



Concerns over Genetically Modified Brinjal

This article is based on the editorial [“Serious concerns over Bt brinjal”](#) which appeared in **The Hindu** on 18th June 2019. It talks about concerns over Genetically Modified Brinjal and suggests a way forward in this context.

Genetic modification of crops has been a controversial issue since the first commercial production of a [genetically modified crop](#). India has banned the cultivation of Bt brinjal in 2010, but GM crops still find its way into the fields through the [illegal supply of seeds](#) specifically in the region of **Haryana, Maharashtra, and Andhra Pradesh** where farmers are indulged in **unapproved sowing and cultivation** of Bt brinjal owing to its advantages of being pest resistant, lower cost, and higher yield.

GM Crops in India

- Bt cotton is India's **first genetically modified crop**, to be approved for commercialization.
- India has the world's **5th largest** GM crop acreage after the USA, Brazil, Argentina, and Canada
- Presently **majority** of India's cotton cultivation area is under Bt cotton crops.
- **Bt brinjal** was developed by **Mahyco** (Maharashtra Hybrid Seeds Company) in collaboration with the Dharwad University of Agricultural Sciences and the Tamil Nadu Agricultural University.

Benefits of increased **shelf life** and **high yield** attached with the cultivation of Bt Brinjal cannot outweigh the multiple concerns arising out of the unapproved and half prepared release of Bt brinjal like :

Major Concerns

- **Environmental impact:** Sowing of Bt brinjal or GM foods can give rise to serious environmental concerns like:
 - **Cross-pollination** in GM crops paves the way for **herbicide-resistant super weeds** that can further threaten the sustenance of other crops and pests because of its uncontrolled growth.
 - Pest-resistant Bt crops can lead to the **extinction** of a few **species** that in turn can affect the **food chain** also.
- **Implications for consumers and farmers: National Institute of Agricultural Economics and Policy Research's** anticipation that Bt brinjal's high yield and increased shelf life will benefit consumers and farmers owing to cut in retail price of brinjals ignores the scenario that companies might charge premium prices for Bt brinjal seeds, in which case farmers may not benefit at all.
 - Critics claim that patent laws give developers of the GM crops a dangerous degree of control/ **dominance** over the food supply that results in the over domination of world food production by a few companies.
- **Biosafety Issues:** Crops like rice, **brinjal**, and mustard, among others, have their **origin in India**

and introducing genetically modified versions of these crops could be a major threat to the vast number of domestic and wild varieties of these crops (GM crops because of their pest resistance characteristics could eliminate important species of pests that are responsible for sustaining domestic varieties and can pose serious threats to biodiversity).

- **Biodiversity** is critical for nutrition and sustainability, and the government's task force on biotechnology (2004) had recommended that no GM crop be allowed in biodiversity-rich areas.
- **Nutrition issues:** Bt brinjal poses risks to human health as their resistance to **antibiotics** can turn medicines ineffective and may result in the formation of **new toxins and allergens**.
 - Toxins produced by GM crops can not only affect **non target organisms** but also pose the danger of unintentionally introducing allergens and other **anti-nutrition** factors in foods.
 - Indian agricultural scientist **M.S. Swaminathan** (who had described **Bt cotton as a 'failure'**) had asked for **independent** (instead of relying exclusively on Mahyco for data) **long-term (chronic) toxicity studies**, of Bt brinjal before going for commercialization and cultivation of Bt brinjal.
- **Inefficient Regulatory system:** Seeing the lapses in the regulatory system and irregularities in the assessment of Bt brinjal (in terms of **labeling** and unapproved and illegal sowing of GM crops) Parliamentary Standing Committee on Agriculture and the Committee on Science & Technology, Environment and Forests recommended:
 - **A thorough probe** by a team of eminent independent scientists and environmentalists for commercialization of GM crops.
 - Endorsed **labeling GM** foods to protect a consumer's right to know.

Labeling GM crops

- Most GM foods in the study did **not disclose GM on their** labels and 15% made false claims saying they were GM-free.
- Retailing being largely an **unorganized sector**, enforcing truthful labeling is not pragmatic.
- Two of the eight infant food samples, imported from the US and the Netherlands, were GM positive, but the labels did not disclose this.
- Under Section 22 of the **Food Safety and Standards Act, 2006**, GM foods are not allowed to be manufactured, imported or sold in India unless approved under the Act.

- **No scientific consensus:** Lack of scientific consensus on the safety and efficacy of GM crops.
 - Pests have developed **resistance to Bt cotton**, forcing farmers to spray lethal pesticides. This led to over 50 deaths by pesticide-poisoning in Vidarbha in 2017.
 - A GM-based strategy of pest control is **unsustainable**, all the more so since farmers, already pressed for land, ignore the government's recommendation to plant refuge crops.
 - The government's task forces and expert committees on GM crops are of the view that Bt brinjal runs counter to the framework for **agricultural development and farmers' welfare**.

Way Forward

- **Environmental Impact Assessment:** must be carried out by independent environmentalist, as farmers do not and cannot assess the long-term impact of GM crops on ecology and health.
- The government must detail the steps it has taken since the ban of Bt brinjal (2010) to address the scientific gap for commercialization of Bt brinjal.
- The government should bring a clear report on benefits accrued by Bt brinjal to the farming community and demonstrate how Bt brinjal fits in with **sustainable farming and biodiversity conservation**.
- Ensure efficient infrastructural and institutional set up in order to ensure labeling of GM crops and bring more efficacy into the regulatory system of GM crops.

- Mandatory labeling of products from GM crops.
- **Unchecked import** of GM products should be stopped.
- In order to curb the **illegal cultivation** of Bt brinjal, the [Genetic Engineering Appraisal Committee \(GEAC\)](#) must:
 - Collaborate with state governments and launch a nation-wide investigation drive.
 - Take action on threats of deliberate Bt brinjal and Bt cotton cultivation.
 - Investigate and prosecute those involved in the illegal supply of Bt brinjal seeds.
 - Organic farming should be encouraged.

The government should go for commercialization of Bt brinjal only after the core and deep research on the long term prospects and benefits of commercialization of Bt crops in India. In that context, India can learn from Bangladesh's example where farmers have been growing the Bt Brinjal since 2013.

Drishti Input:

Discuss the concerns and challenges associated with the GM crops in context of its varied advantages over trad

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