

GM CROPS - PART3: THE ECONOMICS OF GM FOOD

in

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SUMMARY: "The vast diversity of seeds developed by farmers over centuries, with special characteristics in drought or flood tolerance, taste and medicinal properties is often lost when corporate control of seed promotes a few varieties in which heavy investments have been made and high profits are to be reaped. "

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The World Health Organisation (WHO) defines genetically modified organism (GMO) as "Organisms in which the genetic material (DNA) has been altered in ways that do not occur naturally". Currently 99% of GM crops have only two GM traits (1) pesticide production within every cell of the plant (e.g. Bt to control bollworm in cotton) (2) herbicide tolerance (HT) to enable spraying of a pesticide to kill weeds but not the crop. Apart from health and environment concerns, what is relevant is whether this technology is driven by real economic benefits, and for whom.

GM and economics: Both yield and income are the end result of multiple factors : the intrinsic quality of the seed into which the gene has been inserted, the prevailing soil, water and climatic conditions, the virulence of pest attacks , the agronomic practices used and the price support mechanisms are some of them. Disaggregating these is difficult and it is not surprising therefore that there have been serious differences in perception even on Bt cotton economics in India. Agriculture Minister Sharad Pawar has stated that net incomes of farmers have increased from Rs7,000 per hectare to Rs16,000 in rainfed areas while the Vidarbha Jan Andolan states that Bt cotton has increased suicides. About 68% of farmer suicides are in Andhra Pradesh, Maharashtra, Karnataka and Madhya Pradesh, which have the highest acreage under rainfed cotton. With about 60% of the total cultivated land being rainfed and with Bt cotton requiring timely irrigation, failure of rains can result in crop failure, unrepayable debts and even suicides.

Cotton provided a unique opportunity for GM as almost 50% of India's total insecticide usage was on cotton alone. With Bt cotton pesticide costs for bollworm have decreased sharply, but in the past five years, secondary pests have appeared and insecticide costs are again rising. Is there an option other than high pesticide use and Bt?

A study by the Central Research Institute for Dryland Agriculture found that non-pesticidal management in Andhra Pradesh using non Bt cotton gave higher net returns than Bt cotton. A study by scientists from the Central Institute for Cotton Research has shown that net income from organic cotton is significantly higher than from conventional cotton, after an initial three-year transition phase to organic. These studies do not find their way into public discourse since they lack the enormous PR budgets used for promoting Bt cotton. The same applies for other crops.

In the US, GM soya, corn and cotton cover 85% to 95% in these crops, and 53% of a \$15 billion US farm subsidy in 2011 went to support these three crops only. The National Farmers' Union of Canada states that "...these crops have failed to provide significant solutions, and their use is creating problems - agronomic, environmental, economic, social, and (potentially) human health problems". In the US, the economic costs are yet to be estimated from the unexpected ecological backlash of the many weeds that have now become resistant to the glyphosate herbicide used for HT crops, and which are affecting US farmlands and incomes. Studies show that yields in non-GM Western Europe have been higher than for the same crops grown with GM traits in the US and that the ability to

tolerate the recent drought was lower for GM crops. The vast diversity of seeds developed by innovative farmers over centuries, with special characteristics in drought or flood tolerance, taste and medicinal properties is often lost when corporate control of seed promotes a few varieties in which heavy investments have been made and high profits are to be reaped.

The transgenic seed market is controlled by six large global biotech seed companies. The development of a GM trait is estimated to cost \$140 million as compared to \$1 million for conventionally bred seed. Companies must recover these investments. In India, Monsanto controls over 90% of the cotton seed market directly or through its licensees, and they have together made about Rs1,500 crore in royalties and fees in eight years (as reported in Business Standard but not endorsed by Monsanto) . It is not surprising that after the reports of the Jairam Ramesh Committee, the Parliamentary Standing Committee and the Technical Expert Committee (TEC) of the Supreme Court, there is such intense propaganda for GM and even personal denigration of anyone who recommends caution. What is at stake is the clearance of the 17 crops that are in the GM pipeline. Studies show that patented seeds eventually eliminate a large part of the seed diversity built up by generations of farmers. As seed monopolies develop, this not only impact seed prices, but also a country's ability to control the most vital part of its food production process.

Is there a better option than GM?

The International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) Report, the world's largest agricultural study undertaken by more than 400 scientists, commissioned by the World Bank FAO, WHO and other international organizations, found that agro-ecological approaches, and not GM, provide a sustainable answer to the world's food crisis. This has recently been further substantiated by the UN Rapporteur on Food that states "To date, agro-ecological projects have shown an average crop yield increase of 80% in 57 developing countries, with an average increase of 116% for all African projects. Recent projects conducted in 20 African countries demonstrated a doubling of crop yields over a period of 3-10 years."

In Andhra Pradesh, Community Managed Sustainable Agriculture (CMSA) was started as a small initiative in 2005-06. Supported by the Andhra Pradesh government and the World Bank, the program has led to 10,000 villages, with approximately one million farmers practicing NPM (Non Pesticidal Management) on over 3.5 million acres. Net income increases have been estimated at being Rs10,000 to Rs30,000 per hectare per annum—in addition to meeting the food needs of farming households and providing pesticide free food to consumers. A single village was reported to have saved Rs60 lakh in pesticide use, thereby strengthening the rural economy.

According to the Associated Chambers of Commerce and Industry of India (ASSOCHAM), organic farming is growing at a steady annual rate of about 40% and is likely to be worth Rs10,000 crore by 2015. Their study for an organic West Bengal states that this can lead to wealth accumulation of Rs12,000 crore, generate exports worth Rs550 crore and create nearly 20 lakh employment opportunities during next five years.

GM has a serious impact on exports to many countries that reject any GM contamination. Unlike other technologies, the release of living organisms in an open environment cannot be controlled or reversed. Even field trials cannot be fully controlled. In 2006, despite strict US regulations, an experimental variety of rice from field trials caused losses of over \$1 billion to US farmers because of rejection of rice shipments by Europe. In 2013, GM wheat from field trials was found growing in a field years after it was supposed to have been destroyed, and has resulted in cancellation of tenders by Japan. In the former case, Bayer CropScience paid \$750 million in settlement to US farmers and in the latter case the full impacts are yet to unfold. In India, there have been multiple illegal trials but no effective deterrent penalties to date. GM contamination can have a serious impact on India's export potential and there have already been concerns about this in respect of organic cotton.

The BRAI Bill: Regulatory failures in India have been repeatedly castigated by independent Committees. The Biotechnology Regulatory Authority of India (BRAI) Bill recently tabled in Parliament appears, unfortunately, to be a means to speed up the approval of GM crops stalled by these Committees' findings. It empowers just five persons in the Ministry of Science and Technology (i.e. the Ministry, which promotes this technology) to clear GM crops. Other committees envisaged in the

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Published on NW Resistance Against Genetic Engineering (<http://nwrage.org>)

Bill are only advisory. The proposed Bill bypasses the approval presently needed from state governments, and seriously dilutes Right to Information (RTI). The Bill provides for no preliminary assessment of need or of safer alternatives, nor for long term independent testing. It effectively ignores the unanimous recommendation of the Parliamentary Standing Committee on Agriculture, which called for an all- encompassing umbrella legislation on biosafety. It also ignores the Report of the Task Force on Application of Agricultural Biotechnology (2004) which stated "... Transgenic approach should be considered as complimentary and resorted to when other options to achieve the desired objectives are either not available or not feasible". Other options are indeed both available and feasible and it is time that the recommendations of the IAASTD report, to which India is a signatory, are seriously implemented.

SOURCE: Moneylife

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URL: <http://www.moneylife.in/article/gm-crops-part3-the-economics-of-genetica...> [2]

DATE: 16.09.2013

Source URL: <http://nwrage.org/content/gm-crops-part3-economics-gm-food>

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