**GENETICALLY MODIFIED CROPS**

**Genetically Modified Organism**

A genetically modified organism (GMO) is any organism whose genetic material has been altered using genetic engineering techniques.

**Genetically modified crops (GM crops)** are plants used in [agriculture](https://en.wikipedia.org/wiki/Agriculture), the [DNA](https://en.wikipedia.org/wiki/DNA) of which has been modified using [genetic engineering](https://en.wikipedia.org/wiki/Genetic_engineering) methods. In most cases, the aim is to introduce a new [trait](https://en.wikipedia.org/wiki/Trait_(biology)) to the plant which does not occur naturally in the species. Examples in food crops include resistance to certain pests, diseases, environmental conditions, reduction of spoilage, resistance to chemical treatments (e.g. resistance to a [herbicide](https://en.wikipedia.org/wiki/Herbicide)), or improving the nutrient profile of the crop. Examples in non-food crops include production of [pharmaceutical agents](https://en.wikipedia.org/wiki/Plant_manufactured_pharmaceuticals), [biofuels](https://en.wikipedia.org/wiki/Biofuels), and other industrially useful goods, as well as for [bioremediation](https://en.wikipedia.org/wiki/Bioremediation).

**History of GMO's**

* 1980s, transgenic plants are started to be created in china.
* 1988, first transgenic plants producing a pharmaceutical.
* 1995, GMO corn hits the market in the USA.
* 1996, Roundup Ready Soybeans hit market in USA.
* 1998, First GM labelling rules introduced to provide consumers with information regarding the use of GM ingredients in food.
* First crop introduced was Flavr Savr tomato in USA in 1995
* So far 20 crops approved for commercial cultivation in different countries
* Only four crops being marketed commercially i.e., corn, cotton, soybean and canola.
* Commercial production initiated for papaya, squash, rice and alfalfa in USA and other countries, Others are approved but not yet being Marketed
* Major countries include USA, Canada, Japan, China, India, Brazil, EU, Argentina, South Africa

**Why to make transgenic crops?**

Due to limitations of conventional breeding for attaining the desirable traits use of recombinant DNA technology has been take advantage of and development of transgenics started



**Transgenic plant (development objectives**)

1. Integrated pest management (IPM)
2. Herbicide tolerance (HT)
3. Nutritional enhancements
4. Product quality improvement
5. Increase in Yield
6. Stress tolerance (ST)
7. Plant base pharmaceuticals



**GM crops-Pros**

1. Improved resistance to pests and diseases.
2. Improved resistance to Herbicide
3. Production of more nutritious staple crops
4. Contribute to food security ,sustainability
5. Contributing to the alleviation of poverty and hunger
6. Increased crop productivity
7. Stability of production
8. Economic and social benefits

**GM crops- Cons**

1. Human health
2. Environmental hazards
3. Effects on Non-Target organisms and plants
4. likelihood and consequences of a gene being transferred unintentionally from the modified crop to other species

**HUMAN HEALTH**

* Allergen and toxin
* Antibiotic resistance
* Unknown effects on human health

**Environmental hazards**

• Growing of GM crops may lead to monoculture

• The creation of pest or herbicide resistant GM crops could result in superbugs or super weeds