

Non suitability of DMH-11 in Indian Farms

Prelims: Current events of national and international importance | Agriculture

Why in News?

Transgenic mustard hybrid DMH-11 is being promoted as a way to improve mustard yields and reduce India's dependence on edible oil imports.

- The concerns have been raised about DMH-11 suitability for India's farming systems.

DMH-11 (Dhara Mustard Hybrid-11)

- **Developed by** - Delhi University's Centre for Genetic Manipulation of Crop Plants.
- It contains three genes derived from the *bacterium Bacillus amyloliquefaciens* -
 - **Barnase** - enables male sterility/cross-pollination.
 - **Barstar** - restores fertility and facilitates hybrid seed production.
 - **Bar** - provides tolerance to glufosinate herbicide.
- Mustard is mainly cultivated in dry regions of central and northwestern India.
- **Major yield constraint** - Parasitic weed *Orobanche aegyptiaca* (broomrape/Margoza).
- Glufosinate can suppress susceptible weeds while the HT (Herbicide-Tolerant Mustard) mustard survives.

***HT crops** are the crops engineered/bred to tolerate a particular herbicide, allowing the herbicide to control susceptible weeds while the crop survives.*

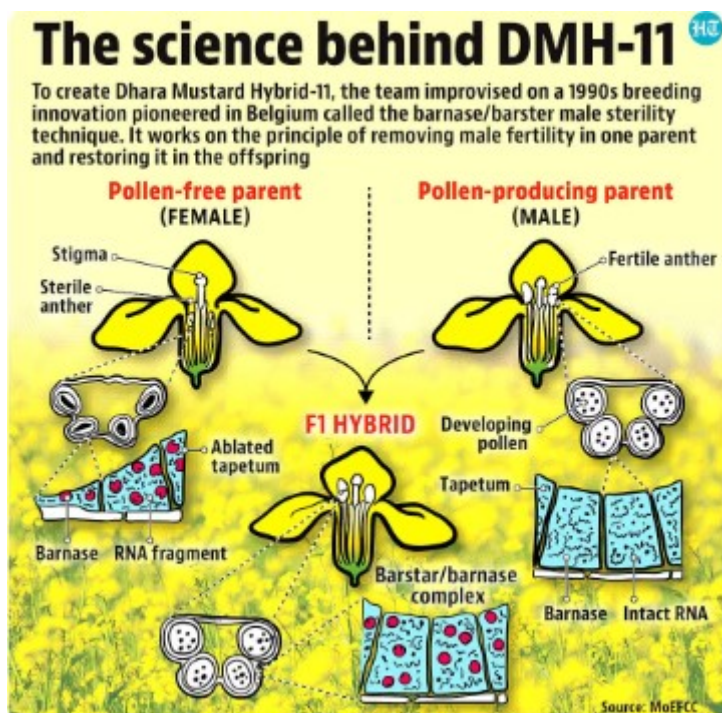
Non-suitability of HT Mustard

- **Small farms** - Indian farms rely heavily on mixed/intercropping, unlike large monocultures.
- **Ecological risks** - Herbicides may harm companion crops, biodiversity, pollinators, soil and water ecosystems.
- **Superweeds** - Repeated herbicide use can promote herbicide-resistant weeds.
- **Nutrition loss** - "Weeds" like Bathua and Celosia provide food, fodder, nutrients and medicinal benefits.

Conventionally mutagenised HT mustard varieties that are not classified as GM crops and have tolerance to imidazolinone herbicides.

Measures

- Improve weed management and agronomic practices rather than relying solely on herbicides.
- Scale up the System of Mustard Intensification, which can improve yields through better agronomy.
- Promote India's diverse oilseed base, including groundnut, sunflower, sesame, safflower, coconut and niger.



Reference

[Down To Earth| Why herbicide-tolerant mustard doesn't fit Indian farms](#)