



*The Canadian Produce Marketing Association supports all Canadian Government approved production practices which will ensure the future viability and sustainability of horticulture production.*

## Fresh Facts for Industry: **Biotechnology**

"**Biotechnology**" means the application of science and engineering in the direct or indirect use of living organisms, or parts or products of living organisms, in their natural or modified forms. This term is very broad and includes the use of traditional or conventional breeding, as well as more modern techniques such as genetic engineering. \* Biotechnology, specifically products that have been modified by genetic engineering (commonly referred to as genetically modified organisms, or GMO) provides opportunities and presents challenges and allows for the development of new food products through a variety of scientific tools and techniques. \*\* Food biotechnology has the ability to address hunger and malnutrition issues, improve crop yields and reduce chemical usage.

The benefits of food biotechnology may include:

- Increased crop productivity including herbicide tolerance, pest and disease resistance, e.g. herbicide resistant plants that can withstand herbicides which are sprayed on crops to reduce weeds or plants that act as pesticides.
- Prolonging shelf-life of foods.<sup>i</sup>
- Additional benefits such as: food without allergens; fruit & vegetables with improved nutrition, better taste, cold tolerance where plants are developed to tolerate cold temperatures and withstand unexpected frost which could destroy seedlings, resistance to harsh environments (e.g. drought, salt resistance and more, as the technology evolves).
  - Produce recently approved in Canada include the Artic Apple (resistant to browning) and the Innate Potato (reduced acrylamide during thermal processing, reduce colouration when exposed to air)

Challenges surrounding food biotechnology include:

- Environmental – There may be unintended harm to other organisms such as:
  - Reduced effectiveness of pesticides as pests become resistant to modified crops
- Human health – There may be a possibility that introducing a gene into a plant may create a new allergen or cause an allergic reaction in susceptible individuals or dramatically change nutritional content.

Overall, biotechnology seeks to improve the quality and quantity of the food supply.

- For a Canadian farmers perspective on the value of the use of modern techniques including biotechnology go to 'a License to Farm' at <http://licensetofarm.com/>
- A recent report: Genetically Engineered Crops: Experiences and Prospects (2016) from the National Academies of Science, Engineering and Medicine (<http://nas-sites.org/ge-crops/2016/05/17/report/>) concluded there is broad scientific consensus that current GE(GMO) crop traits do not pose a threat to human health or to the environment. (<http://nas-sites.org/ge-crops/2016/05/16/findings-and-recommendations/>)

### What You Need to Know

In Canada, **Health Canada** and the **Canadian Food Inspection Agency (CFIA)** share the responsibilities for the safety of novel foods developed using agricultural biotechnology.

- Before a product is approved in Canada, both Health Canada and the CFIA determine the safety or potential risks to human, plant and animal health, and the environment. The organization applying for

approval collects the data for the government's team of scientific experts who also consider other relevant information, such as peer-reviewed publications. All assessments are performed on a case-by-case basis, and only products judged to be as safe as their traditional counterparts, are approved.

A list of currently approved novel foods is available at the following website: [http://www.hc-sc.gc.ca/fn-an/gmf-agm/appro/index\\_e.html](http://www.hc-sc.gc.ca/fn-an/gmf-agm/appro/index_e.html)

- Responsibility for food labelling is shared by Health Canada and CFIA. Mandatory labelling for foods, including foods derived from biotechnology, could be required to highlight a significant nutritional or compositional change, or where there are health or safety concerns that could be mitigated through labelling such as the introduction of an allergen. Voluntary labelling is permitted in order to provide consumers with information that is not related to the safety of the product.
- Important criteria for making voluntary labelling and advertising claims that identify foods sold in Canada that are, or are not, products of genetic engineering can be found in the [National Standard of Canada for Voluntary Labelling and Advertising of Foods that Are and Are Not Products of Genetic Engineering](http://www.tpsgc-pwgsc.gc.ca/ongc-cgsb/programme-program/normes-standards/internet/032-0315/index-eng.html) at the following link: <http://www.tpsgc-pwgsc.gc.ca/ongc-cgsb/programme-program/normes-standards/internet/032-0315/index-eng.html> ( See Section 6 and Appendix B par.B2.5)

### CPMA Contacts and Other Resources

For more information, please contact CPMA at [question@cpma.ca](mailto:question@cpma.ca), or use the following resources:

- **Toll-free Information Line on Food Biotechnology: 1-877-366-3246**
- \* Canadian Food Inspection Agency – Modern Biotechnology: <http://www.inspection.gc.ca/eng/1337827503752/1337827590597>
- \*\*Health Canada – Biotechnology- Food <http://www.hc-sc.gc.ca/sr-sr/tech/biotech/food-aliment/index-eng.php>
- Health Canada – Genetically Modified (GM) Foods and other Novel Foods [http://www.hc-sc.gc.ca/fn-an/gmf-agm/index\\_e.html](http://www.hc-sc.gc.ca/fn-an/gmf-agm/index_e.html)
- Canadian Food Inspection Agency – Information for the General Public <http://www.inspection.gc.ca/eng/1337380923340/1337384231869>
- Canadian Food Inspection Agency – Guide to Food Labelling and Advertising <http://www.inspection.gc.ca/english/fssa/labeti/guide/ch4ae.shtml>
- Canadian Food Inspection Agency – Labelling of Genetically Engineered Foods in Canada <http://www.inspection.gc.ca/eng/1333373177199/1333373638071>

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<sup>i</sup> Uzogara SG. (2000). The impact of genetic modification of human foods in the 21st century: A review. *Biotechnology Advances*. 18:179-206.