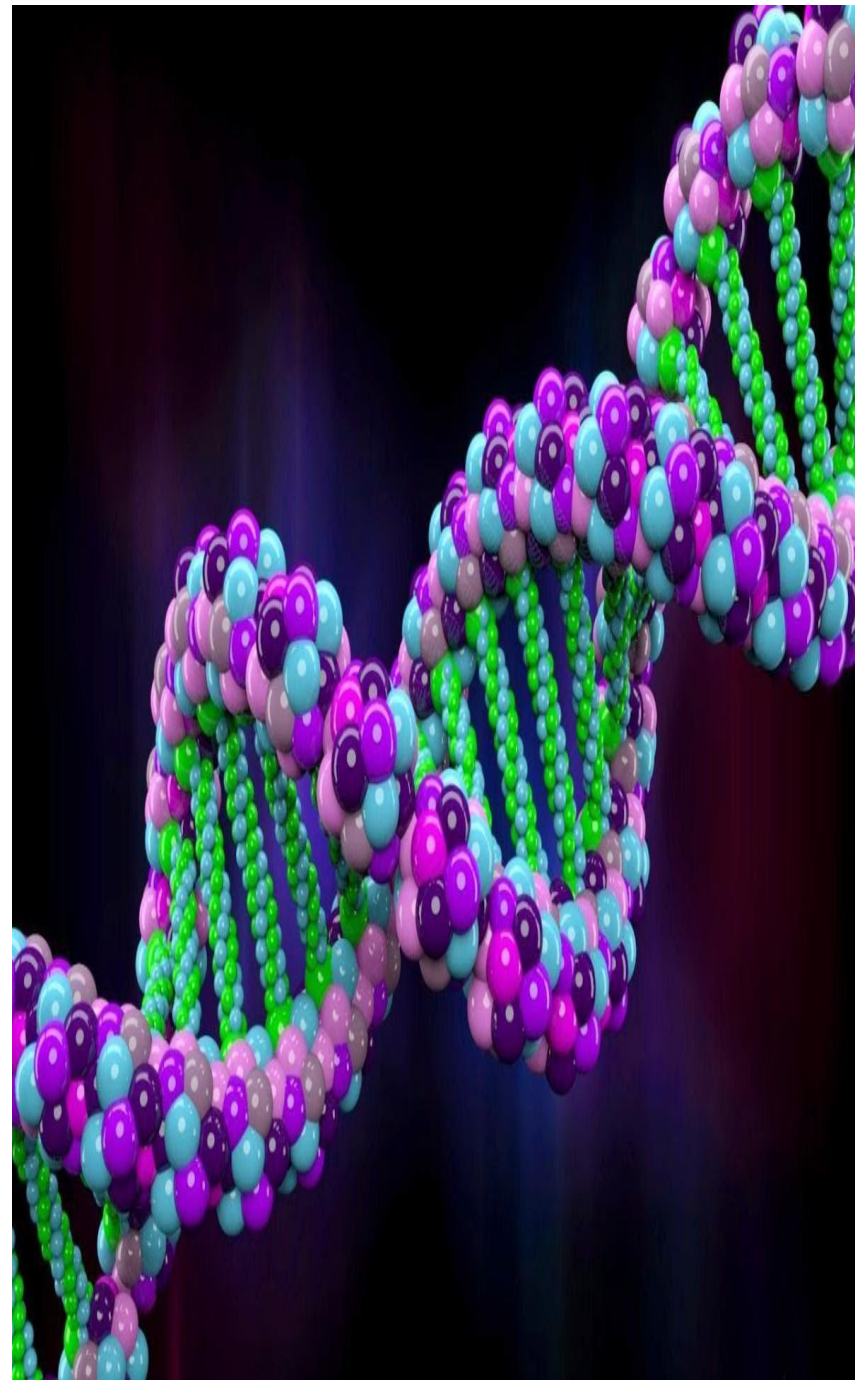


# Why Genetically Engineering plant



- To improve the agriculture ,horticulture or ornamental value of a crop plant.
- To use as a living bioreactor for the production. Of economically, important protein or Metabolites.
- To provide. A powerful mean. For studying The action of genes and genes Protection During development and other processes.
- Insect , pathogen, and herbicide, resistant plant.

- Stress and senescence tolerant plants.
- Genetic manipulation of a flower pigmentation.
- Modification of nutritional content.

## **Golden Rice**

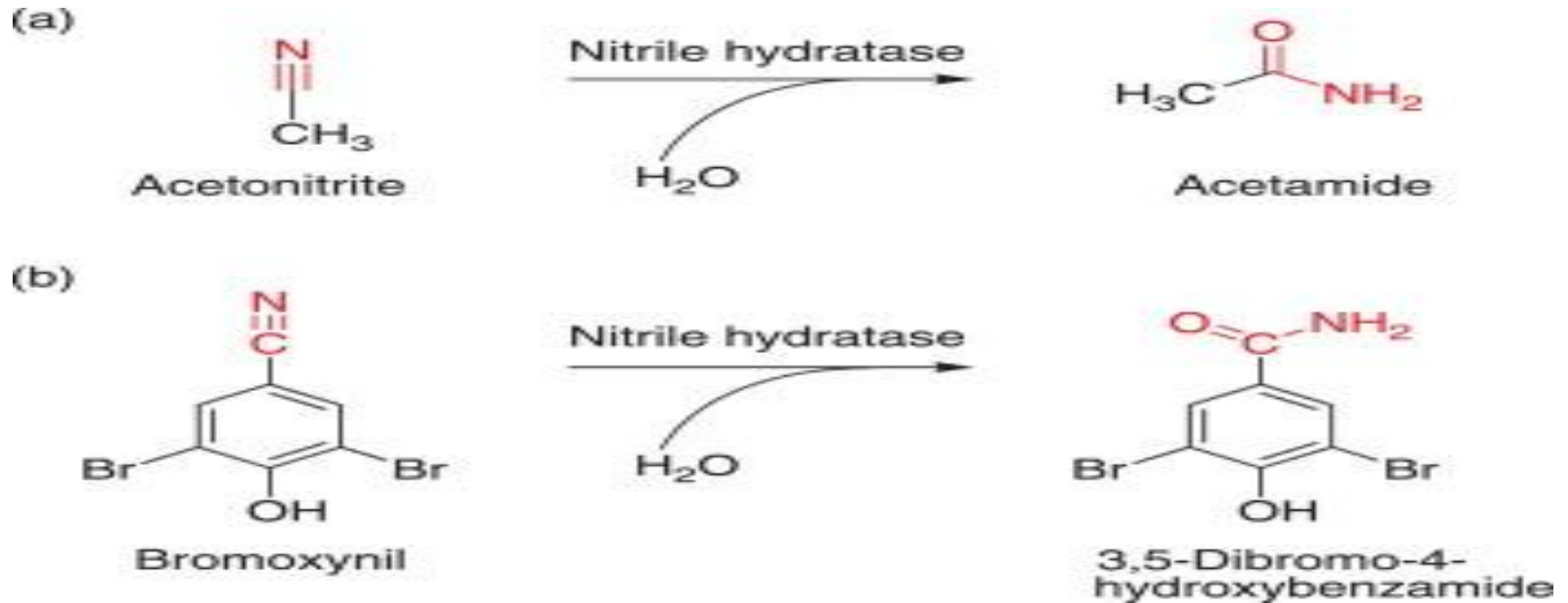
Genetic modification is often used to make healthier foods, such as golden rice, which contains beta-carotene — the very same vitamin that makes carrots orange.

- Modification of plant taste and appearance.
- The plants and bioreactor
- Edible vaccine
- Improving plant yield
- Herbicide and herbicide resistant plants.

A- Inhibit uptake of the herbicide.

B- give plant the ability to inactive the herbicide.

Ex: Bromoxynil that photosystem 2 inhibitor  
*Klebsilla ozaenae* , nitrilase



- C- Reduce the ability of the herbicide. Sensitive protein to bind to the herbicide.
- D- Over produce the herbicide sensitive, targeted protein.

## Pesticide-Resistant Rapeseed Plants

Rapeseed is a flowering plant used to make certain types of vegetable oil. Genetic engineering has allowed these plants to be resistant to certain types of pesticides so that when the fields are treated to remove pests, the plants will remain unscathed.

## Plants That Fight Pollution

Poplar trees developed by scientists at the University of Washington can absorb polluted water through their roots and clean it before the water is released back into the air. The plants were many times more efficient at cleaning certain pollutants than regular poplars.

## Faster-Growing Trees

Demand for wood can be met by trees that grow faster than average. Genetic engineering has produced trees that can ward off biological attacks, grow more quickly and strongly, and create better wood than trees that are not genetically modified.

## Bigger, Longer-Lasting Tomatoes

When tomatoes are genetically engineered, they can be made bigger and more robust. These are engineered to produce tomatoes that can remain fresh for longer, be shipped farther from where they are grown, and be harvested at the same time rather than harvesting only parts of a field at each harvest. What genetic modifications were made to the Flavr Savr tomato?

The Flavr Savr was made more resistant to rotting by the addition of an **antisense gene** which interferes with the production of the enzyme Beta poly galacturonase.



## **Insecticide Corn**

Corn was developed through genetic engineering to produce a poison that kills insects. While this corn may also harm beneficial insects such as butterflies, but that the pros outweigh the cons.

## **Non-Crying Onions**

a New Zealand scientist engineered an onion without the enzyme that tears you up called a sunion. These sweeter onions won't make you cry. the insertion of a single gene which down regulates the activity of the onion enzyme that makes your eyes water has managed to achieve two things: firstly, onions no longer make your eyes water, and secondly, they now have even more health beneficial sulphur-containing substances than regular onions

Genes for toxins that kill insects have been introduced in several species of plants, including corn and cotton. Bacterial genes that confer resistance to herbicides also have been introduced into crop plants. Other attempts at the genetic engineering of plants have aimed at improving the nutritional value of the plant.

## •A biotic stress

resistant to abiotic stress. [Frost-resistant eucalyptus trees](#) are already being produced and used in the paper industry. As for the leading crops, species that successfully grow with smaller doses of nitrogen and phosphorus are already being tested. In addition, the first drought-resistant species are making their way to the market, as well as rice that is better adapted to flooded fields. These characteristics will enable more environmentally friendly production and easier adaptation to extreme weather conditions.

# Bananas

Ugandan scientists have successfully used a genetic modification, inserting a pepper gene into bananas, which prevents the fruit from getting the disease.