bees and other insects, in a 2008 letter, 10 western Canadian forage industry groups stated: "There is ... an extremely high probability that there will be a transfer of pollen from Roundup Ready alfalfa plants to non-Roundup Ready alfalfa plants within the areas of Monsanto Canada Inc. field plots, should Roundup Ready alfalfa plants be allowed to bloom."
- In 2001, the CFIA acknowledged the threat of contamination from its GE **wheat** field trials when it increased the buffer zone distance between the trials and neighbouring farms from 3 to 30 metres.

1. GE Alfalfa

Roundup Ready (herbicide tolerant) alfalfa from Monsanto/Forage Genetics International was approved in Canada for human consumption and environmental release in 2005 however the seeds are not yet legal to sell because Forage Genetics has not yet requested variety registration. GE alfalfa is currently illegal to plant in the US owing to a court ruling that the US Department of Agriculture (USDA) needed to first assess the environmental impact, including impact on farmers. In December 2009, the USDA released a Draft Environmental Impact Statement (EIS). Once the final EIS is published, the US decision to ban or allow GE alfalfa plantings will be known.

Alfalfa is the most important forage crop in Canada, as well as being a significant seed crop. By area, alfalfa is the third largest crop in Canada, with 4.5 million hectares in production, including pure stands and mixes. Most of Canada's alfalfa (75%) is grown in the Prairie provinces, with a further 20% planted in Ontario and Quebec. In 2003, Canada produced 14 000 tons of alfalfa seed, second only to the U.S.'s 30 000. Canada's alfalfa processing industry (dehydration industry) is one of the world's top five largest exporters of alfalfa pellets and cubes.

Alfalfa is also the most important soil-building crop in Canada. Its ability to fix atmospheric nitrogen allows farmers to build soil fertility without animal manure. It allows organic farmers to build soil fertility in accordance with organic standards that prohibit the use of petrochemical-derived fertilizers. Alfalfa is also often used to protect or improve soils on marginal and highly erode-able land. If farmers are forced to abandon alfalfa due to GE contamination, the environmental benefits of alfalfa will be lost. Contamination also threatens the future of organic production, with its various associated environmental benefits.

Alfalfa is a perennial crop pollinated by bees and other insects. These and other characteristics mean that the GE contamination of alfalfa is inevitable.

The GE contamination of alfalfa will have negative economic impacts on a wide range of farmers, both conventional and organic, including dairy, livestock, honey, grain, alfalfa seed and sprout growers, alfalfa growers, and processors of alfalfa pellets and cubes.

Export Market Harm: Canadian alfalfa growers, both conventional and organic, will lose contracts with companies based in Europe and elsewhere, including Japan.

Other Economic Harm: Farmers will bear the costs of trying to compensate for the loss of the irreplaceable perennial crop, the "Queen of Forages", with its many unique characteristics including those for soil building and high protein animal feed. Organic farmers will lose a key input. Organic dairy and livestock farmers will struggle to survive without organic alfalfa as feed.

The use of GE seeds and GE animal feed is prohibited in organic farming.

108 groups and businesses in Canada have signed the following declaration:

- *We oppose the sale, trade and production of GMO Alfalfa in Canada.*
- *We ask the Canadian Food Inspection Agency (CFIA) to reassess its approval for environmental release of GMO Alfalfa.*
- *We want the public to understand the hazards, costs and market losses that would result if GMO Alfalfa were released into our environment.*

(<http://www.cban.ca/content/view/full/476>)

2. GE Wheat:

In 2001-2004, Health Canada and the CFIA considered approval of Monsanto's Roundup Ready GE wheat despite the fact that its introduction would have destroyed Canada's export markets (the inevitability of contamination being a major concern in Canada's markets). At the time, the Minister of Agriculture and many MPs expressed concerns about the economic impacts of introducing GE wheat. In 2004, Monsanto withdrew its request to the Canadian and US governments for approval of GE wheat because of the depth of consumer and farmer protest which was increasing the difficult public controversy over their GE technology. GE wheat remains a concern, particularly because Monsanto has recently reinvested in GE wheat research.

Export Market Harm: In a 2004 Canadian Wheat Board survey, 82% of Canada's international wheat customers stated that they would stop buying wheat from Canada if GE wheat was introduced, largely based on the risk of GE contamination.

Farmer Concern in Canada: 83% of Canadian farmers oppose the introduction of Roundup Ready Wheat (Mauro *et al*, 2009) and a 2009 survey from the Canadian Wheat Board showed 69% of wheat farmers oppose GE wheat at this time.

Global Rejection: In February 2010, 233 farmer and consumer groups from 26 countries reiterated their rejection of GE wheat: *"In light of our existing experience with genetic engineering, and recognizing the global consumer rejection of genetically engineered wheat, we restate our definitive opposition to GE wheat and our commitment to stopping the commercialization of GE traits in our wheat crops."*

3. GE Hogs and Pork

Enviropig™ is the trademarked name for a pig that has been genetically engineered to excrete less phosphorous in its feces. Enviropig™ was developed and patented by researchers at the University of Guelph and could soon be the first GE food animal on the market. In February 2010, Environment Canada granted approval for reproduction of the pigs in confined conditions. The University submitted a request for approval to Health Canada in April 2009 but this process is closed to the public. Approval from Health Canada could be granted any day. (Management of phosphorus over-production is a cost for large-scale hog operations, however a low-cost phytase feed supplement is a quick, cost-neutral technological fix that is already available to solve the problem of meeting phosphorous pollution regulations.ⁱⁱ)

Export Market Harm: Canada's hog producers rely on export sales more than any other country. Canada is the world's third largest pork exporter and represents 20% of world pork trade. In 2009, Canadian pork was exported to over 110 countries. These export markets can be unstable and, in the past, Canadian hog export markets have closed due to concerns about disease (swine flu) and feed additives (Paylean). It is highly likely that export markets will be closed to GE pigs.

Domestic Market Harm: Canadian consumers have previously come to the aid of Canada's pork producers in times of trouble but approval of the GE Enviropig for human consumption will likely result in consumer rejection of Canadian pork and pork products. This trend is assured since there is no mandatory labeling of GE foods in Canada and segregation of GE and non-GE meats in processing will be difficult, if not impossible.

4. GE Atlantic Salmon

Documents released in September by the US Food and Drug Administration (FDA) revealed that the US company AquaBounty is seeking approval to sell its GE Atlantic salmon into the US food market based on a plan to **produce all its GE salmon eggs on Prince Edward Island** and then ship the eggs to Panama for grow out and processing.

Fish escapes happen. The approval of genetically engineered Atlantic salmon poses an unacceptable risk to endangered wild Atlantic salmon populations.

Environment Canada will neither confirm nor deny if the department has already started a secret 120-day risk assessment to approve GE Atlantic salmon egg production on PEI. The process, and that fact that it may or may not be underway, is being kept confidential.

On December 6, 2010, sixty fisheries and oceans conservation, environmental and social justice groups released the declaration "No GE Fish Research, Production, Consumption in, and Export from, Canada":

To protect the health and future of our food system and our aquatic ecosystems, we, the undersigned:

- 1. State our categorical objection to the introduction of genetically engineered (GE) fish into our food system;*
- 2. Object to the raising of GE fish, whether in open netpens or land-based facilities, object to the production of GE fish eggs in Canada and their export from Canada to other countries, and object to the use of public resources for the research and development of GE fish;*
- 3. We call upon Environment Canada to reject any request for permission to commercially produce genetically engineered fish or fish eggs;*
- 4. We call upon Health Canada to reject any application for approval of genetically engineered fish for human consumption;*
- 5. We call upon the federal government to stop any current risk assessments of GE fish.*

Market Harm: The Canadian Aquaculture Industry Alliance is opposed to the commercialization of GE Atlantic salmon.ⁱⁱⁱ There is no mandatory labeling of GE food and consumers are likely to reject farmed salmon as a means to avoid GE salmon.

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ⁱ "Accident Raises GMO-Research Flag: Modified Piglets Turned Into Chicken Feed" Stephen Struass, Globe and Mail, February 19, 2002

ⁱⁱ Use of the phytase supplement is described as "cost-neutral". Adoption rates for Quebec are at 70% and 20-30% in Ontario. *Nutritional Strategies to Decrease Nutrients in Swine Manure, Factsheet 04-035*, Simpson and de Lange, Ontario Ministry of Agriculture, Food & Rural Affairs, May 2004 reviewed July 2009.

ⁱⁱⁱ <http://www.cbc.ca/informationmornings/2010/09/the-first-genetically-modified-animal-is-being-bred-at-a-pei-fish-farm.html>