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GM Crops: Safe or Not – the Fear must be Allayed

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Genetically modified (GM) crops have been the moot point of debate for the scientific community across the world and lot has been said and written about the future of these crops. What is still not clear to the general public is the safety of the genetically modified crops / food. Transgenic or gene cloning provides a new dimension to crop breeding by enabling direct changes to be made to the genotype of a plant, circumventing the random processes inherent in conventional breeding. Biotechnology companies exploit the potential of gene addition or gene subtraction for crop improvement. Calgene (USA) and ICI Seeds (UK) use the 'Antisense RNA approach' as a means of genetically engineered tomato plants so that the fruit ripening process is delayed and other companies also claim to develop apples that won't rot.

The anti-GM crop brigade has warned people against the use of GM crops. The countries that have been successfully growing and enjoying the benefits of GM crops since many years include USA, Argentina, Canada and Brazil. India has joined these nations in the past few years. The only crop that is under trial in India is *Bt*-cotton. The gene coding for the *Bt* (*Bacillus thuringiensis*) toxin that is harmful to small fraction of insects has been inserted into the plants, causing cotton plants to produce this natural insecticide in its tissues. However, in India the attack on the *Bt* cotton by the mealy bug (or woolly aphid) had reduced the cultivation area under GM crop to half and farmers had no option but to blame the government for encouraging them to go for genetic seeds which led to the poor production. Indian farmers so far have failed to retain the soil fertility which has been drastically reduced with excessive use of fertilizers and pesticides. GM crops could be the possible solution for the Indian farmers. But the reports of liver and kidney damage, cancer, degenerative and autoimmune diseases have alarmed the farmers and consumers against the GM food. Feasibility surveys of the GM crops and the comparisons with the conventional varieties have been conducted. However, the reports are contradictory and there is no clear answer from the scientific community to blunt the controversy.

Consent to *Bt*-Brinjal as a commercial crop by the GEAC (Genetic Engineering Appraisal Committee) in October 2009 by the Indian Government and then its ban in February 2010 speaks volumes about the lack of trust on the transgenic crops. The top-notch Biotechnology companies are there to make money. But there should not be any haste in matters where human health, wildlife and environment are in question. The companies must follow the regulations and go through the rigorous safety assessment protocols to check the long-term impact of GM crops on the ecology *in toto* and then only go for the commercialization of these crops. The product should be health-cum-eco-friendly if consensus is sought. We are playing with the plants and the microbes but what are the harmful effects of the marker genes used with plant cloning vectors? What if the new gene being introduced into a genetically modified plant 'escapes' and 'colonizes' wild plants? What effect the colonization would have on the biodiversity and the ecosystem? All these questions must be answered precisely.

The decision by some governments against GM crops might be acrimonious for many but the message is loud and clear–we must win the trust of the consumers and the farmers before bringing any genetically engineered technology or product from laboratory to the fields and finally to our dinning tables.

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