

## GM Mustard can enable domestic reliance in edible oils

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It is important to note that anti-GMO activists who are opposing GM mustard, a hybrid variant of mustard are up against a team led by Dr. Deepak Pental, noted geneticist and former Delhi University vice-chancellor. Dr. Pental's project on-going for over 16 years has been funded by the university and the National Dairy Development Board (NDDDB), which, at one time, was entrusted with ensuring self-sufficiency in cooking oil through the Technology Mission on Oilseeds and Operation Dhara. This is an entirely indigenous effort.

Is GM Mustard important? Is it needed? And who will it benefit? Let's take a look at the big picture first. In 2013-14, for which data is available, India imported 14 million tonnes of cooking oil for a staggering US\$10 billion or Rs 66,000 crore. Edible oil is by-far the biggest item of food import and also makes India the largest importer of edible oils in the world. Edible oil is also the third largest import after crude oil and gold. It is remarkable to the extent to which imports have risen - from 4.4 million tonnes in 2003-04 to 14 million tonnes in the current year. But until 2007-08, India's edible oil production exceeded its imports. It is after that the situation completely reversed. It is also important to note that this is the cost that India pays when global edible oil prices are down by around 20 - 25%. If global prices were to recover, the prices would be significantly higher.

Unfortunately as our import dependency goes up (from 30 percent to nearly 70 percent in the last few years) there is no silver lining in sight (unlike in global crude oil prices where prices dropped and continue to remain low). Massive imports have driven down Indian soybean prices by 20 percent in four months, discouraging farmers from expanding oilseed area. But despite this, local soyoil is still 50 percent costlier than imported palm oil. Despite the recent increase in import duty by the government, oilseed cultivation is not profitable for the Indian farmer.

India needs to therefore increase the productivity of all oilseeds in every possible manner. The twin-pronged advantage is

that the import bill goes down and the Indian farmer benefits. GM mustard is an initiative towards this. Dr. Pental's version of the hybrid seed will yield 20-30 per cent more crop. Increased yields will reduce the price of mustard oil and relieve the oil shortage. Like with Bt Cotton, where India went from a net importer to one of the world's largest exporters in a period of around 10 years, being self-reliant could help India earn foreign exchange as well and pave the way for replication with other oilseeds as well.

#### Safety & human consumption

GM Canola, a sister crop of mustard, has been used extensively for hybrid seed production in rapeseed in Canada and Australia. In 2014 alone, Canada exported 9.6 million tonnes of seed, 2.3 million tonnes of oil and 3.4 tonnes of seed meal to all parts of the world.

Japan, a country that does not grow any GM crops, was the biggest importer. Canadian rapeseed oil, high in quality, is also being sold in the Indian market as a premium health oil under the brand name Canola. It is ironical that we are fine consuming oil from Canola and Soybean, which is derived from GM crops and have several food items which are imported and mostly likely contain ingredients, which in turn are derived from GM crops but a technology developed in India is being opposed.

The first generation hybrid developed using GM methodology for pollination control yields 20-30 per cent more than the leading non-GM varieties currently in the field without any additional inputs of water or fertiliser. Better hybrids will follow as has happened with other crops around the world. As the research on mustard has been funded entirely by the department of biotechnology and National Dairy Development Board (NDDB), hybrid seed should reach the farmers at a very reasonable prices.

#### Benefitting the farmer

While the GEAC takes a decision on GM Mustard, anti GM activists are leaving no stone unturned to create a strong fear psychosis in the minds of farmers and consumers alike. For the average middle class mustard oil consumer who does not understand GM technology, propagating untruths that have no scientific or rationale basis will create misconceptions that are easy to exploit by stakeholders with a vested interest against GM Mustard and those not inclined to making India self-reliant in edible oils. However, given that this research has been spearheaded by an entirely indigenous team and funded by publicly funded organisations, there is no 'foreign hand' to blame this time. So, the government and researchers are being blamed for clandestinely and wilfully bypassing safety rules and/or withholding information from the public. This is an allegation that is unfair and untrue. No government or organisation (private or international) anywhere in the world bypasses safety concerns and wilfully allows the perpetuation of a crop that will be unsafe or unfit for human consumption. Why would we believe that India is any different? The opposition, however, will keep on benefiting the farmers of Canada and USA, help their economies but will deprive our farmers to have a chance to look at the technology and their decision whether to grow GM mustard or not and continue to strain our economy with increasing import bills.

Plant breeding, conventional and GM, will be foundational in meeting the challenge of bringing about low-input, high-output agriculture in the 21st century. Use of GM technology in developing productive hybrids in mustard is a step in that direction. No one, least of all Dr. Pental, the inventor of GM Mustard, is saying that this technology should be put into the farmer's field without relevant studies. In fact we all urge the government to review the data critically. But give science a chance.

**Author Bio:** *Dr Shivendra Bajaj has Ph.D. in Genetics from University of Delhi, South Campus. With over 20 years of experience in the field of biotechnology and research, Shivendra has joined ABLE- AG from DuPont Pioneer National Biotech Regulatory Cooperation Lead and China and Asia Pacific Regulatory Science and Operations Lead. He worked at DuPont Pioneer for over seven years and prior to joining there, he was a senior scientist with ViaLactia Biosciences in Auckland New Zealand. Shivendra has also worked with Monsanto India as a Regulatory Manager in Biotechnology during the initial years of his career.*