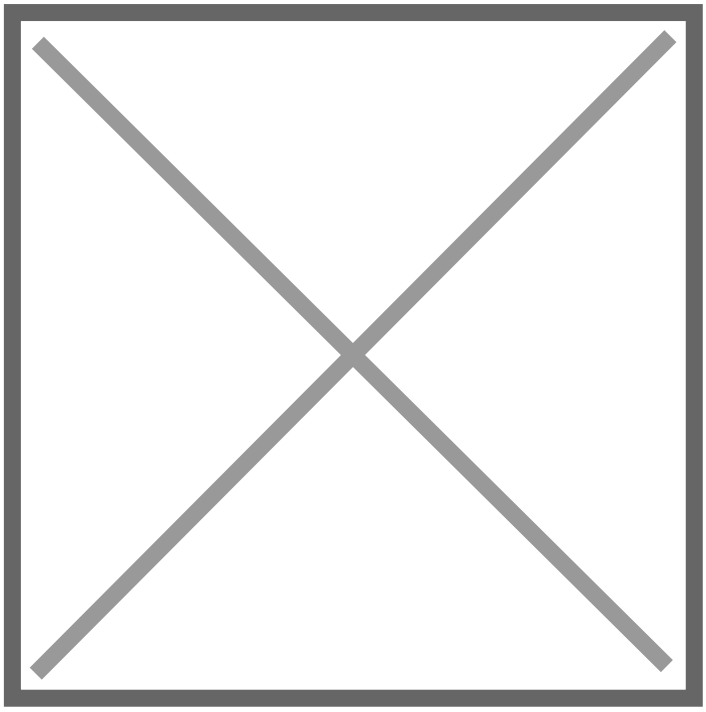
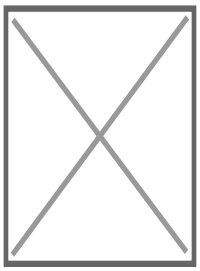


GM Crops and Biodiversity: What

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Anti-GM crop activists are of the strong belief that GM crops pose a threat to biodiversity but this is far from truth and is yet to be proven scientifically.



The modern agricultural economy dictates that farmers grow only those crops that would fetch decent returns (not always the case!). All of this is not a rocket science to those who are intimately involved in agricultural research of one kind or another. But, the general public does not understand these things very well and need not. They have left it to the experts to take care of the matter. How effectively these matters are being addressed by experts is also questioned by many. But, unless proper public policy instruments are in place, there is very little that experts can do to help protect biodiversity. Full blown activism is underway around the world to change policies that can help protect biodiversity. But, any such activism in the policy arena necessarily becomes political and things don't change very easily. But, that is the price we have to pay in this day and age for cherishing democratic pluralism.

A 10,000-year-old human activity like agriculture will not change quickly. Any practical solution to conserve biodiversity will have to come from modern science and technology, and not by activism and harping against GMOs. Modern plant breeding and biotechnology have already proved that they can play a useful role. There are always trade-offs, but the critics of biotechnology single out GM crops as the villain of the situation, and would like to stop GM crops in its tracks to save the precious biodiversity without proving how they are directly responsible for the destruction of biodiversity. Many of them want to go back to diversification of crop varieties of the yore and restore the glorious romantic agricultural past where every homestead grew little of everything needed and take care of all the community's needs and just be one happy family. How realistic is this?

We can neither go back to the past nor can we ask poor farmers of the developing world to grow uneconomical varieties. That will be a crime against humanity. Certainly, we all need to protect that precious biodiversity and protect it using modern science and technology and there is nothing better than modern biotechnology to do so. But, it is ludicrous to suggest that GM crops destroy biodiversity any more than any other introduced crops. "Gene pollution" and "genetic contamination" from GM crops are merely scaremongering tactics. One must realize that there must be an economic incentive for farmers to maintain on farm biodiversity; otherwise they have no reason to conserve the biodiversity to the benefit of few environmental romantics. Protecting biodiversity for the sake of biodiversity without benefiting from it in a sustainable manner will never work and has never worked. Many eulogize a tattered, poor farmer as a primary conserver of biodiversity. There is no reason why a poor and hungry farmer must cling on to non-productive old varieties just so that the urban NGOs and activists can feel good about it. What does he get in return? Is not it better for a scientific organization to collect all that biodiversity, characterize them and maintain both for posterity and also for use by future generations if they tap any benefit from them. That is what FAO is doing by organizing the Global Trust. Yes, it is going to cost money and money must be spent for that yeoman purpose, and all

NGOs fighting for conservation of biodiversity must get on the case of their host governments to support this international effort. And, that would be a good case of meaningful activism.

The cause celebre of the critics of GM crops is the introduction of GMOs into the centers of origin and diversity. They constantly invoke the infamous case of Bt maize gene escaping into certain land races of maize in the highlands of Oxaca, Mexico. All hell broke loose when it was first reported in a scientific report in the prestigious science magazine Nature. There were so many grandiose claims of loss of land races to genetic contamination to gene pollution to loss of agricultural spirituality of pastoral people in the highlands of Mexico. The fact is Bt genes did escape into land races because those farmers just did what they always did to preserve their delicate land races. They just used some of the Bt maize seeds and crossed them into land races (creolilization). This was happening all along the way and GM maize happens to be the villain this time because some people don't like GM crops. Now did this destroy maize land races? The answer is an emphatic NO, and it has been certified by the world's leading research institute on maize CIMMYT located right in Mexico. In fact, there is not a single instance of any wild or weedy relative having been reduced or destroyed by any newly introduced crop variety much less GM crops. But, for the critics it is "genetic pollution" or "genetic contamination" as if biodiversity was some how a virgin all this time, a complete scientific nonsense! CIMMYT did a thorough investigation of all its world collection of maize in their gene bank, and proved that there has been no contamination at all. But, activists never accept it and keep on stirring the pot so much so that FAO with the help of CGIAR has launched another multi-million exercise to discuss all the pros and cons of GMOs threat to germplasm collections around the world. That same funding could have been used to fund the much needed research that helps improve many of the subsistence crops and animals that badly need improvement. This is wastage of precious funding entirely due to the misguided activism.

If one can visualize a pathway of gene flow from a GM crop to a wild or weedy relative anyone with basic a understanding of biology would know that gene flow in plants is via pollen and that pollen has to be viable in transit, effectively pollinate (through any number of known ways of pollination), and the genes have to be fixed in the new population over several generations with selection pressure. Then the question is so what if a Bt-gene or any other introduced gene from GM crop really gets fixed in a non-target population (biodiversity). By all reckoning, hundreds and thousands of genes are being introduced into crops through breeding are all known and determined to be beneficial and there is no evidence of these genes causing any harm to the non-target crop wild or weedy. On the other hand, they all enhance genetic diversity. In the context of GM opposition, somehow this wonderful natural gene flow is considered dangerous! Genes have been flowing as long as there have been living organisms on the planet, and we should all be thankful for it. Gene flow is the very essence of biodiversity. We should be praying for more of it, and not less. Humans have mediated gene flow all throughout the course of agricultural history and what biotechnologists are doing today is an improved and refined way of doing the same. There is no newly invented villainy here. It is once again sheer scientific nonsense to single out GM crops as a threat to biodiversity and prevent their gene flow. Genes flow in all directions. These critics of GM crops do not seem to have considered that genes from surrounding wild and weedy plants also flow into cultivated crops. That process equally destroys genetic purity of advanced varieties and can potentially lose their market and agronomic value (contra-indication!). In fact, plant breeders have been doing just that selectively for genetic improvement of crops.

To preserve and to enhance biodiversity must be an important goal for everyone. By all reckoning, biotechnology can help by providing for new and novel approaches. GM crops are just like any other introduced crop variety designed for a beneficial or utilitarian purpose, and would have no more or less significant impact on either on-farm biodiversity or wild biodiversity. If genes that might have flown from cultivated plants into surrounding biodiversity all these years has not done any demonstrable or observed damage to biodiversity, how on earth GM crop pollen would destroy biodiversity now? The same can be said of any changes to agricultural practices associated with GM crops. All other arguments to the contrary are sheer a scientific hog wash, and nothing but an attempt scare people into banning GM crops which might otherwise be useful to farmers and consumers. Surely, all introduced crops must be monitored and GM crops are no exception to see what unexpected effects might occur on the agricultural landscape.But scientific and technological quest for improving the moribund agriculture in developing countries must go on as it is the only hope. That biodiversity will be destroyed by GM crops is nothing but an urban myth, and be dismissed as a scientific nonsense.

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(Concluded)