GM CROPS

A Vicious Attack on People

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In April last year, the Supreme Court, in response to a public interest litigation filed by Gene Campaign (whose convenor is the internationally known geneticist Dr Suman Sahai), directed the Genetic Engineering Approval Committee (GEAC) to consider the toxicity and allergenicity of Genetically Modified (GM) crops and to post the relevant material on the web so that independent experts could examine these. The Supreme Court asked the GEAC to study also the isolation distance of experimental fields to prevent contamination.

But in view of the virtual impossibility of preventing contamination, even the open field trials ought not to have been permitted. According to independent geneticists, the isolation distance needed to be both in time and space. The land on which the GM crop is to be grown should not sow a crop in the previous or the succeeding year. Cross-pollinating crops, unlike the self-pollinating ones, require isolation distance of three to four kms. The implementation of these requirements is impossible under Indian conditions. Farmers would not keep their lands fallow. Crops in adjoining fields are almost always planted up to the boundaries. The trials needed to be in greenhouses controlled by independent institutions.

Even the limited orders issued by the Supreme Court seem to have been violated. According to a report in the *Mail Today* of January 13 this year, the G M brinjal was released for large-scale cultivation by GEAC of the Ministry of Environment as early as October 14, 2009. Did the Indian public get the test results about the toxicity and allergenicity for public debate? How many field trials were conducted? What was the isolation distance in each of these trials?

If the agency/agencies which conducted these tests claim to have done proper tests, they should be able to give concrete answers to the following four questions.

—(i) In gene modification–whose other name is trans-genic engineering–the gene of the soil bacteria, bacillus thuringiensis, has been applied. This much is clear. But the infusion of this alien gene inevitably needed a vector to pierce the native barrier of the brinjal and to super-impose the bt. gene. This over-whelming of the brinjal's native barrier is possible only by a combination of infectious viruses, plasmids and transpoons. In the given trials, which combination of pathogens was used as the vector?

The UK-based science journal "Science in Society" has reported that globally, cauliflower mosaic virus (CaMv) was the first plant virus found suitable to drive the expression of foreign genes in transgenic plants so much so that it is present in all genetically modified crops commercially grown today. It has also reported that this virus is hazardous for its relationship to hepatitis-B virus and the even more dreaded HIV. If this CaMv finds way to human cell, it multiplies and activates a number of common viruses that cause diseases including cancer. Would the GMO introducing corporate bodies, then, be liable for compensating the victims of such pandemics and mass-scale malignancies caused by deliberately engineered poisoned foods?

(ii) Apart from the vector, some "marker gene", too, must have been used as the tag to identify, and select, the cells in the plant to successfully integrate the foreign gene into the genome of the target crop. In the given tests, which "marker genes" were used? Have these been publicized as per the Supreme Court's directive?

(iii) What are the remedial measures to control the effects of the toxins in the bodies of the consumers –humans and other animals?

(iv) Eminent geneticists abroad have pointed out that "the cellular mechanisms that enable the foreign genes to force-integrate into the genome can also mobilize these genes to jump out. These can also function as disintegrases. By jumping out, these can re-insert into other organisms by secondary, tertiary and quarternary horizontal transfers. What are the ways to prevent other organisms from being affected?

The Supreme Court appointed an observer (Dr Pushpa Bhargava) to the GEAC. Did he find the toxicity and allergenicity reports of the trials–and also of the isolation distances–acceptable? Which were the trial conducting agencies? Was it Mahyco, Monsanto's subsidiary, which is eager to propagate the GM seeds? Was it not a case of the proposer itself usurping the role of the examiner? Is that not analogous to the accused donning the mantle of the judge? What was the need for hurry in permitting the large-scale cultivation of GM seed for a food crop used for mass-scale human consumption?

Now that US corporations like Monsanto, Novartis are having to increasingly wind up their business in Europe due to the European people's resistance, the presumption becomes irresistible that they are trying to establish their markets in India and other countries of Asia, and further spread their wings in Africa. Is it to oblige them that Indian Ministry of Environment is making their own people the victims of slow deaths and long-suffering painful diseases?

This is not the concern of the Ministry of Environment alone. It is also the concern of the Ministry of Health, the Ministry of Rural Development, and the Ministry of Consumer Affairs. What do they say in the matter of GM foods? In this regime of infamous compartmen-talism, are they aware of how the GM seeds become impregnated with alien genes?

According to *Down to Earth*, the Delhi-based fortnightly published by the Centre for Science and Environment, the GEAC has also given approval for field trials of Bt rice, chickpea, groundnut, maize, mustard, watermelon, papaya, sorghum etc. "There are 238 varieties of 56 GM crops at different stages of trial. These include 41 food crops". Does this approval conform to the spirit of the Supreme Court order? Is it possible to examine the toxicity and allergenicity of so many GM crops on such a wide front simultaneously –and at such a short time? Will the Hon'ble Supreme Court suo motu take up these questions?

Reports have been appearing in international forums that in Argentina, communities all over the country have been suffering from the ill-effects of agro-toxins. The cattle population and other animals, too, have been suffering. A country which used to produce a surplus of varied and healthy foods for eight times its population, today has to import milk, lentils, peas, cotton etc, thanks to the lure of GM crops during the regime of Carlos Menem. Does India's Manmohan Singh government want to open the gate to the same kind of

destiny for India? And, will the Supreme Court helplessly watch this phenomenon?

In the USA, where the previous Bush Administration was giving unbridled rein to the profit-hunting, world-food-market-monopoly seeking GMO seed corporations, protests against this demonic business are now raising their heads. In April, 2009, the Union of Concerned Scientists (UCS) published a report “Failure to Yield” confirming that “after 20 years of research and 13 years of commercialization, GM crops have failed to increase yields” and that “traditional breeding outperforms genetic engineering hands down”. It has recommended “organic and sophisticated low-input farming practices”. In India, the coupling of vermiculture (earthworm culture) and chemical-avoiding organic farming has been yielding larger harvests than the so-called ‘green revolution’ could ever do. The principle that bounteousness lies in Nature-harmonic techniques is now re-asserting itself.

In the era of climate change, people need climate-friendly, organic, biodiverse agriculture. Biodiversity throws up newer and newer species and newer and newer varieties within each species to cope with the changing ecosystems. On the other hand, GM cropping is big businesses’ pseudo-science inimical to all principles of life sciences and disruptive of Nature’s speciation process, promotive of monoculture, and breeder of toxins. Organic, biodiverse agriculture is potential for plenitude. GM cropping is its nemesis. □□□