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The Inevitability of Contamination
FROM GM ALFALFA RELEASE IN ONTARIO

THE CASE FOR PREVENTING THE INTRODUCTION OF ROUNDUP READY ALFALFA

A report from the Canadian Biotechnology Action Network

Available at www.cban.ca/alfalfaONreport

CBAN's new report explains the risk of contamination from genetically modified (GM) alfalfa, if it is released in Ontario/Eastern Canada. It also describes the status of alfalfa production, and the regulatory status of Monsanto's GM glyphosate-tolerant Roundup Ready Alfalfa in Canada.

ALFALFA PRODUCTION IN ONTARIO AND CANADA

Alfalfa is an important crop in diverse farming systems, and is widely grown in Canada. In fact, alfalfa is one of the largest crops in the country by area. It is grown on almost 30% of Canada's cropland, and 22% of the cropland in Ontario. Alfalfa is used to produce high-quality hay or haylage for dairy and beef cattle, and grown as pasture. It is also included in crop rotations to help build nitrogen levels and maintain soil fertility. These latter uses are particularly important for organic farms, which do not use nitrogen fertilizers. Canada exports several alfalfa products, including hay, alfalfa seed, and processed products such as alfalfa pellets, meal and cubes.

THE STATUS OF GM ALFALFA IN CANADA

The US company Forage Genetics International (FGI) wants to introduce GM alfalfa in Eastern Canada. FGI has applied Monsanto's genetically modified (GM) Roundup Ready (herbicide resistant) technology to alfalfa.

Canada approved this GM alfalfa as safe for eating and growing in 2005, but the first GM alfalfa varieties were only granted variety registration in 2013. GM Roundup Ready alfalfa could be put on the market at any time.

THE IMPOSSIBILITY OF PREVENTING CONTAMINATION FROM GM ALFALFA

If GM alfalfa is introduced in Eastern Canada, contamination of non-GM alfalfa will be unavoidable.

There are several ways in which this gene flow can occur. These may be broadly divided into three categories: seed escape, pollinator-mediated gene flow, and gene flow through volunteer and feral alfalfa.

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SEED ESCAPE

There are a number of ways in which seeds of GM and non-GM alfalfa can mix, resulting in contamination. These include seed spillage during planting, harvest and transport, and seed being left behind when storage, seeding or harvesting equipment is being cleaned out. Alfalfa seed often has "hard seed" in it, which can stay dormant for years, and then germinate at a later time, possibly in fields of non-GM crops.

POLLINATOR MEDIATED GENE-FLOW

Alfalfa is an out-crossing perennial crop that needs insects to pollinate it. In Ontario, it may be pollinated by a number of native pollinators, as well as by the better-known leafcutter bee and honeybee. Foraging distances for native pollinators are not well understood, but many travel great distances. Leafcutter bees forage up to 1000m from their nests, and may travel even further over time. Honeybees – especially juvenile honeybees, who have not learnt to avoid alfalfa's "tripping" mechanism – also forage in alfalfa stands. The risk of pollinator-mediated contamination is heightened when harvest is delayed due to weather conditions, or farm management decisions. It is impossible to fully control the forage patterns of pollinators, or the bloom timings of a forage stand.

FERAL AND VOLUNTEER ALFALFA

Alfalfa produces persistent and hardy feral populations. These can act as a "bridge" that facilitates gene flow from GM alfalfa, both through cross-pollination, as well as by producing seeds that may then germinate. Volunteer alfalfa can also grow in other non-GM fields, further increasing the risk of contamination.

Existing experiences with GM flax and GM canola in Canada further warn of the inevitability of gene flow and GM contamination, including the risk of contamination in certified seed.

The unintended presence of GM alfalfa will have widespread and negative impacts on family farms in Ontario, and across Canada. The only way to prevent contamination from GM alfalfa is to stop the market release of GM Roundup Ready Alfalfa in Canada.

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