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Genetically Modified Mustard in India: Monumental Fraud and Regulatory Delinquency

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The approval and planting of large-scale field trials of genetically modified (GM) mustard in India is currently taking place. According to environmentalist Aruna Rodrigues, this is completely unconscionable. It is occurring even as the Supreme Court-appointed Technical Expert Committee (TEC) Report awaits adjudication in India's Supreme Court, which expressly recommends a bar on herbicide-tolerant (HT) crops. As a result, Rodrigues is mounting a legal challenge as the lead petitioner in a Public Interest Litigation.

Large-scale field trials may only be conducted when a crop has comprehensively cleared all biosafety protocols in rigorous independent long-term testing and appraisal. However, this has not been the case with GM mustard. Rodrigues argues that official regulators have even hidden all data from the public and the independent scientific community, which is against constitutional provisions and the orders of the Supreme Court. She concludes this means one thing: mandatory rigorous biosafety protocols have not been carried out and the data pertaining to 'mustard DMH 11' therefore needs to be concealed.

Requests for data have been refused. Rodrigues asserts that the secrecy surrounding GM mustard exemplifies the appalling state of regulation and smacks of corruption. She thus concludes the Indian government is using underhand means to introduce GM crops into Indian agriculture. There appears to be no place for science or transparency in this process, which will inevitably contaminate India's mustard diversity.

Mustard DMH 11 is an herbicide-tolerant crop that has been made resistant to Bayer's glufosinate, which is even more toxic that glyphosate. Glufosinate is a broad spectrum herbicide thatcauses nerve damage and birth defects and is toxic to most organisms. It is also a neurotoxin of mammals that doesn't easily break down in the environment.

The International Agency for Research on Cancer (IARC) of the WHO confirmed glyphosate to be a *"probable human carcinogenic."* It missed by a whisker being labelled 'definitely' carcinogenic.

Rodrigues says this implicates the US Environmental Protection Agency (EPA) for complicity and fraud with regard to its oversight of glyphosate; and similarly implicates Monsanto, which has known since at least the 1980s that glyphosate causes cancer/is an endocrine disruptor.

In addition, a new peer-reviewed study by Heinemann et al states that herbicides can cause bacteria to change their response to clinically-relevant antibiotics. The effect occurs upon simultaneous__exposure to antibiotics and is faster than the lethal effect of

antibiotics. *Simultaneous* is clarified to mean that the bacteria do not need to have had a history of herbicide exposure to become resistant. The resistance can arise *immediately.* So it can happen if someone is exposed to spray drift or pets a cat that has walked through a treated lawn.

According to Rodrigues, these two studies epitomise the problem with GMOs: historical fraud on the one hand and the 'latency lacuna' or long-period hazards that become known or manifest only over time.

The fall-out of the IARC conclusion is that Sri Lanka has banned glyphosate/Ht crops and Scotland and Germany (among several other countries) will use the opt-out clause of the EU to ban GMOs in their agriculture.

Rodrigues says DMH 11 must be barred on a number of counts, which include the following.

> 1) HT crops comprise a failed technology. The incontrovertible evidence is based on USDA crop data from 20 years of commercialised HT crops, which have failed to positively affect performance yield and have spawned intractable super weeds as a direct consequence of the huge increase in herbicide use. The pesticide treadmill for farmers is like a drug addiction: different herbicides to counter resistance and more herbicides as super weeds emerge. This is leading to the use of more toxic herbicides, including glufosinate, which has led to triple herbicide weeds in Canada in the case of HT rape.
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> 2) Under the PPVFRA (Protection of Plant Varieties & Farmers' Rights Authority, India), no national law allows toxins to be put in foods/food crops and seeds. The PPVFRA expressly refuses registration of such 'injurious' seeds. Thus, DMH 11 is doubly banned for seed registration under the PPVFRA for being *"injurious to life"* and for being a GURT – "*For the purposes of this subsection, the expression "any technology" includes genetic use restriction technology and terminator technology."*
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> 3) The TEC Report: Mustard DMH 11 is required to be doubly barred: it is an HT crop and second, a Crop of Origin and /or diversity in India like Bt brinjal. Both are recommended to be banned.
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> 4) Contamination: The potential for contamination by HT mustard is particularly high and it should not be risked in small field trials (FT), let alone large-scale. Approval of DMH 11 in large-scale FT is also in Contempt of the SC Order of *"no contamination."*
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> 5) The claim is that DMH 11 will provide yield increases of 25-30%. However, higher yields are not the result of these particular transgenes but rather a direct result of hybridisation of normal crop genes. This is why in the case of corn that has natural male sterile genes, hybrid corn can be made that has nothing to do with genetic engineering. Neither Bt nor HT crops have traits for yield. Bt and HT are traits for pesticides. The use of hybrids is also a deliberate ploy to camouflage the yield attributable to the hybrid and assign it to the GM crop instead. This is precisely the story that ensued with Bt cotton and that thread wove its way through Bt brinjal and now, openly for mustard. The fraud is unprecedented.

Rodrigues goes on to list a number of serious toxicity issues with both GM mustard and glufosinate. For instance, she says that both the EPA and the European Food Safety

Authority have confirmed that glufosinate poses a risk to mammals and that a number of studies have also indicated that glufosinate is toxic to beneficial insects that control crop pests and to pollinators.

She finishes by noting environmental dangers: the EPA has stated that glufosinate is *"expected to adversely affect non-target organisms."* The EPA classifies glufosinate ammonium as *'persistent'* and *'mobile'.* It is likely to leach into drinking water sources, could increase nitrate leaching and is toxic to beneficial soil micro-organisms and "*terrestrial plant species."*

Aruna Rodrigues concludes by stating that the case surrounding GM mustard in India is evidence of unremitting regulatory delinquency.

It all raises the question: why the rush and by-passing of proper procedures and regulations to get GMOs into the Indian food chain? (See this.)

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