Bt Cotton in Karnataka

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Suman Sahai's field visit to Wardha to understand the problems of cotton farmers who are opting for Bt seeds is a good beginning to unravel the mysteries of GM crops like Bt cotton in India ('Bt Cotton: Confusion Prevails', *EPW*, May 25, 2002). The recently concluded flagship event Bangalore Bio 2002 has thrown several challenges for the Bt cotton crop and its performance in the farmer's field in Karnataka. Monsanto/Mahyco has been allowed by the Genetic Engineering Approval Committee (GEAC) of the government of India to sell commercial Bt cotton seeds MECH-12, MECH-162 and MECH-184 for three years from the current year's cotton sowing season. There is no price control on these Bt seeds and considering the monopoly of Mahyco, farmers would be paying through their nose to purchase them. This author posed several questions in the Bangalore Bio 2002 along with many others on the farmers' perception of Bt cotton and who is to answer their questions in their field situation. Crop scientists are all busy in laboratories and the farmers cannot come to them and seek answers for their cultivation decisions. Monsanto/Mahyco by its very nature of business, cannot do extension work for the benefit of farmers. Its job is to sell the seeds and be done with it. Pushpa M Bhargava, noted molecular scientist, has raised several questions on the trial conducted by Monsanto/Mahyco and the manner of approval accorded by the GEAC without doing a thorough risk assessment ('GMOs: Need for Appropriate Risk Assessment System', *EPW*, April 13, 2002).

This author went to Haveri district in Karnataka and interviewed farmers who were part of the trial run by Mahyco before getting GEAC approval. The farmers were silent spectators on their own fields and the Mahyco plant managers did all the record keeping without involving the farmers, who were given a shawl and a watch for accepting the Bt cotton trials in a grand luncheon gathering held in Davangeri! Basically, the farmers have questions on 'refugium', under which they have to grow non-Bt cotton within a distance of 20 metres of the Bt variety. This is to allow the bollworms to migrate to the non-Bt variety. In Bt variety the bollworms will not be completely eliminated, and their severity will be minimised at best, thus helping to reduce the cost on pesticides. Their holdings being small, they prefer to mix the crop with any other crop like sun hemp or vegetables to get a good return by mixed cropping. Scientists are divided on this 'refugium' and as the adage goes, if two doctors disagree the patient dies! In this case the farmer may die! Most of our farmers fall in the category of what is called low external input sustainable agriculture (LEISA) and high doses of external inputs like pesticides have already ruined the farmers. According to Kameshwar Rao, founder of the Bangalore-based Foundation for Biotechnology Awareness and Education, "If the refugium is a crop/species different from GM crop it functions as a virtual pollen sink as no intercrossing is possible. Vegetation surrounding a crop acts as a screen and prevents pollen from drifting away from the field. This purpose is served by any species that grows dense and is taller than the crop like sun hemp. If the refugium and the main crop are the same there will be intercrossing at the interface of the two varieties in both directions and the intended benefits of a considerable part of the GM crop are diluted by the intercrossing. It is not necessary that the refuge belt be formed of only cotton around a Bt cotton field. Even green manure sources like gliricidia and sun hemp will serve the purpose of a pollen sink around a GM crop."

The farmers I interviewed are not convinced of this refugium business. GEAC has mandated that Mahyco should sell along with Bt cotton seeds some non-Bt seeds and farmers are supposed to cultivate them. This is an absurd condition, and who is going to monitor it? The village accountants of the revenue department doing the crop inspection in the villages are not competent to do this. We now have elected village panchayats, for whom agriculture is a major concern. It is unfortunate that GEAC, sitting in New Delhi, has not thought of involving these gram panchayats. The zilla panchayats have an agriculture subcommittee and they should have been involved. Today in all economic reforms and the threat of new technologies invading the countryside, these local bodies have been kept out. Adoption of new agricultural technologies will have serious repercussions and those immediately affected, like the panchayats, have to be involved whether we like it or not.

The second issue is the cost and impact of Bt cotton cultivation on the cultivation cycle. At different stages of the crop maturity from sowing to flowering to final harvest, farmers are exposed to several risks. There is no crop insurance and many cotton growing farmers in Andhra Pradesh and Karnataka have committed suicide by drinking the same pesticides they were spraying on the pests. Bt cotton has the promise of reducing the pesticide cost as much as 70 per cent and this cost saving is a boon to cotton growers. But what the other risks are, nobody knows. Many commercial seeds in the early days of the green revolution failed in germination. The poor farmer had to face the effects. The Seeds Act has many loopholes. According to Bhargava, there is at present no organisation in India which would test on a reliable commercial basis whether a seed is Bt or not. According to present indications, only the farmers who were under the Mahyco trial would be given the Bt seeds for sowing at Rs 1,600 per packet, which would be sufficient for 1-2 acres. But what about other farmers who want to cultivate? They will buy smuggled Bt seeds as happened in Gujarat. Already there are reports that in Punjab – which was not taken up for Bt trials earlier – a seed company has promised to sell Bt seeds without the approval of GEAC. Thus the farmers will be exploited further and the GEAC is powerless to do anything to clear this imbroglio.

The government of Karnataka has fixed April 15-17 every year to hold its biotechnology showcasing in the state. This is a good thing to do because every biotech enterprise can prepare its 'showcasing' events accordingly. Will the 'Vision Group on Biotechnology' of the government of Karnataka arrange to 'showcase' the performance of Bt crop next year and will the farmers be provided a 'platform' to air the problems they would have encountered in cultivating Bt cotton? Many so-called farm leaders in Karnataka want to "steal the show against the Bt seeds" and Monsanto/ Mahyco will tell its side of the story and the real farmers are left high and dry. It is time to act on Bt cotton and "listen" to the farmers' version. The practising farmer – not the absentee farmer – is the best person to do the risk assessment of not just Bt cotton but all genetically modified crops. Why can't our plant scientists train the farmers to record the complete "site" and "sequence" of every genetic change that has occurred in the GMO, and assess the impact on ecology in controlled field trials? Farmers understand well but they may not be able to communicate in scientific terms.

When I was evaluating the water recharging work under the 'pani rokho' programme in Madhya Pradesh, I asked one farmer to show me proof of water recharge. He took me to a corner of his field and showed me the worms called 'mitrakeet' surfacing up from the ground because the water was touching them! There are different ways of understanding ecological factors and our scientists have to work with farmers to learn their version. In the early days of green revolution, farmers were involved with several types of adaptive research trials on their farms. In Tanjore, several paddy varieties were tried first on the farmers' field and then released commercially. From the beginning the trials were in public domain, unlike the GM seeds, which are not known to the public. India has a well-established network of ICAR research stations and network of home science colleges attached to agricultural universities. Sharat Chandra, a member of the Karnataka Vision Group of Biotechnology, bemoaned in the Bio2002 Conference about the lack of public education on biotechnology. This public education has to be done through the existing network of institutions established over the decades, instead of creating new ones. There was this 'lab to land' programme of the ICAR and then we have Krishi Vigyan Kendras all over the country. Why not use them to spread the message of modern and globalised agriculture involving biotechnology? Our institutions are sitting idle and the best way is to use them and make biotech enterprises to leverage with them. Only then will the benefits of biotechnology penetrate in the countryside. EPW

[Based on the author's presentation on GM Crops and Their Public Acceptance in the panel discussion in Bangalore Bio2002 held during April 15-17, 2002].