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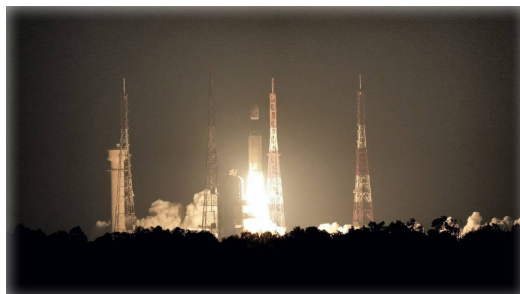
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Commercial Space Launch & Promise of GM Mustard



TWO major announcements spiced up the Indian science scene in October. While the first was the report of ISRO's success in putting to service its heaviest rocket to inject 36 broadband satellites into orbit, the second news was about the recommendation by India's Genetic Engineering Appraisal Committee (GEAC) for the "environmental release" of the transgenic hybrid mustard DMH-11 for seed production.

On 23 October 2022, India's heaviest rocket – Launch Vehicle Mark III (LVM3) – successfully launched 36 broadband satellites of a UK-based customer placing them into precise orbits. This was ISRO's first venture into the commercial space market.

The launch acknowledged the credentials of India's heavy launch vehicle. The total payload carried by LVM3 – earlier known as the Geosynchronous Launch Vehicle Mark III or GSLV-MK3 – was 5.8 tonne, the heaviest payload that any of ISRO's launches have carried so far. The GSLV-MK3 has the capability to carry up to 8 tonnes of payload into low earth orbit. In fact, the heavy launch vehicle is even slated to carry Indian astronauts to space under the Gaganyaan mission.

The mission was challenging as all the satellites had to be precisely placed into their orbits, with the customer requirement of minimum of 137-metre distance between any pair of satellites. And all this had to be achieved without the satellites colliding with each other.

The second announcement pertained to the recommendations of the Genetic Engineering Appraisal Committee (GEAC) under the Union Ministry of Environment, Forest and Climate Change (UNFCC) for "environmental release" of the transgenic hybrid mustard DMH-11 for seed production and to study through field demonstrations whether it would have any effect on honey bees and other pollinating insects.

The hybrid mustard DMH-11 has been developed by genetic modification by scientists at Delhi University's Centre for Genetic Manipulation of Crop Plants (CGMCP) and contains two alien genes isolated from the soil bacterium *Bacillus amyloliquefaciens*. DMH-11 has shown an average 28% yield increase over the Varuna mustard variety in contained field trials carried out by the Indian Council of Agricultural Research (ICAR).

GEAC's recommendation for seed production and testing of DMH-11 is essentially a green signal for commercial cultivation by farmers. However, this will happen only after the Central Government accepts the GEAC's recommendations. Cultivation of GM mustard DMH-11 could reduce the country's increasing edible oil import bill. The country produces only 8.5-9 million tonnes (mt) of edible oil annually, while importing 14-14.5 mt.

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