



# CHINMAYA ACADEMY FOR CIVIL SERVICES

## Genetically modified crop

Genetically modified (GM) crops, also known as transgenic crops, are plants that have had their genetic makeup altered in a way that doesn't occur naturally. This is done through techniques like gene insertion, removal, or modification using genetic engineering tools.

### **What are they?**

- Crops with their DNA deliberately altered to introduce new traits or enhance existing ones.
- Achieved through techniques like inserting genes from other organisms or modifying the plant's own genetic code.

### **Goals of GM technology in agriculture:**

#### **Increased yield and productivity:**

- GM crops can be engineered to resist pests and diseases, tolerate harsh environments, and produce higher yields.
- This can lead to increased food security and economic benefits for farmers.

#### **Improved nutritional value:**

- Crops can be fortified with essential vitamins and minerals, addressing malnutrition and dietary deficiencies.
- Examples include Golden Rice enriched with Vitamin A.

#### **Enhanced sustainability:**

- GM crops can be engineered to require less water and fertilizer, reducing environmental impact and promoting sustainable agriculture.

### **Herbicide tolerance:**

- Some GM crops are resistant to specific herbicides, allowing farmers to control weeds more effectively while minimizing harm to the crop itself.

## **Examples of GM crops:**

### **Bt cotton:**

- Contains a gene from the bacterium *Bacillus thuringiensis* (Bt) that produces a protein toxic to certain insect pests, reducing pesticide use.

### **Herbicide-resistant soybeans and corn:**

- Engineered to withstand specific herbicides, simplifying weed control for farmers.

### **Golden Rice:**

- Contains genes from other plants that enable it to produce beta-carotene, a precursor to Vitamin A, addressing Vitamin A deficiency in regions where rice is a staple food.

## **Challenges and concerns:**

### **Safety:**

- Potential risks to human health and the environment are a major concern, although extensive testing and regulations are in place.

### **Ethical considerations:**

- Modifying organisms raises ethical questions about interfering with nature and potential unintended consequences.

### **Socioeconomic impact:**

- Concerns exist about corporate control of seeds and potential negative impacts on small farmers.

## Current Scenario in INDIA

### Only one commercially cultivated GM crop:

- Bt cotton, introduced in 2002, dominates the country's cotton production, accounting for nearly 96% of cotton area.
- Its pest resistance has demonstrably increased yields and farmer income.

### Field trials for other crops:

- Trials are underway for brinjal, tomato, maize, and chickpea using transgenic technology.
- However, commercial release remains stalled due to regulatory hurdles and public concerns.

### Mustard on the cusp of commercialization:

- The GEAC approved GM mustard hybrid DMH-11 in October 2022, bringing it closer to full cultivation.
- However, legal challenges still exist, delaying its potential widespread adoption.

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## Prelims Facts

<b>Colombo Security Conclave's</b>	<p>About</p> <p>The CSC is a trilateral maritime security alliance comprising the Maldives, Sri Lanka, and India that was established in 2011.</p> <ul style="list-style-type: none"><li>• At the fifth meeting of national security advisers, it welcomed Mauritius as a fourth member.</li><li>• Seychelles and Bangladesh were invited to join the group and attended as observers.</li><li>• Currently India is heading the conclave</li></ul>
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**Agni Path**

The Agnipath Scheme is a revolutionary recruitment program launched by the Indian government in June 2022 to transform the way soldiers are recruited into the Indian Armed Forces. It aims to bring in a younger, fitter, and more tech-savvy workforce while reducing the pension burden on the military.