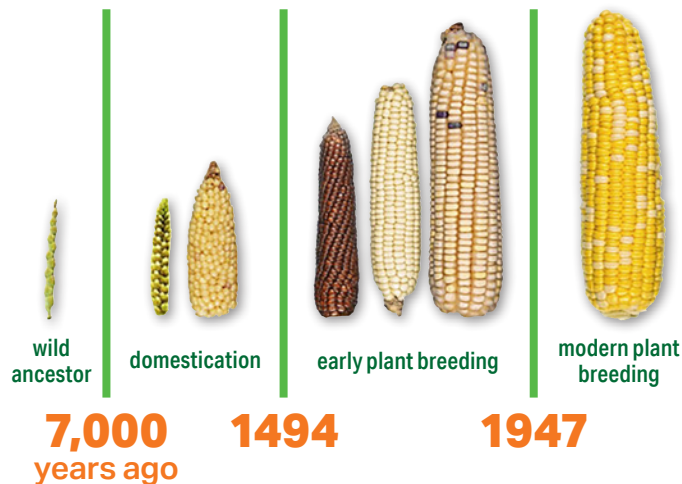


Understanding GMOs and other plant breeding tools!

The evolution of plant breeding

Humans have been using plant breeding to improve their crops for thousands of years. Corn is just one of the foods we eat today that is unrecognizable from its wild ancestors thanks to improvements through traditional plant breeding.



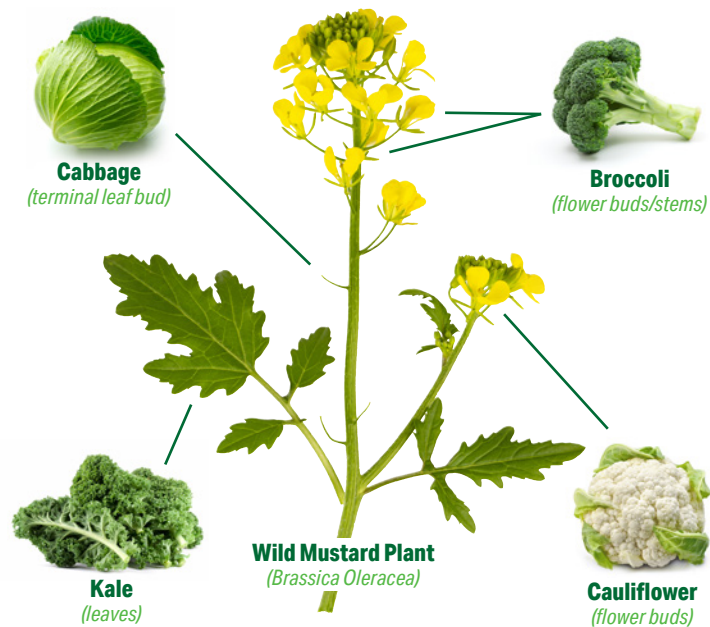
Plant breeding methods

Thousands of years ago the best method was visually selecting the best seeds from the best plants.

This evolved into deliberate cross pollination, which raised the chances of gaining the best traits from two different plants.

Jumping forward to modern times, plant breeders have access to a wide range of tools to develop improved crop varieties. For example, genetic engineering has been used for about 30 years to develop better crops more efficiently, and includes:

- **Genetically modified organisms (GMOs)**, which are typically the result of moving favourable genes from one organism to another.
- **Gene editing**, a more recent technology which focuses on making precise, targeted changes within a plant's own DNA. These changes mirror what could occur in nature or through traditional plant breeding, but more efficiently.



Over thousands of years, people in different parts of Europe and Asia transformed wild mustard by replanting the seeds from the plants which had the largest expression of their favourite parts to eat. This early plant breeding of wild mustard created some of our most recognizable grocery store staples.

Plant breeding today



Plant breeders today have access to a more advanced toolbox, providing many ways to access new beneficial traits.



Modern plant breeding is producing stronger, healthier, and more pest resistant crops as farmers face increased instances of flooding, drought, and new insects, weeds and diseases that threaten to destroy their crops.



Plant breeding is also helping to produce more nutritious, affordable, and sustainable food that consumers are looking for.

Benefits of GMOs

Here are just some examples of crop improvements through genetic engineering:



Crops that are insect and disease resistant, resulting in less crops lost in the field. This means more land can be left in its natural state to support biodiversity.



Herbicide-tolerant crops that allow farmers to more effectively control weeds without having to mechanically remove them. This has helped advance sustainable agriculture by improving soil health, retaining moisture, and reducing greenhouse gas emissions.



Crops that are better adapted to climate change and resistant to environmental stresses like drought and flooding.



Food with enhanced nutrition content including vitamin A-enhanced golden rice and omega-3 soybeans.



Crops with increased durability and non-browning traits that can significantly reduce food waste from bruising during harvesting and handling.

How many GMO foods are there today?

Currently, the following GMO crops are grown in Canada:



Corn



Canola



Potatoes



Soybeans



Sugar Beets



Alfafa

Other GMO crops grown in other parts of the world include:



Apple



Cotton



Eggplant



Papaya



Pink Pineapple



Purple Tomato



Rice



Squash



Sugarcane

GMO FAQs

Are GMOs safe?

GMOs have been evaluated by Health Canada and international governments and scientists for over 30 years. The scientific consensus is clear: GM foods pose no more risk to human health than non-GM foods. Globally, there have been trillions of meals consumed containing GMOs without any evidence of negative health impacts.

What are the environmental impacts of GMOs?

GMO crops can improve environmental sustainability in agriculture by increasing yield, reducing soil erosion, conserving water, reducing greenhouse gas emissions, and improving the efficiency of pesticides and fertilizers.

What about non-GMO labels?

In Canada, mandatory food labelling is reserved for things that could impact the nutrition or safety of a food product. Since GMOs do not pose a health or safety risk, they do not require labelling. Many non-GMO products are labelled advertising their GMO free status, however this can be a bit misleading as many foods labelled in this way do not contain ingredients that have a GM counterpart. For example, labelling orange juice as non-GMO is unnecessary since there are no GM oranges.