India and GM-Mustard

Why in news?

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- The genetic engineering appraisal committee (GEAC), India's biotechnology regulator has approved the environmental release and cultivation by farmers of DMH-11.
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- It is a genetically modified (GM) hybrid mustard developed by scientists at Delhi University.
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What are genetically modified crops?

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- Genetically modified crops are plants used in agriculture, **the DNA of which has been modified** using genetic engineering techniques.
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- The aim is to introduce a new trait to the plant which does not occur naturally in the species.
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- In food crops include resistance to certain pests, diseases, or environmental conditions, and **improving the nutrient profile of the crop.**
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- In non-food crops include production of pharmaceutical agents, biofuels, and other industrially useful goods, as well as for bioremediation.
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- More than 10% of world's crop lands has been planted with GM crops.
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What are the benefits of GM crops?

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- Better Pest and Disease Resistance.
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- Greater tolerance of stress, such as drought, low temperatures or salt in the soil.
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- High yield and faster growth, they can be cultivated and harvested in areas with shorter growing seasons.
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- More nutritious, and tastier.
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- May be possible produce medicines or even vaccines.
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- Can be made resistant to specific herbicides.
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What are the drawbacks with GM crops?

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- Can cause Unpredictable side effects.
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- Can cause ecological damage.
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- Lead to over use of herbicides.
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- Not accessible to every poor farmers.
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- Problem with Intellectual property rights.
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What is the status of GM varieties in India?

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- The country has yet to approve commercial cultivation of a GM food crop.
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- **BT Cotton:** BT cotton was first used in India in 2002.
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- **The only genetically modified cash crop under commercial cultivation in India is cotton.**

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- Now it’s being grown by Indian farmers on some 11 million hectares.
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- Only 1/3rd of the kapaas or raw un-ginned cotton harvested by farmers.
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- Remaining 2/3rd comprises the seed that is crushed to extract oil.
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- Cotton-seed oil is, indeed, India’s second largest indigenously produced oil today after mustard.
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- The de-oiled cake or meal remaining after oil extraction is, likewise, fed to milch animals.
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- During its introduction it was found to be promising for many farmers but after few years it created distress among the farmers.
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- It **failed to fulfil its promises** such has high yield, pest resistance, drought resistance.
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- The **seed prices are determined by corporates** which is highly expensive for the farmers.
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- Many hectares of the land has been spoiled by this seeds.
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- **BT Brinjal:** The GEAC in 2007, recommended the commercial release of Bt Brinjal.
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- It was developed by Mahyco (Maharashtra Hybrid Seeds Company) in collaboration with the Dharward University of Agricultural sciences and the Tamil Nadu Agricultural University.
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- BT brinjal was overturned in February 2010 by the then Environment Minister who assumed the role of regulator and ordered a suspension on the transgenic vegetable’s cultivation.
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What are the benefits of GM Mustard?

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- GEAC has recently given a green signal for taking a decision on commercialization.
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- Indigenously developed seeds, the patent remains with government unlike with cotton it remains with corporates.
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- India Plans for food fortification to achieve SDG, this will help to achieving its goal.
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- Yields are expected to rise by up to 30 per cent.
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- India imports 15 million tonnes (Mt) of edible oils worth almost $11 billion annually, Mustard oil production from this variety of crop will save a lot on Foreign exchange exchequer.
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What is the way forward?

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- Environment ministry is the final conclusive authority in this regard.
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- If the Minister’s consent is obtained, GM mustard would be the first transgenic food crop to be allowed for commercial cultivation in Indian fields and would be a gateway for several genetically-modified food crops in India.
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- Many of the GM crops in world today are cultivated for animal feed, the effects of GM crops on Humans are yet undiscovered.
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- It is to be noted that many Developed countries closed their doors for GM foods.
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- The legal and regulatory status of GM foods varies by country, with some nations banning or restricting them, and others permitting them with widely differing degrees of regulation.
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- GM varieties should be promoted in a responsible way, and lot of awareness need to be created among the stake holders.
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- Other than bio-safety concerns, transgenic technology is necessary for India to be scientifically relevant as well as have better seeds to address threats from climate change.
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Source: The Hindu & The Indian Express

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