

## Technological intolerance is hampering GM research

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The activists opposed to GM technology burned the GM mustard crop in the second year of the first stage before the researchers could collect the scientific data. In the past, duly approved experimental field crops of Bt-cotton were also burned. Field trials are an integral part of biosafety assessment and performance evaluation and are, therefore, essential. Every technology, be it traditional or modern, has its own place and no single technology can solve all the problems. Wisdom lies in integrating them. Technological intolerance should be avoided and there is vast scope for socialism in science too for the progress of agriculture.

The opposition to GM mustard now, and to Bt-cotton, Bt-corn, Bt-brinjal, Golden rice, etc. in the past, is not based on science. Most of the people who are organizing the protests, launching signature campaigns and spreading canards about GM crops, are not scientists. Nor do they seem to attach any importance to scientific facts. The truth is that GM mustard, DMH -11 (Dhara Mustard Hybrid -11), has gone through all the prescribed biosafety tests for over 15 years and has been established by GEAC to be safe for humans, animals and the environment. It has the potential to increase the yield of hybrids between 20 to 30% without adding any extra cost to its cultivation. It can thus help the farmers to earn more money while enabling India to produce sufficient quantity of an important edible oil that is now being imported, along with other cooking oils, at an annual cost of over Rs.56,572 crores (as of 2014).

#### **Safe and beneficial:**

As far as safety is concerned, the oil and feed from the GM rapeseed have been consumed extensively since 1996 in Canada and several other countries without any scientifically proven ill effects. Then, is the opposition justified? Previously, the opponents in India, with the support of their counterparts in other countries, opposed Bt-cotton even before it was tested and they continue to do so even after its remarkable success of over 13 years following its commercialization in March 2002. Currently, Bt-cotton occupies over 11 million hectares comprising 95% of the total cotton acreage in India. Adopted by more than 7 million farmers, it has significantly contributed to the social and economic benefits of the farmers with no adverse impact on environment, and turned India from a net importer to an exporter of cotton. However, the activists, instead of gracefully accepting this outstanding success, continue to indulge in fault-finding and even try to associate it with farmers'

suicides! They vehemently opposed Bt-brinjal also in India. The Govt. of Bangladesh brushed aside the protestors and, based on scientific recommendations, took a bold decision and approved its commercialization in 2014 which is significantly benefitting its farmers.

Presently, various GM crops are cultivated in about 30 countries and they have significantly contributed to enhanced productivity and farmers' welfare. Against this background, it is difficult to understand why there is such an aggressive opposition!

The various accusations orchestrated repeatedly by the opponents are baffling. They are speculative and their concerns are unauthenticated! In fact, no other crops or food products have been subjected to as stringent a testing and evaluation as are GM crops prior to commercialization.

Globally, over two thousand studies dealing with the safety of GMOs have been published in reputed scientific journals. Almost every major scientific body and regulatory agency in the world, that include countries like the USA, Australia, New Zealand, France, United Kingdom, Belgium, Germany, India, etc., have reviewed such research data and strongly vouched that the food and feed derived from GM crops are as safe as those produced conventionally. What more do the opponents want? GMOs are a product of scientific research. Leave science to scientists. Please do not take science to streets. Bt-brinjal was enough! Signature campaigns do not reflect the merit of research, especially when the product is yet to be born and reach the end users.

### **Strange attitude:**

GM mustard has been developed by a public institution - Delhi University with support from DBT. Earlier, the adversaries opposed GM technology because the products were developed by private sector. Now, they are opposing even the public sector.

Their claim is that it is meant to pave the way for entry of private sector! It is difficult to understand their stance. For example, on one hand, if the government discloses the GM crop trial sites, they go there and vandalize the experimental crop or even burn them as they did with Bt-cotton and GM mustard.

On the other hand, if the sites are not disclosed, they allege that the government is hand-in-glove with the product developers and, therefore, is keeping everything under wraps! Similarly, if the scientists do not openly express their opinion on GM crops, they conclude that they are doubtful or not confident about the technology, hence the silence.

On the other hand, if they speak in favour of the technology, they brand them as being bribed and insult them. On being sensitive to their integrity being questioned in public, most of the scientists and also farmers and other supporters of GM technology, prefer to keep quiet. This offers an advantage to the opponents. As they are very aggressive and vocal, only their voice and views are heard, thereby confusing the gullible public. It is a typical case of Silent Majority vs Loud Minority!

### **Shun intolerance and be secular:**

If the opponents believe in any specific technology, they are most welcome to practice and promote it. There is no need for them to denounce other technologies.

To declare a wholesome war against GM technology with slogans like 'GM free India' betrays their lack of understanding of alternative technologies. Such technological intolerance or technological prejudice and needless interference should be avoided. It has already hampered the progress of research and affected the product developers (both public and private), scientists working in biotech sectors, students of biotechnology and, moreover, the farmers who need effective technologies to face the emerging challenges.

Merely opposing a technology without any scientifically authenticated reasons or offering tangible alternatives does not contribute to progress. Scientists are as, if not more, concerned about the society and environment as the so-called environmentalists. They try to develop technologies to benefit the community. The opponents may criticize, but should not try to kill a technology!

It is indeed possible that there are individual scientists or group of scientists or research organizations that believe in traditional ways of cultivation and are averse to modern technologies. However, it is noteworthy that while the approaches may vary, the noble objective of all technologies, be it traditional or modern, is to achieve adequate production to feed the teeming millions. Over the years, one has realized that every single technology is important in enhancing crop production and protection. There is thus a need to harness all the technologies. It is like practicing secularism in science! This is possible if all those with divergent views talk to each other, listen to each other and understand each other in the best interest of

agriculture and feeding the society at large.

Here is an opportunity for the opponents of GM technology to review their stand and join hands with other scientists to promote agriculture. Technological intolerance has no place in science. Rather, a judicious integration of available technologies, depending upon their suitability to a particular situation, should be explored which augurs well for the future. Together we can take agriculture to the next level.

**Author's Bio:** *Dr T M Manjunath is an agricultural entomologist with over four decades of research and executive experience, both in public and private sectors. He worked extensively on the bio-ecology and control of a wide variety of insect pests, including those of cotton, rice, sugarcane, maize, coconut, vegetable and other crops. His two books "Q&A on Bt-Cotton in India" (2007, 2011) and "GM Crops: Perception vs Reality" (2015) are aimed at clarifying doubts related to GM crops. He is an author of over 100 research and review papers and six books, and has delivered innumerable lectures, including many keynote addresses, in these areas.*