

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.
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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.
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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.**
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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.**
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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.
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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.**

