GM Mustard: DMH (Dhara Mustard Hybrid)-11

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In News: Is there a compelling reason for GM mustard; will it not affect the environment, asks Supreme Court. SC worried over the effect of GM crops on the livelihood of women farm laborers.

What is GM Mustard?

Mustard is one of India's most important winter crops sown between mid-October and late November. It a self-pollinating crop difficult to hybridise naturally as it cross-pollinate. It is largest edible oil yielding crop of India.

DMH (Dhara Mustard Hybrid)-11 is genetically modified variety of mustard developed by Centre for Genetic Manipulation of Crop Plants at Delhi University. It was Government sponsored project. But researchers at Delhi University have created hybridised mustard DMH-11 using "barnase / barstar" technology for genetic modification. It is Herbicide Tolerant (HT) crop.

In February 2016, the Genetic Engineering Appraisal Committee (GMEC) had allowed the commercial production of another GM crop viz. Mustard DMH-11.

What are GM Crops?

A GM or transgenic crop is a plant that has a novel combination of genetic material obtained through the use of modern biotechnology. For example, a GM crop can contain a gene(s) that has been artificially inserted instead of the plant acquiring it through pollination. The resulting plant is said to be "genetically modified" although in reality all crops have been "genetically modified" from their original wild state by domestication, selection, and controlled breeding over long periods of time.

What are the Potential benefits of GM plants?

- Higher crop yields: With the challenges like malnutrition, agriculture sustainability ,sustainable development ,food security debates & goals like zero hunger by 2030, GM pulses looks a promising solution as they are rich in Nutrients (including Micro nutrients) , drought resistance and give more produce .
- Reduced farm costs: Enhancing production and thus lessening demand supply gap. Our import bills will lessen.
- Increased farm profit.
- Improvement in health and the environment.

What are the Potential Risks?

- The danger of unintentionally introducing allergens and other anti-nutrition factors in foods.
- There is no clarity about impact of GM crops on human health and environment. The scientific community itself seems uncertain about this. It is also argued that once GM crops are introduced risks outweigh benefits. Also, the technology is irreversible and uncontrollable
- The likelihood of transgenes escaping from cultivated crops into wild relatives.
- The potential for pests to evolve resistance to the toxins produced by GM crops.
- The risk of these toxins affecting non target organisms.

- Seed makers charging high prices for instance Monsanto (maker of BT cotton seed) demands 30% royalty. It withdrew its plan to introduce advanced version of Bt-Cotton when government put a cap on seed prices.

What is the role of GEAC?

GEAC has demanded more tests for genetically modified mustard- Dhara Mustard Hybrid (DMH -11) for "commercial cultivation. It has called for 'field demonstrations' of GM mustard in an area of 5 acres at two or three different locations across the country to study possible impact transgenic crop could have on honey bees and seeks additional data on these and other pollinators and also on soil microbial diversity. The demand for renewed field demonstrations comes year after GEAC had given final clearance for GM mustard (in May 2017).

GEAC is apex body under Ministry of Environment, Forests and Climate Change for regulating manufacturing, use, import, export and storage of hazardous micro-organisms or genetically engineered organisms (GMOs) and cells in the country. It is also responsible for giving technical approval of proposals relating to release of GMOs and products including experimental field trials. However, Environment Minister gives final approval for GMOs.