

**What is a GMO?** GMOs are the product of a specific type of plant breeding where precise changes are made to a plant's DNA to give it a characteristic that cannot be achieved through traditional breeding methods (such as selective or advance breeding).

## 01 Trait Identification



### i Fun fact:

For every one trait that is brought to market, more than 6,000 others are screened and tested.

Scientists conduct research to identify the specific genes responsible for traits that make crops resistant to disease, pests or drought.

## 02 Transformation



### i Fun fact:

There are many ways to transform a cell. One common method uses agrobacterium - a natural bacteria that can pass on genes to plants.

Once the desired gene has been identified, scientists transfer the gene into a plant seed. The result is a genetically modified organism or GMO.

Researchers can also turn off or move a gene within a plant to create a GMO.

## 04 Regulatory Science

**75+ different studies** are conducted to demonstrate each new GMO is:

- Safe to grow**
  - Crop grows the same as non-GM varieties
  - Crop exhibits expected characteristics (e.g., insect resistance)
- Safe for the environment and beneficial insects**
- Safe to eat**
  - Same nutrients as non-GM crops
  - No new dietary allergens

### i Fun fact:

A new biotech seed product takes an average of 13 years and \$130 million in R&D before coming to market.

More than 75 different studies are performed on each new biotech product before commercialization to ensure that they are safe for people, animals and the environment.

## 03 Greenhouse Testing



### i Fun fact:

Only after several years of rigorous testing are the top performing plants and traits selected to advance to field testing and regulatory review.

After a GMO is developed in the lab, the seedlings are moved to greenhouses where further tests are performed.

## 05 Field Testing



### i Fun fact:

More than 90 government bodies globally review and approve GMOs. In many countries, multiple agencies are involved in the regulation of GMOs.

Field trials are an important part of developing new products. They provide critical scientific and performance data and information.

## 06 Getting Seeds to Farmers



### i Fun fact:

In 2013, more than 18 million farmers globally chose to plant GMO seeds for higher yields, improved crop quality and the ability to use sustainable farming practices such as no-till.

Farmers choose seeds that are best for their farms and businesses. Both GM and non-GM seeds are available options for farmers.