Bt brinjal in India: The nays outnumber the ayes

The aubergine has an important role in the diet of Indian people. The planned introduction of a genetically modified variety – Bt brinjal – at the beginning of the year has triggered heated debate across the country. The result is a temporary moratorium.

With approximately 2,400 varieties in India, the aubergine or brinjal (*Solanum melongena*) is said to have originated in the country and is known to have been cultivated here for over 4,000 years. Not only is the brinjal a popular component of the Indian diet across the country, it is an important ingredient in Ayurvedic medicine as well. It is one of the most popular vegetables in India and has found its way into several folk songs across the country.

Why GM technology?

The brinjal is highly susceptible to pest attacks, of which the fruit and shoot borers cause the most damage in terms of yield. It is to address this pest primarily that the genetically modified Bt brinjal has been developed by Mahyco Monsanto Biotech, a joint venture between Maharashtra Hybrid Seed Company and the US seed giant Monsanto. This brinjal contains the gene from *Bacillus thuringiensis* (Bt) and is said to give the brinjal plant resistance against lepidopteran insects like the brinjal fruit and shoot borer *Leucinodes orbonalis* and fruit borer *Helicoverpa armigera*. It is reported that ingestion of the Bt toxin by the insect would result in disruption of its digestive processes, ultimately resulting in its death.

The debate

The debate about Bt brinjal rages around issues of its safety to human health, the environment, farmers' seed rights, economics and livelihoods, consumer choice, sustainability of the technology, regulatory processes etc.

Briefly, proponents of Bt brinjal support it on the basis of the claim that it would reduce pesticide usage by 80 percent; that it passed all biosafety tests as required by the Indian regulatory system; that the Cry1Ac endotoxin it contains would not harm humans as it breaks down when cooked; that it would result in higher incomes for farmers as a result of negligible damage by borers; and that the technology would be shared with public sector research institutions to create open pollinated varieties and would enable Indian farmers to get access to Bt brinjal at low prices.

Opponents of Bt brinjal, however, debunk these claims. In a nutshell, they argue that several studies show the health hazards of bioengineered foods to both humans and animals; likelihood of tolerance being developed by the target pests and secondary pest attacks is very high; farmers cultivating Bt cotton in India report a decline in soil productivity after some time; the impact of the breakdown of the protein Cry1Ac on soil microflora has not been studied intensively; no tests were conducted to check for the effect of Bt brinjal on the crop raised subsequently, and feeding tests did not include open grazing of animals on Bt brinjal plants; the transgene transfer to local and hybrid varieties of brinjal would effectively destroy our brinjal diversity; raw brinjal used in traditional medicine and for food would have Cry1Ac toxin which would be active and extremely dangerous; organic farmers would be at risk as there would be no mechanism by which contamination by the transgene could be stopped; there is no labelling law in place in India and, even if there were, its implementation would be practically impossible. According to the opponents, non-pesticidal pest

Nivedita Varshneya
Programme Manager
Welthungerhilfe
New Delhi, India
nivedita.varshneya@welthungerhilfe.de

management and healthy ecosystem-based farming effectively practised by farmers offer a healthier, eco-friendly and farmer-friendly alternative.

National consultations and the role of civil society

On 14 October 2009 the government's Genetic Engineering Approval Committee (GEAC) cleared Bt brinjal for commercial release, claiming that it would result in lower usage of pesticides and higher yields. The GEAC, set up in 1990 under the Ministry of Environment and Forests (MOEF), is India's highest regulatory body for genetically engineered plants. This was the first time that the GEAC had given permission for large-scale open trials for a food crop in India and it would also have been the first genetically modified vegetable to be grown anywhere in the world.

On 15 October the Minister of State for Environment and Forests, Mr. Jairam Ramesh, responding to strong views raised both for and against the introduction of the Bt brinjal, called for public consultations across the country in the months of January and February 2010, before taking a final decision on this issue. The report of the Expert Committee that formed the basis of GEAC's decision was made public and uploaded onto the website of the MOEF. Comments on this report were sought by 31 December 2009.

Photo: Living Farms, Orissa

The authorisation of the genetically modified aubergine Bt Brinjal triggered a fierce debate in India.

The main objectives of the consultation were to provide a forum for various stakeholders to express their views and concerns related to Bt brinjal at venues across the country and to provide appropriate inputs to the Minister for a "carefully considered decision in the public and national interest". Advertisements were placed in the local media before the event to ensure that the public was fully informed.

Between 13 January and 6 February 2010 seven public meetings, organised by the NGO Center for Environment Education (CEE) at Kolkatta, Bhubaneshwar, Ahmedabad, Nagpur, Chandigarh, Hyderabad and Bangalore and chaired by Mr. Jairam Ramesh, were conducted in the local language of the area in addition to Hindi and English. Almost 8,000 people from different stakeholder groups – farmers, farmers' organisations, scientists, agricultural experts, consumer groups, citizens' forums, non-governmental organisations (NGOs)/community-based organisations (CBOs), government officials, media, seed suppliers, traders, doctors, lawyers, students, housewives and others, representing diverse viewpoints on the issue, participated in the meetings.

The consultations witnessed high voltage action, with emotions and tempers running high and stakeholders vying with each other to get their message across. Concerns ranged from the long-term impact on the health of consumers, cross-contamination of other local plants and its effect on biodiversity to control of Indian agriculture by multinational corporations (MNCs) – an activist even called the Minister a 'Monsanto agent'.

The scientific community also came out against the GM crop, expressing their deep concerns over the reliability and the standards of the tests. The farmers wanted to know why the Agriculture and Health Ministers were not present, when the meeting was about these issues. They said that country-wide farmers had suffered the green revolution which opened the doors to deadly pesticides, harming them and destroying the fertility of their fields. They also spoke passionately about seed sovereignty.

In addition to the meetings, letters were sent to the Chief Ministers of six states – West Bengal, Orissa, Bihar, Maharashtra, Andhra Pradesh and Karnataka, since these are the major brinjal-cultivating states accounting for almost 78 percent of the country's brinjal production. Opinions were sought from scientists from India and abroad. A large number of emails from research institutes, NGOs and concerned individuals were also received.

Meanwhile, to sustain the pressure on the Government in the run-up to the decision, on 30 January 2010 (the anniversary of the death of Mahatma Gandhi, called National Martyrs' Day) civil society organisations organised a fast on a national level against the entry of Bt brinjal. More than one hundred thousand Indians – prominent Gandhians, organic farmers, teachers, media, etc. – took part in the fast to emphasise that the hard-won independence led by Mahatma Gandhi could not be lost to agri-business MNCs, with their technologies like GM seeds, and to uphold the food sovereignty of the country. "Remember the Mahatma, stop Bt brinjal and protect India's seed and food sovereignty" was their message.

After considering the results of all these deliberations and engagement with civil society, on 9 February 2010

Photo: Living Farms, Orissa

The Indian Centre for Environment Education has organised seven public hearings throughout India.

the Government of India officially announced its decision to impose a moratorium on the release of the transgenic brinjal hybrid developed by Mahyco. The moratorium will last "till such time as independent scientific studies establish, to the satisfaction of both the public and professionals, the safety of the product from the point of view of its long-term impact on human health and the environment, including the rich genetic wealth existing in brinjal in our country," said Environment Minister Jairam Ramesh.

The minister also announced that he intended to rename GEAC the Genetic Engineering Appraisal Committee, giving a clear signal to private companies that "not everything they bring to the table will be approved". The minister also called for transparency in the functioning of GEAC and more engagement with other scientists and civil society groups who had submitted their representations to the Ministry. He also stressed the strategic importance of farmers and the public retaining control over the seed industry, rather than allowing the private sector to control it as has happened with Bt cotton. "During the moratorium period there should be a detailed debate in the National Development Council and Parliament," said Ramesh.

Response to the moratorium

The decision has its fair share of detractors, not least the Minister's own colleagues – Science and Technology Minister Prithviraj Chavan and Agriculture Minister Sharad Pawar. Mr. Pawar wrote to the Prime Minister saying the moratorium declared by Mr. Ramesh on the GEAC's recommendation for commercialisation of Bt brinjal had "confused" the scientific community and the private sector about the status of biotechnology in food security and about the deciding authority.

Differing with Mr. Pawar, the Environment Minister said the "expert panel may well be a statutory body but, when critical issues of human safety are involved, the government has every right and, in fact, has a basic responsibility to take the final decision based on the panel's suggestions".

Opponents of this decision have criticised Jairam Ramesh for sacrificing science at the altar of "public outcry".

Civil society groups, however, have hailed the minister's decision as "a path-breaking precedent", "a step towards democratising science", "a good step towards charting the path for sustainable agriculture and food security for our country", and "a victory for farmers, consumers, democracy and science", and are gearing up to take on other legislation that is detrimental to small farmers' interests.

The article takes forward the discussion on the use of biotechnology that we examined in Issue 3/2010 from the perspective of science and NGOs (pages 30–31).

A list of references can be obtained from the author or at:
www.rural21.com

Zusammenfassung

Als Mitte Oktober 2009 die indische Zulassungsbehörde grünes Licht für den kommerziellen Anbau der gentechnisch veränderten Auberginensorte Bt Brinjal gab, hat dies im Land eine heftige Debatte ausgelöst. Umweltminister Jairam Ramesh hat daraufhin zu öffentlichen Konsultationen aufgerufen, um die Argumente der verschiedenen Akteure in den Entscheidungsprozess einfließen zu lassen. Rund 8.000 Menschen aus Politik und Wirtschaft, Wissenschaft und Zivilgesellschaft nahmen an insgesamt sieben Anhörungen teil. Als Ergebnis hat die indische Regierung den Anbau von Bt Brinjal zunächst auf Eis gelegt. Der Beitrag beschreibt den Konsultationsprozess, die vorgebrachten Pro- und Contra-Argumente sowie die Reaktionen auf das Moratorium.

Resumen

Cuando a mediados de octubre de 2009, las autoridades de la India dieron luz verde a las plantaciones comerciales de una variedad transgénica de berenjenas llamada Bt Brinjal, se desató un acalorado debate en el país. En vista de ello, el Ministro del Medio Ambiente Jairam Ramesh ha organizado una serie de consultas populares para enriquecer el proceso de decisión con los argumentos presentados por diferentes actores. Alrededor de 8.000 personas de la política, la economía e industria privada, las entidades académicas y la sociedad civil participaron en un total de siete rondas públicas de discusiones. Como resultado de este proceso, el gobierno indio ha paralizado por ahora el cultivo de la variedad Bt Brinjal. El artículo describe el proceso de consultas, los argumentos presentados en pro y en contra y las reacciones ante la moratoria.