GM Food Crops in India

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GM Food Crops in India: The Debate Over GM Mustard

Context

India is at a critical juncture in its **biotechnology and agricultural policies**, with **genetically modified (GM) food crops** under legal scrutiny. The **Supreme Court** is set to hear petitions challenging the **2022 approval of GM mustard**, a crop designed to **enhance yields and reduce import dependency**. The issue raises key concerns about **food security, environmental risks, and regulatory transparency**.

Background: The GM Mustard Controversy

- **First GM food crop in India:** GM mustard is the first **genetically modified food crop** to receive **conditional approval** from the **Genetic Engineering Appraisal Committee (GEAC)** under the Ministry of Environment.
- **Legal and environmental concerns:** Activist groups have challenged its approval, citing **biosafety risks, ecological impact, and health hazards**.
- **Supreme Court hearings:** The upcoming hearings will determine whether GM mustard can be **commercially cultivated** in India.

Government's Stand on GM Crops

- The **Department of Biotechnology (DBT)** stated that **progress** is being made on GM food crops, despite the matter being **sub judice**.
- The **Science and Technology Minister** emphasized **biotechnology's potential**, arguing that:
    - Innovation is crucial for **agricultural advancement**.

    - Biotechnology **must evolve** to meet future challenges.

- The **DBT has submitted technical inputs** to the Environment Ministry for formulating a **national GM crop policy**, as directed by the Supreme Court.

Supreme Court Proceedings and Legal Implications

- **July 2024:** A **two-judge bench** of the Supreme Court delivered a **split verdict** on the approval of GM mustard.
- **Larger Bench Reference:** The case has been referred to a **larger bench** for further deliberation.
- **Significance:** The judgment will shape **India's future policies on GM crops, biosafety, and agricultural innovation**.

Concerns Raised by Environmental and Farmer Groups

- **Ecological Impact:** Potential risks to **pollinators like bees**, affecting **biodiversity and crop pollination**.
- **Health and Safety Issues:** Lack of **long-term studies** on human health impacts.
- **Regulatory Gaps:** Allegations of **insufficient transparency** in the approval process.
- **Impact on Traditional Farming:** Fears of disrupting **indigenous seed varieties and farming practices**.

India's Growing Bio-Economy and Role of GM Crops

Despite regulatory hurdles, GM crops play a key role in **India's expanding bio-economy**.

Key Highlights from the 2024 Bio-Economy Report

- **Total bio-economy value: $165.7 billion**

- **Bio-agriculture share: $13.5 billion (8.1%)**
- **Biopharma sector contribution: 35% of total bio-economy**
- **Bio-industrial sector (biofuels, bioplastics, enzymes): 47% share**
- **India's biotech startups (2024): 10,075**, projected to reach **22,500 by 2030**, creating **35 million jobs**.
- **Leading states: Maharashtra, Karnataka, and Telangana** drive biotech innovation.

Way Forward

The future of GM food crops in India depends on:

- **Judicial Clarity:** Supreme Court ruling on **biosafety, environmental concerns, and public health risks**.
- **Policy Formulation:** Balancing **scientific innovation** with **strict biosafety regulations**.
- **Public Awareness:** Addressing **misinformation** and ensuring **stakeholder engagement**.

With the **BioE3 policy** aiming to enhance **biotechnology-driven agriculture**, GM crops like mustard could play a role in **food security and climate resilience**—but only under **robust legal and ethical safeguards**.