

1 GM Crops (Source: The Hindu)

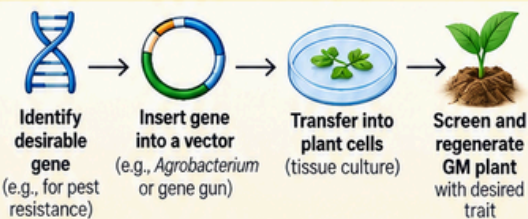
Genetically Modified (GM) Crops

What are GM Crops?

- Crops whose genetic material (DNA) is altered using modern biotechnology to introduce, remove or modify specific genes for desirable traits.
- Genes can be inserted from the same species or from different species (cross-species gene transfer).



How are GM Crops Developed?



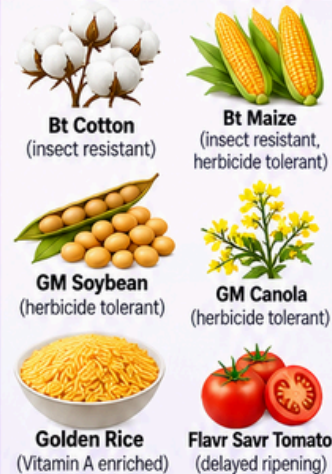
Objectives

- Increase crop productivity and food security
- Resist pests, diseases and environmental stresses (drought, salinity, heat)
- Improve nutritional quality (biofortification)
- Enhance shelf life and reduce post-harvest losses
- Reduce use of chemical pesticides and input costs

Key Traits Introduced

- Insect resistance (e.g., Bt gene)
- Disease resistance (e.g., viral / fungal)
- Herbicide tolerance (e.g., glyphosate tolerant)
- Tolerance to abiotic stresses (drought, salinity, heat)
- Nutritional enhancement (e.g., Vitamin A, iron, zinc)
- Delayed ripening / longer shelf life

Examples of GM Crops



Benefits

- Higher yields and stable production
- Reduced crop losses from pests and stresses
- Lower use of chemical pesticides
- Improved nutritional quality
- Potential for climate-resilient agriculture
- Higher income for farmers

Concerns and Challenges

- Possible impact on biodiversity and non-target organisms
- Evolution of resistant pests and superweeds
- Uncertain long-term health effects (allergenicity, toxicity)
- Ethical concerns over genetic manipulation
- Corporate control over seeds and farmers' dependence
- Socio-economic and trade issues (e.g., GM-free markets)

Global Scenario

- Many countries cultivate GM crops, including the USA, Brazil, Argentina, Canada and Australia.
- Major GM crops: soybean, maize, cotton and canola.
- Largest area under GM crops: USA, followed by Brazil and Argentina.
- GM crops are widely used in animal feed and processed foods.
- Regulatory approaches vary across countries, with strict rules in the European Union.

Status in India



- **Bt cotton** is the only commercially approved GM crop in India (since 2002).
- Developed for resistance to bollworm, leading to higher yields.
- India has a **moratorium** on commercial cultivation of other GM food crops (e.g., GM brinjal).
- Regulation by **Genetic Engineering Appraisal Committee (GEAC)** under the Environment (Protection) Act, 1986.

DATE: 28 OCTOBER 2026

2 Siang River (Source: The Indian Express)

- *Siang River is a major transboundary river flowing through Tibet (China) and Arunachal Pradesh (India).*
 - **Upstream Source:** It originates from glaciers near Mount Kailash and Lake Manasarovar in Tibet, where it is known as the Yarlung Tsangpo.
 - **Entry into India:** It cuts through the deep Yarlung Tsangpo Grand Canyon around the Namcha Barwa peak before entering India near Geling and Tuting in the Upper Siang district of Arunachal Pradesh.
 - **Confluence & Transformation:** As it flows south and exits the foothills, it is also referred to as the Dihang. Near Sadiya in Assam, it merges with the Dibang and Lohit rivers to officially form the Brahmaputra.
 - **Major Tributaries:** Key tributaries include the Siyom, Yamne, Simang, and Yargyap Chu.
 - **Key Hydro Power Project:** Siang Upper Multipurpose Project in Arunachal Pradesh.

3 Jordan (Source: The Hindu)

- **Location:** West Asia
- **Capital:** Amman
- **Bordering Countries:** Syria, Iraq, Saudi Arabia, Israel, and the West Bank.
- **Bordering Waterbodies:** Gulf of Aqaba (Red Sea), Dead Sea
- **River:** Jordan River
- **Geographical Features:** Jordan Valley (the northwest portion of the Great Rift System) and Wadi Rum Desert.
- **Key International Grouping:** Arab League, Organisation of Islamic Cooperation (OIC), Non-Aligned Movement.

