GM Mustard

Why in news?

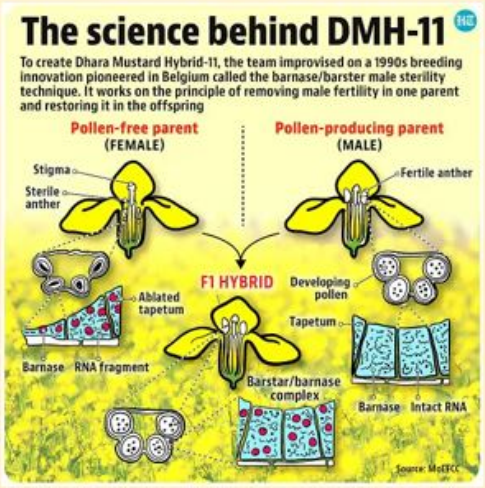
A determined battle by environmentalists in the Supreme Court of India against genetically modified (GM) herbicide-tolerant (HT) mustard is all that stands between GM food and Indian farmers and consumers.

What are GM crops?

- A crop which has a gene artificially inserted into it from another species to give some desired properties (pest resistant, herbicide tolerant, etc.) is known as GM crop.
- Soya bean, maize, cotton, and canola are the most widely grown GM crops around the world.
- **Bt cotton -** It is the only GM crop that is allowed in India.
- It has two alien genes from the soil bacterium Bacillus thuringiensis (Bt) that allows the crop to develop a protein toxic to the pest pink bollworm.
- **GM Mustard -** It is the first GM food crop that India has permitted for commercial release.
- It is a product of crossing two plants containing alien '*barnase*' and '*barstar*' genes derived from a soil bacterium.

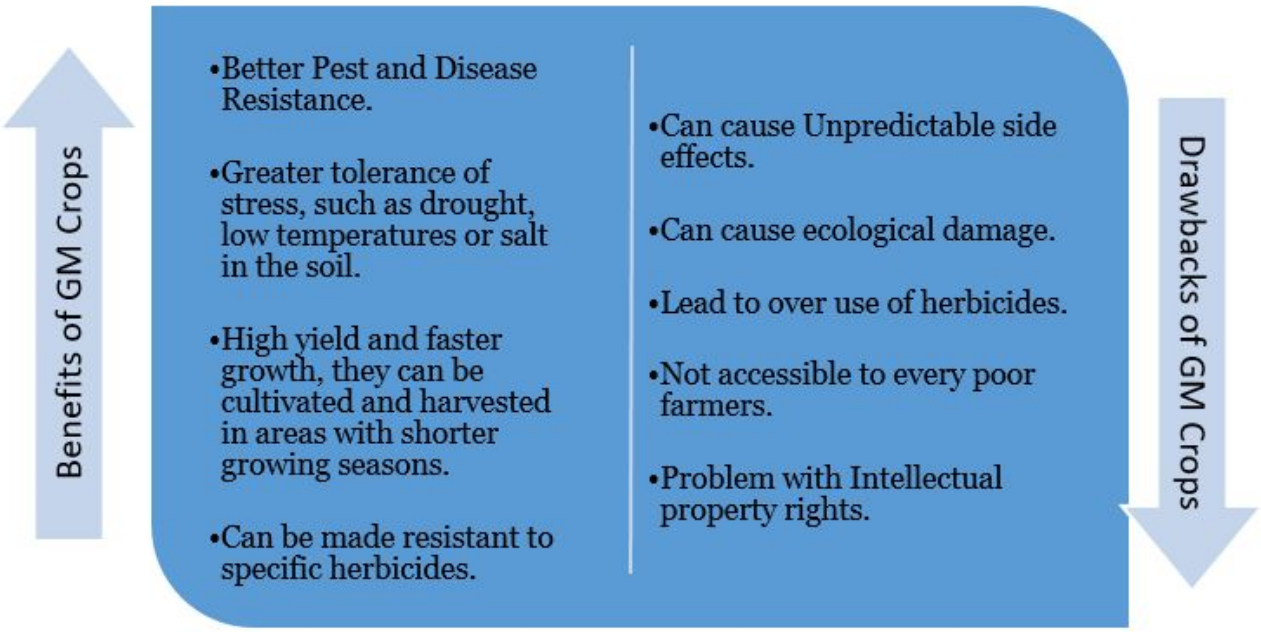
Dhara Mustard Hybrid (DMH -11)

- Mustard is generally a self-pollinating plant.
- Genes from soil bacterium makes mustard plant better suited to hybridisation.
- Centre for Genetic Manipulation of Crop Plants (CGMCP), University of Delhi developed the Barnase-Barstar technology.



For More Details about GEAC's Approval for GM-Mustard - Click here.

What are the pros and cons of GM Crops?



What are the regulatory and approval authority for GM crops in India?

- The Acts and rules that regulate GM crops in India include:
    1. Environment Protection Act, 1986 (EPA)
    2. Biological Diversity Act, 2002
    3. Plant Quarantine Order, 2003
    4. GM policy under Foreign Trade Policy
    5. Food Safety and Standards Act, 2006
    6. Drugs and Cosmetics Rule (8th Amendment), 1988

Mandate of Ministries/Departments	
Ministry of Environment, Forest and Climate Change	• Primarily responsible for conservation and protection of environment, ensuring environmental and human health safety before release of GMOs / LMOs. • Nodal agency for implementing Rules, 1989 and the Cartagena Protocol on Biosafety
Department of Biotechnology (Ministry of Science & Technology)	• Nodal department for promoting biotechnology programs • Provides scientific support in implementation of biosafety regulations • Provide services in areas of research, infrastructure, generation of human resource
Ministry of Agriculture	• Policies aimed at agriculture growth. • Indian Council of Agricultural Research (ICAR) responsible for monitoring agronomic benefits of GM technology. • Monitoring post-release performance of GM crops.
Ministry of Health and Family Welfare	• Policies aimed at protecting and monitoring human health. • Food Safety and Standards Authority of India responsible for regulating genetically engineered foods.
Ministry of Commerce and Industries	• Enhance trade with other countries through export/import policies. • Nodal agency for implementing DGFT notification on GMOs
Central Board of Excise and Customs, Department of Revenue, Ministry of Finance	• Enforcement of regulation pertaining to transboundary movement of GMOs/LMOs at point of entry

Genetic Engineering Appraisal Committee (GEAC)

- GEAC is responsible for appraisal of proposals relating to the release of GM organisms and products into the environment.
- It functions in the Union Ministry of Environment, Forest and Climate Change.
- It operates as per the Rules, 1989, under the Environment Protection Act, 1986.
- It applies to large scale use of hazardous microorganisms and recombinants in research and industrial production from the environmental angle.

What is the issue around GM Mustard?

- GM Mustard is the first genetically modified food crop permitted for commercial release thus it requires attention towards environmental, agricultural and public health.
- The government is pushing ahead with GM mustard disregarding both science and the law.
- The full biosafety database of GM mustard is not placed in the public domain.
- It has not adequately responded to criticisms that already available non-GM mustard hybrids have better yields than GM mustard.
- There is a growing evidence of long-term ecological and health risks of HT crops.
- The government has argued that GM mustard should not be considered HT at all in the Supreme Court hearing.

HT crop - *A crop that can withstand herbicides. (HT - Herbicide Tolerant)*

What are the reports on GM crops?

- Two Standing Committees of the Parliament independently and comprehensively examined GM crops and food.
- The 2 reports concerning GM foods are by
    1. The Standing Committee on Agriculture in 2012
    2. The Standing Committee on Science and Technology, Environment and Forests in 2017.
- **Report takeaways -** The two committees unanimously highlighted major weaknesses in the regulatory system, and called for utmost caution before releasing GM food.
- **REC Report -** The Supreme Court also appointed a Technical Expert Committee (TEC) in the public interest litigations.
- The TEC warned of serious harm to the environment, rural livelihoods and sustainable agriculture if they were released.

What is the way forward?

- If the Supreme Court allows GM mustard to go through, it will likely pave the way for the release of other HT crops such as cotton, rice, and maize.
- The government needs to approach the issue of HT crops transparently and robustly with an emphasis on precaution.
- GM food crops involves public health, environmental protection and agricultural livelihoods.
- The government should address the science-based concerns of GM crops.
- It should also comprehensively strengthen regulation before allowing GM food.

References

1. The Hindu - A push for GM mustard disregarding science, the law
2. The Hindu - Genetically modified crops and their regulation in India