

Sowing Disaster's Seeds ⁱ

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When the first ever genetically engineered crop variety was given approval in India a few weeks ago, it raised a predictable storm of controversies. The Genetic Engineering Approval Committee (GEAC) approved three GM varieties of Bt cotton belonging to Mahyco- Monsanto with certain conditions. The first is that Bt cotton will have to be grown with an insect refuge of 20 % non-Bt cotton. The farmer has to set aside about 20 % of his acreage for non-Bt cotton so that the bollworm pest can feed partly on non-poisonous, normal cotton and remain susceptible to the Bt toxin. Otherwise, like the mosquitoes developed resistance to DDT, the bollworm will quickly become resistant to Bt toxin and the crop will fail. The mandatory 20 % refuge places these varieties out of the reach of small farmers. The GEAC acknowledges this and says the varieties are not recommended for them.

The second condition laid down by the GEAC is that Mahyco-Monsanto itself will monitor its own variety to assess possible negative impacts on the environment, like the development of resistance in the bollworm and possible impacts on untargeted insects and crops. No pretence of objectivity has been maintained. In what must be a first in the world, monitoring and regulation of a GM crop has been entrusted to the very same company that is producing and selling the GM variety! Is it realistic to expect that the company will be reporting negative data about itself? Do you see them reporting that the bollworm has developed resistance and that their variety has failed?

The Bt Cotton technology was essentially developed for the well off cotton growers in the USA, a temperate country where 2 % of the population is engaged in agriculture and everyone has huge land holdings. Where insurance and credit availability are no issues and where agriculture subsidies are so huge that the farmer's ability to try risky technologies is substantial. Even if the entire cotton crop were to fail, the American farmer is not going to be driven to the edge.

In India the cotton belt is a hot region and for the most part it is non-irrigated, depending only on rains. Average land holdings are small, farmers are generally poor and there are neither effective crop insurance schemes nor access to loans and credit. Bt cotton is unlikely to work for more than a few years in India because it is fundamentally at odds with the agricultural and climatic conditions here. Insects are likely to develop resistance quite fast, making the variety useless in a few years.

In the US with average land holdings of several thousand acres, wasting 20 % of the acreage, even more if needed is not an issue. Pesticide use can be reduced because there is only one main pest, the bollworm and that is killed by Bt toxin. In India, where 80% of the farmers have small land holdings, the economics of Bt cotton cannot work after setting aside 20% as an insect refuge. Apart from that, the Bt approach alone is unlikely to succeed. There are many kinds of cotton pests in India apart from the bollworm. The use of pesticides will have to continue because spraying will be needed to kill these other pests. It is unlikely the Bt strategy alone will be effective in controlling the intense pest attacks common in the tropics. Monsanto itself knows this and therefore recommends that farmers should count the insects in their fields and if these exceed a certain number, pesticide sprayings should be done.

I was travelling through some villages in the cotton belt of Maharashtra recently. The figures that emerge from talking to farmers look like this. For the cotton they cultivate today, the average

expenditure on seed is Rs. 800 per acre (two pouches costing Rs. 400 each). Pesticide sprayings cost another Rs. 1000 per acre making the total outlay per acre to be Rs. 1800. The average cotton yields are around 3 quintals per acre in this region. Now let us look at the economics of the Mahyco –Monsanto Bt varieties. These seeds are to be priced at Rs. 1600 per pouch. So the cost of seed will go up to Rs 3200 per acre. If pesticide use is reduced by half because of the Bt toxin, the cost of pesticide cost will go down to Rs. 500 per acre.

The promise of bumper yields is unlikely to materialise since Bt cotton has not been bred to confer a yield advantage but the advantage of disease resistance. The main reason yields will not go up in any significant way is because of the lack of water. So the economics of Mahyco- Monsanto's Bt cotton look very unfavourable for the farmer. A total outlay of Rs. 3700 (3200 for seed + 500 for pesticide) as against Rs. 1800 per acre in the old system..

In the Gujarat- Maharashtra cotton belt, farmers are reporting that due to heavy pest attacks this last season when they were cultivating the illegal Bt cotton supplied by Navbharat , they had to resort to frequent sprayings in their fields. Monsanto itself has been spraying several times in its experimental plots. The same farmers report no significant yield differences between Bt and non-Bt cotton. Add to this the additional cost of the expensive Bt seed and non- productive refuges amounting to 20 % of the land holding and you do not have to be a genius to figure out that Bt cotton is not going to be economically viable in most parts of India.

The economics of Bt cotton is all wrong but it is its irrelevance to our small farmer that is the crux of the resistance to its introduction here. There is anger at the lies and hypocrisy of the scientific and administrative establishment, which used the small farmer as the prop for promoting Monsanto's varieties saying these were crucial to help the impoverished farmers driven to suicides. The GEAC knew all along, as did everyone who understands the technology that this Bt cotton cannot work for most of the cotton belt and it certainly won't work for small farmers who form the bulk of the cultivators. The government is in the dock. It should be made to explain to the public who is pushing Monsanto's technology in this way. Which lobby is railroading India's GM policy?

ⁱ Sahai, S., (2002), Outlook, 3 June, pp 53