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Genetically modified crops : A controversial issue

JIBAN SHRESTHA*

Scientist, Nepal Agricultural Research Council, National Commercial Agriculture Research Program, Pakhribas, Dhankuta, Nepal, E-mail : jibshrestha@gmail.com

Genetically modified (GM) crops are used in agriculture, the DNA of which has been modified using genetic engineering (GE) methods. GM crops contain alien genes, also called transgenes, from widely different kinds of plants or animals, from bacteria or viruses, or that were created synthetically in the laboratory. The advent of GM crops has led not only to concerns over food safety but also to questions about their potential impact on the environment. GM technology has several benefits such as insect resistance, pathogen resistance, herbicide tolerance, delayed ripening, longer shelf life of harvested fruits in the super market, drought resistance, ability to fix nitrogen, ability to grow faster and bigger, higher oil content and ability to manufacture pharmaceuticals. GM technology is the only technology that can provide miraculous genotypes in the hands of the poor and helps support food production which will continue to match the growth of the population. This technology can feeds more people with better food and act as a bridge in poverty reduction by boosting production per unit area per unit time. DMH 11 (Dhara Mustard Hybrid) is the GM version of Mustard that was recently grown for commercial cultivation in India. It gives twenty-five to thirty per cent more yield than the best varieties such as 'Varuna' currently grown in the country. Advocates of GE declare that using GM will reduce the use of pesticides and can bring higher crop yields and profitability to many farmers. Manipulation of foreign resistant gene against the particular pest reduces the chance of pesticide use that lower the production cost and helps to maintain pollution free environment. Bt brinjal improves yields, reduces the pesticide use and reduces the production cost. Introduction of novel gene into the new host would maximize the production efficiency and increase the quality of end products. The GM tomatoes fruits remain forty-five days, three times as long as normal tomatoes, without refrigeration.

Living organisms are very complex; genetic engineers can not predict all the effects of putting new genes into them. When introducing a new gene into any organism, there will be "position effects" that can cause unpredictable changes in gene expression and genetic function. The genetic contamination spontaneously multiplies. It can never be canceled or deleted; genetic errors are passed on to future generations of species. There is a possibility that GM crops will hybridize with wild relatives and form viable offsprings. Crop to wild gene flow leads to the disappearance of rare species through the process of swamping and outbreeding, and this genetic contamination will have negative long-term consequences for the preservation of diversity. A highly likely event is cross-pollination between sexually compatible crops and GM crops, between GM crops and local/weed species. Contamination of the plant gene through the gene Bacillus thurengensis (Bt) causes a toxic pesticide, which also harms non-target organisms. This will promote the rapid emergence of resistant insects and lead to excessive destruction of beneficial organisms, which will create a serious environmental imbalance. GM crops that are likely to survive in the wild, spread their genes through the flow of genes and, finally, pollute the natural gene pool. Increasing the use of GM crops has led to a shift in agricultural power to biotechnology companies that gain excessive control over the production chain of crops and food as well as for farmers who also use their products.

GM products are not risk free. It is necessary to balance those risks against benefits and balance those risks against current alternatives. The risk of an unintended introduction of GM crops is more threatening and unpredictable in countries where no legal framework exists. So, it is safer to promote alternative food production methods in developing countries like Nepal and India.

***Mr. Jiban Shrestha** has earned his M.Sc. Ag. degree from Tribhuvan University, Institute of Agriculture and Animal Science, Rampur, Chitwan, Nepal in 2007 . Presently he is working as a Scientist (Plant Breeding and Genetics) at Nepal Agricultural Research Council, Nepal since 2010. Mr. Shrestha has been involved in basic and applied research on maize mainly related to development, maintenance and improvement of hybrid and open pollinated maize varieties as well as soil nutrient management for maize grown in various production systems. He has played vital role for development and release of 3 hybrids, 3 early and 1 quality protein maize varieties. From August 2017, he is working as a Coordinator at National Commercial Agriculture Research Program, Pakhribas, Dhankuta, Nepal. He has published 75 peer reviewed articles in both national and international journals, 10 proceeding papers and 2 books. He has been affiliated to 45 journals as editor or reviewer. He has worked as reviewer of 8 international conferences related to agriculture. He has guided 8 agricultural graduate and 4 postgraduate students for their thesis research.