



BAN GMOs IN INDIA IMMEDIATELY

Genetically Modified [GM], also called Genetically Engineered [GE], seeds and foods are extreme health and environmental hazards yet this year 120 food crops were approved for release in March 2014 and additional 13 varieties in July 2014. In this paper, we briefly review regulation and approval process, recent researches and the geo politics of seeds. We further recommend nine specific steps, including complete ban on open field trials, to make India safe from this dangerous technology.

1. RECENT APPROVALS OF GMO SEEDS

India's Genetic Engineering Approval Committee [GEAC] approved en bloc 13 events including rice, potato, Brinjal and mustard in July 2014. GEAC is part of a three tier mechanism for granting approval for research and development activities on recombinant DNA products, environmental release of genetically engineered (GE) crops and monitoring and evaluation of research activities involving recombinant DNA technology has been established. These are:

- Institutional Biosafety Committees (IBSC) at the Institute/ company;
- The Review Committee on Genetic Manipulation (RCGM) in the Department of Biotechnology of the Ministry of Science and Technology; and
- the Genetic Engineering Approval Committee (GEAC) in the Ministry of Environment & Forests (**MoEF**)

When institutions and/or companies develop a new 'event' [type of seed] using biotechnology IBSC is required to conduct thorough biological safety studies and submit its findings to RCGM for a review. IBSC and RCGM reports are then submitted to GEAC for approval. However, the final decision to approve field trials or environmental release is vested in the cabinet minister heading **MoEF**. It is well known that biosafety studies by companies and even institutions are largely farcical. Both RCGM and GEAC members are packed with pro-industry scientists, even lobbyists.

Reliable sources confirm that Mr. Prakash Javadekar, Minister of Environment and Forests, has not given his consent. Recall two similar situations in the past when Mr. Jairam Ramesh refused to approve field trials of Bt Brinjal. Similarly Ms. Jayanti Natrajan also refused to approve rice, wheat, maize, cotton and sorghum crops for field trials stating that **granting approval would be improper** when a six-member Supreme Court-appointed Technical Expert Committee had called for an indefinite moratorium on field trials of GM crops over concerns about their long-term safety. Due to her strict adherence to the directions of the Supreme Court, she was replaced by Mr. Veerappa Moily in March 2014 who immediately approved 120 GM food crops. **These are in the open environment.** Mr. Prakash Javadekar has taken the same stand as Ms. Jayanti Natrajan. However, it remains to be seen if he will endorse GEAC decisions. The open field trials of the GM food crops approved by Mr. Veerappa Moily must also be stopped immediately.

Mr Prakash Javadekar should assure the people of India that he shall not allow open field trials and that he shall implement the directions of the Supreme Court and Parliament's Standing Committee on Agriculture. **It is his responsibility to strengthen the regulatory framework and discipline the regulators who have violated two important directions.**

2. REASONS FOR BANNING GMOs

There are many reasons why GMOs should be banned and not one scientifically validated reason why GMOs should be approved for open field trials or commercialisation. It may be noted that

- The Supreme Court appointed Technical Experts Committee [**TEC**] in its final report [July 2013] had strongly recommended that open field trials should not be allowed until stricter biosafety protocols are in place. [2] Such protocols are still not in place.
- In October 2012, the Parliamentary Standing Committee [**PSC**] on Agriculture in its 37th Report had recommended not to allow any GMOs in India until all biosafety protocols and safeguards are in place. A member of TEC immediately raised alarm at recent approvals and for allowing genetically engineered soybean oil import.[3]

Both **TEC and PSC** investigated the nature of GMOs, the imprecision and unpredictability of agricultural biotechnology and genetic engineering, adverse impacts on human and animal health from Bt toxin, glyphosate and other herbicides, and adverse changes in the nutritional composition of food and forage crops. Both looked into the adverse and irreversible environmental impacts including growth of super weeds, resistance of pests, changes in soil chemistry from the use of proprietary chemicals used with GM crops, loss of biodiversity, horizontal contamination in unrelated species, and contamination of natural crops from gene flow. Most importantly, they gathered evidences of false industry data on yield, field trial risks and adverse health impacts. Finally, they looked into the regulations, approval process, corporate ethics of large firms engaged in the business of bio-technology [Monsanto, Syngenta, Bayer, and Pioneer-DuPont, to name a few], corporate monopolies, impact on farmers income and consequential social impacts.

Both TEC and PSC separately, based on their own investigations, stressed the need to constitute an independent experts' body **to examine** the pros and cons of approving any open field trial and **to specify** protocols for biosafety study. In view of the fact that GEAC approved en bloc 13 events without adhering to the advisory of either the Standing Committee or that of the Supreme Court TEC, it begs a question, why the hurry when hard evidences show failure to increase yield, severe adverse health effects, nutrition deficiency and adverse environmental impacts? We briefly discuss main findings from recent independent studies.

Failure to increase yield: Dr. Doug Gurian-Sherman, 'first to evaluate in detail the overall, or aggregate, yield effect of GE after more than 20 years of research and 13 years of commercialization in the United States,' concluded that genetically engineered seed 'has done little to increase overall crop yields.' [4] It was known in India that Bt cotton does not increase operational yield as compared to non Bt organic and non Bt conventional cotton crops. The promise of reduced crop loss to pests also proved to be a lie.

GMOs induce infertility: A Russian study [2010] by Dr Alexander Surov proved that by the third generation the offspring were infertile. [5] It is known that many biotech seed firms are producing spermicidal corn seeds that are already in the market elsewhere.

GMOs cause vital organ failure and cancers: Seralini studies, first of its kind over the normal life cycle of rats showed massive malignancies and vital organ failure. The experimental rats he used have a life cycle of around 700 days. Up until the 90th day, his team did not observe problems with GMO fed rats. From the 90th day onwards, his team observed tumours. Now, 90th day out of 700 days is 12.85% of the life-cycle. Average human life span is about 80 years. So, if a person eats GM food now, the onset of severe and cataclysmic health impact would show after about 10 years. [6] Earlier, Dr Arpad Pusztai of Rowett Institute [UK, 1999] and Dr. Irina Ermakova [Russian Academy of Science, 2005] had also observed similar effect on vital organs of GMO fed experimental pups. These are exhaustive studies.

Glyphosate damages sperm quality: A recent study by CRIIGEN [Seralini group, 10th July 2014] shows that Roundup, the herbicide that is sold with Monsanto's GM seeds, damages sperms.[7] Monsanto's herbicide 'Roundup' is being sold all over India under different names.

GM foods are nutrition deficient: Scientifically validated evidence exist that GM foods are deficient in vital nutrients. GM soy, non-GM soy grown conventionally [using chemicals] and organic soy [with no chemicals] were tested. Organic soy was found to be far superior; GM Soy was found most nutrition deficient. The three sources of soy were tested on '35 different nutritional and elemental variables to characterize each soy sample.' [8][9]

GMOs are not equivalent to natural foods and major health hazard: Egyptian scientists carried out three studies and concluded that (a) GE foods were *not equivalent to natural foods*, (b) *GE diet caused significant changes in body and organ weight indicating toxicity*, and (c) histopathological examination showed *severe impairment to vital organs* and 'examination of the testes *revealed necrosis (death) and desquamation (shedding) of the spermatogonial cells that are the foundation of sperm cells and thus male fertility.*' [10]

GM seeds with co-products destroy soil quality and soil living matter. According to Dr Don Huber the chemicals associated with GM crops, particularly glyphosate, prevent crucial nutrient uptake by plants, a reason why animals fed GM crops can't reproduce. Dr. Prabhakaran Nair, an eminent Indian scientist, says they immobilise living soil. Effectively, GM crops and herbicides sold as joint products destroy soil quality and biota. [11] Scientists in India have also observed that wheat crop yield, after harvesting of cotton crop, is lowered by as much as 30% but this finding has not been released to the public.

It is for these reasons that 250 eminent scientists on 8th November, 2013 urgently requested the previous Prime Minister Manmohan Singh to stop such trials immediately.

On 3rd August, 2014, a group of scientists including Dr PM Bhargava, director of Centre for Cellular and Molecular Biology, Hyderabad, Dr Minoo Parabha, former Professor and Head of Bioscience Department, Veer Narmad, South Gujarat Unievrstity, Dr VS Vijayan, Former Chairman, Kerala State Biodiversity Board, Dr Dinesh Abrol, Professor, Centre for Studies in Science Policy, JNU, New Delhi, and Dr Tushar Chakraborty, Senior Scientist, Indian Institute of Chemical Biology, Kolkata, wrote to the present Prime Minister Mr. Narendra Modi to stop all open field trials.

3. CONSEQUENCES OF OPEN FIELD TRIAL

Open field trials contaminate non GMO crops. Many organic farmers all over the world have lost their certification from contamination which means GMO crops can't co-exist with non-GMO. GMO rice crops contaminate all rice crops within 2.87 kilometre radius in the first season from cross pollination and over 200 kilometre radius by the next season. New evidences have emerged suggesting that the entire global supply of rice **may have already been contaminated** by unapproved, genetically-modified (GM) rice varieties manufactured by multinational corporation Bayer CropScience. Monsanto's unapproved GM wheat has already contaminated North American wheat. A recent entry in the *GM Contamination Register* explains that between 2006 and 2007, three different varieties of illegal GM rice, **none of which ever approved for cultivation or consumption anywhere in the world**, were identified in more than 30 countries worldwide. [12] Bayer's responsibility for contaminating American rice was confirmed when it agreed to compensate the 11,000 affected American rice farmers to the extent of US\$750 million. [13] **The main point is that even if farmers and consumers win such law suits, the fact remains that contamination is intensifying over time and space.** Therefore, it is absolutely crucial that all field trials are stopped and decontamination measures taken up and hence India has real reason to completely ban open field trials of any GMO food, fiber, and feed crops.

While TEC and PSC were looking into all the shocking evidences, the most important issue about which we have not found any mention is that GM seeds are designed to collapse world agriculture and cause an unmanageable health and environmental disaster. Given the evidences quoted above, GMOs fall within the definition of weapons of mass destruction [WMDs]. Both TEC and PSC could have also looked at GMOs from the perspective of WMD because biological contamination is an established fact. Intensification of contamination over

time and space is also an established fact. Adverse effects on human and environmental health is also an established fact.

4. ADVERSE IMPACT ON INDIA'S EXPORTS OF AGRICULTURAL PRODUCE

Russia and the European Union are both major markets for Indian rice. It has been known since 2005 that American rice contamination was detected at Rotterdam port and the consignment was rejected. China has consistently rejected American corn on the same grounds. Russia has completely banned GM food crops with zero tolerance for any level of contamination. German farmers had to request the Government to allow increase of contamination level from 0.1% to 0.9% because they were finding it uneconomical to subject their produce to 0.1% level of contamination. Farmers have been ruined from GMO contamination even when they did not plant GM seeds.

Farmers have no control over illegal planting. There is no known mitigation measure for decontamination. Can Indian agriculture survive in the global agriculture trade? Given the evidence it can't, which means Indian farmers will lose huge overseas markets. Russia demands sovereign guarantee from Indian Government that its rice is GMO free. The rate at which contamination is on, can the Indian Government provide such guarantees?

5. GMO CONTAMINATED FOODS ARE ALREADY IN THE INDIAN MARKET

As far back as 2003, 31 food samples from selected food stores tested positive for GMO contamination because of lax controls at India's ports.

An argument proffered by the Government is that they have only approved fibre crop for commercialisation. Bt cotton is grown in all the nine cotton states. It is known that each tonne of cotton produces 2/3 tonne of seeds. Cotton seeds are used as edible oil and the residue is used as animal feed. It is also known that alien proteins used in genetic engineering remain intact even after processing. Once ingested, these alien proteins alter the composition of intestinal microflora and induce toxic reaction.

Recall that in Andhra Pradesh buffaloes grazing on harvested cotton fields died of extreme toxicity. Elsewhere, goats and sheep grazing on cotton fields have also died. They had eaten 100% GM feed crop. This is similar to a German farmer's experience: when Gottfried Glockner increased the feed to 100% GM, all his 70 cows died. Post mortem studies conducted by a well known toxicologist Dr. Angelika Hilbeck found that Syngenta's Bt-176 GMO corn was the cause and Bt toxins were present in stable form in all samples. [14]

6. GEO-POLITICS OF GMOs

The technology of genetic engineering of seeds is part of US Government's multifaceted strategy of total control over world's food system. Kissinger finalised the plan in 1974 targeting 13 countries including India, Pakistan and Bangladesh. By 1974 biological technology to alter natural genetic sequence was available and in 1979 the US Supreme Court allowed patenting of life forms, earlier denied. Thus genetically engineered seeds could be patented. It should be noted that the US Department of Agriculture [US-DoA] is a joint owner of the Terminator, seeds that can't germinate unless proprietary chemicals are added and these seeds self-destruct. GMOs and its more deadly form, the Terminator, are part of that global food control agenda.

The world believes that USA is technologically most advanced country and hence it is presumed that the US Government will never introduce a technology that is harmful to human and animal health and the environment. **This of course is a lie.** GM seeds and foods were introduced on a large scale in the US in early 1990s without proper biosafety studies. Review studies show loss of productivity, extreme environmental damage and a steep rise in all sorts of degenerative diseases in the USA. Over 75% of all processed foods sold in USA's superstores contain GMOs. Asians travelling to the USA with extended stay frequently fall seriously ill with allergies, diabetes, cardio-vascular diseases and cancers. It's

therefore not without reason that many countries have banned GMOs but are unable to contain contamination. Every year more contamination is detected in many more food crops. This is deliberate and pre-meditated act of the leading GM seed manufacturers.

7. MARKET POWER AND WEAPONIZATION OF FOOD

Just four multinational firms control nearly all Genetically Modified seeds globally. These are Monsanto [USA], Pioneer/DuPont [USA], Syngenta [Switzerland], and Bayer [Germany]. As on September 2013, US-DoA had approved over 7,800 varieties of seeds covering all major crops including forage crops like Alfalfa without biosafety studies. India has thus far approved just one GM crop which is cotton and that patented seed is controlled by Monsanto.

These four firms are cross-licensing proprietary germplasm and technologies. R&D efforts are coordinated to avoid litigation. These firms are also in agrochemicals and are consolidating market power for not just profiteering but to hold the world to ransom. Evidences clearly show that their seed and chemicals businesses do not offer any benefit to farmers and consumers. However, through collusion, their deals are getting smarter, bigger, and bolder. The financial power allows them to purchase political and bureaucratic support. They have even taken over the direction of India's agricultural research just as in USA and the European Union.

Since there is no labelling in countries where GMOs are approved as food, there can be no traceability. Evidence is based on traceability. Since there is no traceability, culpability for premeditated murder or genocide can't be established. Even the International Criminal Court is controlled by powerful western interests who protect these firms.

8. HOW TO PROTECT FARMERS AND CONSUMERS

While 29 states in India have banned GM seeds, that does not mean that illegal GMO planting has not been done. We have received credible reports from nearly all states of unapproved GM crops being grown. Hence, the following steps must be taken immediately.

- i. Recommendations of the Supreme Court appointed Technical Expert Committee must be enforced now.
- ii. Recommendations of Parliament's Standing 'Committee on Agriculture' 2012 [Report No 37] must be implemented now.
- iii. The Parliament and the people must be informed where Veerappa Moily approved 120 GM food crops are undergoing field trials. These open field trials must be stopped and all biological matter safely destroyed.
- iv. The Government should set up food testing labs and start testing all processed and raw foods, including edible oils, being sold in India. All ports and airports should have trained and equipped manpower to test all foods and if found contaminated be quarantined. The exporters, shippers, and agents involved in sending the consignment be heavily fined, if necessary imprisoned for life.
- v. Enforce strict labelling of GMO and non-GMO foods to protect consumers' health
- vi. Establish which seed manufacturers are selling unapproved GM seeds. They should be charged under EPA rules.
- vii. Entrust all ICAR institutions to start testing impacts on soil and contamination of related and unrelated species within their states/districts/areas of operations
- viii. Estimate the extent of GMO contamination from Bt cotton cultivation and post harvest Bt seeds co-products and by-products like cooking oil
- ix. Establish the economic and environmental damages from biotechnology to farmers, consumers and the environment and make these companies pay for cleaning up.

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ABOUT SEDEM

Society for Economic Development and Environmental Management, short name SEDEM, was founded in 1992, by a group of leading researchers. A tax-exempt institution, it has been engaged in research work, policy studies and developing radical technologies for food and nutrition security. So far it has completed over 200 complex studies sponsored by various Ministries, State Governments and the UN system. Members of SEDEM have over 175 papers to their credit published in journals of repute.

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