



Ishar Saini prepares his field to sow the season's kharif crop after uprooting and destroying the GM brinjal crop that he had planted on his farm in Nathwan village, Fatehabad district, Haryana. (Below): Seeds of various vegetables are sold in a shop in Dabwali. Ishar's son bought the brinjal saplings from a vendor in the vicinity. ■ AKHILESH KUMAR

The mysterious case of GM brinjal cultivation

Last month, genetically modified brinjal was found in a farm in Haryana. While the government insists that this is a one-off case, activists wonder how widespread the problem could be. The spotlight is back on an old debate, reports **Vikas Vasudeva**

Braving the stifling June heat, Ishar Saini is busy preparing his half-acre field to sow the season's kharif crop. Ishar has unwittingly been in the limelight in Haryana for over a month, ever since genetically modified brinjal, the cultivation of which is illegal in India, was found planted on his rented farm. Saini was forced to destroy the crop in the presence of local officials and activists in Nathwan village, Fatehabad district. What remains a mystery is the source of the seeds of the transgenic variety.

Ishar asserts that neither he nor his son Jeevan Saini, who bought the saplings of brinjal in December 2017, was aware that the saplings were of a genetically modified variety. The Sainis had procured them from a roadside vendor in Dabwali, a town nearly 100 km from Nathwan.

Samples were collected from Ishar's field by the Haryana horticulture department on April 29 this year, following a complaint by activists. They were then sent to the National Bureau of Plant Genetic Resources (NBPGR) in New Delhi for testing.

In the eye of the storm

"What is our fault? My son bought saplings that were available in the market. If they were of an illegal variety, it's for the government agencies to answer how this variety came to be sold in the market. We are the victims here, not the culprits," says Ishar. After the brinjal crop was uprooted, Ishar sowed Bt cotton in his field. Apart from the half acre that the Sainis have rented, they also own one acre of land.

"First, we had to bear the loss caused by the uprooting of the brinjal crop, which was ready to be plucked. We had spent about ₹25,000 on the crop's maintenance this season. Now we have to spend additional money on sowing the new crop. This will cost us at least another ₹5,000. The government should compensate us for this as farming is the main source of our livelihood," says Ishar.

Jeevan, 33, pleads ignorance. He says he had no idea that sowing this variety of brinjal was illegal. "How could I possibly know whether the saplings were a genetically modified variety or not? The vendor told me that the brinjal plant would be free from insects. The price, though, was high. It cost me seven to eight times more than the regular varieties, but because he assured me of better quality produce and good returns, I decided to cultivate it." Jeevan was a motor mechanic for 20 years. It was only a couple of years ago that he joined his family occupation of farming.

"In April and May last year, I harvested the first produce of the crop," says Jeevan, as he assists his father on the farm. "The quality was good, though I had to spray pesticides. I sold the brinjal in the local markets of Ratia and Tohana



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Farmer

and they fetched good returns. We consumed the same brinjal at home and it seemed fine. One of my friends in the neighbourhood had also procured the saplings along with me, but he destroyed the crop in 2018 after he found that it got infested."

Jeevan says he has not met the vendor from whom he purchased the saplings after that one time. "Most of the vendors come with saplings during the sowing season. They leave after selling the saplings. It's difficult to track them," he says.

Beeru, 60, who has three and a half acres of farmland adjacent to Ishar's land, says: "Though I have not seen anyone else apart from Sainis sowing this variety of brinjal in the village, it can't be ruled out that this variety is not being cultivated elsewhere. I am sure those vendors or dealers must have sold the saplings and seedlings to many other farmers. Government agencies should ensure that such seeds are not sold in the market. They must find out the origin of the seed supply."

'A one-off case'

Samples from Ishar's farm that were sent to the NBPGR in Delhi for testing were shown to be of a genetically modified variety. Soon after, a committee of experts was set up by the Haryana government and chaired by the Vice Chancellor of the Haryana Agricultural University to analyse the NBPGR's findings. They government confirmed the findings and said genetically modified brinjal had been sold in the market.

Ranbir Singh, joint director at Haryana's horticulture department, insists that this is a one-off case, however. "The crop from Ishar's field was destroyed

and buried deep inside the earth to avoid any contamination. Growing and selling genetically modified brinjal is a violation under the rules of the Union Environment Ministry. We have also surveyed fields across the State and we have found no trace of genetically modified brinjal anywhere else. A report in this regard has been sent to the Union Agriculture Ministry," he says. R.K. Chauhan, joint director in Haryana's environment department, says an interim report based on the observations of the expert committee has been sent to the Union Environment Ministry.

The test results of the sample collected from Ratia's fields establish that genetically modified brinjal did not come from the line that was developed by Mahyco, the Maharashtra-based seed company that developed Bt brinjal. Mahyco's Bt brinjal is commercially grown in Bangladesh. In India, Mahyco's Bt brinjal was cleared in 2009 for commercial cultivation by the Genetic Engineering Appraisal Committee, the apex body that decides on genetically modified organisms in the country. But in 2010, former Union Environment Minister Jairam Ramesh put an indefinite moratorium on Bt brinjal on the grounds that there was scientific and public disagreement on its safety.

The extent of illegal cultivation

While the government insists that this is a one-off case, activists are anxious over the extent of genetically modified crop cultivation in India and blame government agencies for adopting a casual attitude in dealing with the situation. Rajinder Chaudhary, a former professor in the Department of Economics at M.D. University, Rohtak, says: "If the government was really serious about protecting India's biodiversity and consumer health, it should undertake an extensive strip-testing of brinjal and map the extent of genetically modified brinjal cultivation in the country," he says. "It should get further tests done, such as an

'event test'. [Event is a term used to describe the point on a chromosome where a genetic tweaking has happened – an addition or deletion, for instance. By identifying the 'event', scientists can say exactly which line the crop came from.] But neither the State government nor the Central government has done this." Chaudhary is associated with Kudrati Kheti Abhiyan which conducted the preliminary tests, using the 'lateral flow strip method', on the brinjal produced in Ishar's farm.

He cautions that if immediate and stringent steps are not taken, the story of Bt cotton could very well be repeated in the country. "Bt cotton entered Indian fields illegally and then was accorded post-facto approval. Today non-Bt cotton seeds are practically out of the market and can only be procured with great difficulty. Moreover, the adverse impacts of genetically modified food are not evident immediately, they are evident only in the long run. So, the fact that the Sainis have been consuming genetically modified brinjal without any visible adverse effects does not mean it is safe," he says. Chaudhary adds that there is a grave danger of illegal genetically modified brinjal cultivation proliferating if the Central and State governments do not act swiftly. "The seedling supply of this suspected genetically modified brinjal happened last year. It is not clear what the extent of illegal cultivation of this unapproved crop is."

Chaudhary narrates how he was able to trace the field where the suspected cultivation of genetically modified brinjal had taken place. "A resident of Ratia town went to a local nursery to fetch saplings of brinjal. When he was discussing the shoot and fruit borer [the most destructive pest of brinjal], the nursery merchant told him about a local farmer [Saini] who had planted a brinjal variety that is resistant to the shoot and fruit borer. When he tipped us off about the variety, I visited the farm in April this year and bought a few kgs of the sus-

pected brinjal. A lateral flow strip test [a preliminary test conducted using a kit] was conducted and it indicated that the sample was of genetically modified brinjal. The lateral strip method is not a confirmatory test though. So I sent samples to the Ahmedabad-based SGS Private Limited, a laboratory accredited by the National Accreditation Board for Testing and Calibration Laboratories. A report on May 8 by the laboratory confirmed that the brinjal samples were genetically modified."

Unable to differentiate crops

In Dabwali, where Jeevan bought the seeds, seed suppliers and dealers say they do not know about the sale or availability of illegal genetically modified seedlings in regulated markets. Some, however, do not rule out the possibility of such saplings or seedlings being sold in unregulated markets.

"If a genetically modified crop has been found on one farm, it means that saplings or seedlings are being sold. Saplings are sold in nurseries. Many mobile vendors sell seedlings. This means anyone can be involved in selling the banned seeds. We have the example of Bt cotton before us," says Rakesh Garg, a vegetable seed dealer who has been in the business for over 15 years in Dabwali's vegetable market. Garg adds that it is important for government agencies to trace the entire supply chain – from seed developers to intermediaries – to find out the origin of seed and sapling supply.

At Garg's store, Ram Swarup, a farmer from a nearby village called Rajpur Majra, points out that it's difficult to differentiate between saplings of a genetically modified plant and those of a normal variety plant. Hence it's not difficult to sell genetically modified seeds in the market, he says. "Also, when a farmer grows genetically modified brinjal, the harvested crop is similar to any other variety. Even the consumer can't make out the difference," says Swarup, who has 11 acres of farmland.

Umendra Dutt of Kheti Virasat Mission, an organisation promoting organic farming, says the government should take legal action against the suppliers of these seedlings or saplings. "Curbing the supply network of illegal genetically modified brinjal is something that should not be ignored at all. However, it's equally important that no penal action should be taken against farmers who have been duped into cultivating these illegal seeds. Instead, they must be fully compensated for the destruction of their standing crop," he says.

Support for GM brinjal

Meanwhile, others are demanding that the Central government should allow cultivation of genetically modified crops, including of brinjal, across the country as they claim that the crops are absolutely safe for consumption. Also,

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they put forth the argument that farmers should be allowed to reap the benefits of modern technology, which would help them boost their income by fetching better returns.

On June 10, a few hundred farmers gathered at Akot village in Maharashtra's Akola district to protest against the ban of cultivation of genetically modified crops. "To show our anguish against the ban we sowed herbicide-tolerant Bt cotton in the field of one of our fellow farmers," says Gun Parkash, Bharatiya Kisan Union's Haryana unit president, who participated in the protest. The protest was spearheaded by Shetkari Sanghatana, a farmer body which has been opposing the government's ban of genetically modified crops.

Stating that a similar kind of protest will be launched in Haryana and Punjab in the days to come, Parkash says, "These genetically modified crops are in use in many parts of the world. Countries like the U.S. and Canada are using this technology. With the use of genetically modified technology, costs are reduced, pest attacks are lower and production is higher. Farmers who are in distress in our country are not able to reap the benefits of genetically modified crops because these crops are banned." He adds that farmers and consumers in Bangladesh have been safely reaping the benefits of Bt brinjal, but in India successive governments have preferred to keep quiet.

"The ban on genetically modified crops is not just restricting farmers from accessing technology but is also promoting an illegal market to flourish. The adverse consequences of an unregulated market are far more dangerous. Even though in our country no genetically modified food crop has been given a nod due to bio-safety issues, genetically modified substances have already entered our food chain," he says.

Therein lies the irony. "Bt cotton cultivation is allowed in India as a non-food crop but then cotton seed oil is extracted from these plants and is being consumed in parts of the country, especially in Gujarat and Maharashtra. Not only this, canola oil and soybean oil are both extracted from imported seeds, which are produced from genetically modified crops abroad. It's high time our government realises that genetically modified crops have already entered the food chain," Parkash says.

The debate is far from settled.

