The Organic Farming Association of India

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To,
Shri Jairam Ramesh,
The Hon'ble Minister for Environment & Forests,
Ministry of Environment & Forests,
Government of India, Paryavaran Bhavan,
CGO Complex, Lodi Road
New Delhi 110003

Subj**: Objections to introduction of Genetically Modified Bt Brinjal in Indian agriculture; need for further testing of Bt Brinjal for possible toxicity to humans and animals as well as serious threat of contamination of gene pool and diversity of brinjals**.

Ref.: Genetic Engineering Approval Committee recommendation of 14 October, 2009.

Sir,

The Organic Farming Association of India, a registered society comprising organic farmers from all the states of India, is submitting in this written representation to you that it objects to the commercial cultivation of genetically modified Bt brinjal on the grounds set out further in this document. We therefore request you to reject the proposal of MAHYCO to introduce Bt brinjal as proposed. In the confirmed opinion of our association, the introduction of GM crops like Bt Brinjal is a wholly unnecessary compromise of the food sovereignty of this country.

We have considered the EC–II report based on which the Genetic Engineering Approval Committee (GEAC) has

recommended commercial scale introduction of Bt brinjal. In the view of the association, the following problems may be noted with the EC-II report:

1. **Contamination of native cultivars and reduction in biodiversity not considered:**

The issue of contamination and reduction of biodiversity in brinjal has not at all been considered by the expert committee. The focus of the discussion concerning contamination and gene flow in the EC-II report has been restricted to brinjal's wild relatives and the committee has ruled there is no ground for apprehension that such contamination will occur.

However, as farmers, we are intensely concerned with the contamination of cultivated non-Bt brinjal varieties. On this aspect the committee has expressed no opinion and neither have any experiments been conducted. The introduction of Bt brinjal would lead to contamination of the various cultivated varieties in several areas of the country. Some of these are indeed heirloom varieties which are well known and form the basis of unique local cuisines. The contamination of such varieties with the Bt gene would be wholly unacceptable. In fact the issue of introduction of Bt brinjal should not be discussed without a prior guarantee from MAHYCO that there will be no contamination of such cultivated varieties.

The Organic Farming Association of India works largely with organic seeds and heirloom varieties. As a community, almost every organic farmer involved in brinjal production would find his rights to preserve, use and multiply such heirloom varieties taken away by the introduction of Bt brinjal. The issue cannot be resolved by merely stating that adequate precautions are being imposed on the cultivation of such crops. The reliance on refugia, isolation tracks or artificial barriers is not found effective in any part of the world. In fact, no country has reported serious implementation of such measures. Closer home, in the state of Gujarat, one finds that not a single plot of Bt cotton is being grown keeping in mind adequate isolation of Bt varieties from non Bt varieties.

The EC-II reports that an isolation distance of 300 m has been used in the experiments knowing full well that 70% (EC-II's own figure) of brinjal farmers are small farmers who plant side by side and can maintain no buffer at all.

The Ministry is duty bound under the Biodiversity Conservation Act and the Farmers Varieties Act to ensure that reduction in biodiversity is not an intended or unintended effect of any of Government's policies. The introduction of Bt brinjal in areas where there are many cultivated varieties would ensure not only their contamination but in effect would destroy biodiversity absolutely as all the varieties would be reduced to a single variety in terms of commonality of privately owned Bt toxins. These aspects have not been considered by the GEAC in any of its deliberations and neither do we see any discussion of it in the EC-II report.

2. Appropriation and privatization of native cultivated varieties:

The second set of objections we are presenting to the introduction of Bt brinjal concerns the issue of appropriation of the cultivated varieties of various States for the purpose of creating the proprietary Bt brinjal. This aspect as well has not been considered by the GEAC and its sub committees. It is clear that the varieties used for the introduction of the Bt toxins are in many cases heirloom varieties which are within the common property ownership of the farming communities which have created them in the first place. To the best of our knowledge no agreement exists between these communities and any of the research laboratories for use of this germplasm for the purposes of insertion of the Bt toxins. In the opinion of the association this large scale misappropriation of germplasm for private profit needs to be closely examined from a legal standpoint. Unless it is resolved, all further experimentation on such varieties needs to be halted in the interest of protecting the biological wealth created by the farmers of this country and preventing piracy.

We are very much concerned that the genetic material being used is proprietary material. The Ministry is already aware of several cases filed by Monsanto against farmers in the US and Canada who have been found to be in unintended possession of proprietary genes because they were adjoining farmers using such proprietary genes and the pollen of such plants have

crossed the field boundary thus laying them upon to the charge of violating patent laws.

The Ministry therefore would be well to examine the implication of permitting large numbers of cultivated varieties being contaminated with Bt genetic material and possible claims being raised by MAHYCO in terms of payments for the use of such genes even when they were wholly unintended.

We draw the attention of the Ministry to the recent conflict between Monsanto and Argentina over Roundup Ready (RR) soya. RR soya is not patented in Argentina. Yet Monsanto attempted to persuade the Argentinian government to levy charges for use of its product. When the Argentinian government refused, Monsanto thereafter filed suits to seize stocks in several European countries where soya meal was being imported from Argentina on the grounds that it was a proprietary product since RR soya is patented in Europe.

Any government that does not see the writing on the wall in this respect should not be allowed the privilege to decide on such issues. It has no business to hand over the control over the food crops of the country in such a manner to foreign companies which are bound to use the TRIPs agreements under the WTO regime to claim property rights and payments.

3. Resistance to Bt Crops

The issue of resistance to Bt has also not been considered by GEAC. The extensive use of Bt crops is causing an acceleration of the proliferation of Bt resistant insects. The contamination of all the local varieties through Bt brinjal may cause widespread population of Bt resistant insects. To the members of the association, the ecological impact of this forseeable problem has not been considered by the GEAC. We are submitting three recent scientific studies that indicate building of resistance of insects to Bt varieties:

1. J.B.J. van Rensburg (2007) "First report of field resistance by the stem borer, Busseola fusca (Fuller) to Bt-transgenic maize" S. Afr. J. Plant Soil 24(3):147-151

2. Yang, Y. et al (2007) "Mutated Cadherin Alleles from a Field

Population of *Helicoverpa armigera* Confer Resistance to Bacillus thuringiensis Toxin Cry1Ac" APPLIED AND ENVIRONMENTAL MICROBIOLOGY 73(21): 6939–6944

3. Liu, F., et al (2008) "Resistance Allele Frequency to Bt Cotton in Field Populations of *Helicoverpa armigera* (Lepidoptera: Noctuidae) in China." J. Econ. Entomol. 101(3): 933-943

4. Impact on soil fauna

With respect to the accumulation and persistent of Bt protein and soil and its environmental impact the EC-II report states:

"The EC-II also evaluated the possibility of accumulation and persistence of Cry1Ac protein in soil where the Bt brinjal crop is likely to be grown repeatedly and plant residues such as roots are ploughed back into soil. It was noted that this important environmental concern has been assessed by measuring the level of Bt protein in soil samples. As mentioned above, the residual Cry1Ac protein is not detectable in any of the soil samples tested during as well as after the harvest of the crop. These results are consistent with the literature reports that the Bt protein is rapidly degraded in the soil and therefore, there is no accumulation of the protein in the soil associated with production of Bt brinjal. The half life of Cry1Ac protein has been reported to be 9.3 to 40 days depending on soil types as depicted in Box 3.3."

In our view, the EC-II report takes an overly sanguine approach to this issue, and ignores data showing that transgenic Bt plants decompose less in soil than non-Bt plants, creating the risk of depleting soil of important elements.

A recent study in the peer-reviewed scientific literature documenting this point:

S. Flores,et al. (June 2005) "Transgenic Bt plants decompose less in soil than non-Bt plants Soil Biology and Biochemistry, 37(6):1073:1082
http://dx.doi.org/10.1016/j.soilbio.2004.11.006

Bt plants are plants that have been genetically modified to express the insecticidal proteins (e.g. Cry1Ab, Cry1Ac, Cry3A)

from subspecies of the bacterium, Bacillus thuringiensis (Bt), to kill lepidopteran pests that feed on corn, rice, tobacco, canola, and cotton and coleopteran pests that feed on potato. The biomass of these transgenic Bt plants (Bt+) was decomposed less in soil than the biomass of their near-isogenic non-Bt plant counterparts (Bt-).

5. Human safety Trials

With respect to the protocol for conducting necessary biosafety tests on Bt Brinjal or any other GM crops several protocols are available. We are ready to supply these on request. However, we find that even these tests do not involve human trials as brinjal is one of the major vegetables being used in India. Human trials using Bt brinjal would not just be recommended but mandatory. This is because even in the non human trials and those trials which are limited to 90 days period there is already clear evidence emerging of differences between GM and Non GM varieties. In the absence of such tests, to subject the entire population of India to a product that is associated in the literature with several controversial medical issues (particularly allergies) etc., would be completely unjustified.

6. No need for Bt Brinjal

The brinjal fruit is available in large quantities at reasonable price throughout various production seasons in India. Crop and seed production are largely managed by Indian farmers at the household level without any external intervention. EC-II itself records that 70% of production is with small farmers. No one has alleged any crisis in brinjal production. Brinjal is available freely throughout the country at modest prices. Therefore there must be compelling reason why this country is being forced to consider introduction of genetically modified varieties in such circumstances.

The problem of insect infestation is not very complicated. The Fruit and Shoot Borer (FSB) lays its eggs in the fruit with a needle-like puncture of its ovipositor (the 'sting' of a bee). The egg hatches inside and the worm crawls out creating the exit hole. The 'damaged' fruit is absolutely safe to eat as it is unlikely to have been sprayed with insecticides. If the worm is still in the fruit, it can be physically removed by cutting the affected part. With

insecticides, one has the option to spray or not. With Bt brinjal, there is no choice. The poisonous proteins are an integral part of the plant and the crop.

The entire justification for the introduction of Bt brinjal is sourced to the Fruit and Shoot Borer. Example is given of pesticides use in Bangladesh where farmers are reported to be spraying the crop a total of 84 times. This is certainly not the case in India. The wholly misguided and pointless practices of brinjal farmers in Bangladesh should not be the reason for the introduction of Bt brinjal either in Bangladesh or India but it certainly justifies introducing Bangladesh farmers to good practices like NPM.

7. Better alternatives available to Bt use

In the state of Andhra Pradesh entire villages have been declared as pesticide free under the Non Pesticide Management (NPM) programme. The Society for Elimination of Rural Poverty (SERP) with hundreds of thousands of members in one state alone has shown that all crops can be grown in a pesticide free environment. Brinjal is a major vegetable crop grown and consumed throughout the state of Andhra Pradesh. Obviously it can be grown commercially and economically in an NPM region. The claims of the ABSP-II and GEAC that brinjal crops require large doses and frequent application of insecticides stands totally exposed by the success of NPM. This example can be replicated in other states with no adverse environmental consequences and without the need of biotechnology or foreign intervention as in the case of Bt brinjal. The NPM farmers in Andhra Pradesh have begun progressing towards organic farming which does not permit the use of genetically modified crops.

Organic farming has developed a crop mix and crop rotation that reduces pest incidence without the use of any synthetic chemicals. Organic cultivation of various crops including solanaceous crops like tomato, potato, brinjal and chilli have been demonstrated to be possible and economically viable. Environmentally friendly practices using botanical repellants, trap crops, light and pheromone traps have been demonstrated in the farmers' field by the farmers with very little external support. The government of India would do well to promote these practices instead of introducing Bt varieties of food crops with unknown consequences to man and his environment. The world

community is moving towards organic agriculture. Organic produce from India is exported to Europe and also to other countries with certification by various agencies created by importing countries. This has created an awareness among the farmers and producers in India of the value of such organic produce.

Recognizing this, the Government of India and states like Karnataka have created policies and dedicated budgets for the promotion of organic agriculture. Civil society and NGOs have come forward to promote organic farming as a way of life for the local communities in as much as it is good for the people in the importing countries. Organic farming prohibits the use of genetically modified organisms such as Bt cotton and Bt brinjal. When the government of India has embarked on a policy of promoting organic farming and has created budgetary provision besides setting up the National Centres for Organic Farming and Centres for Organic Farming in state agriculture universities, it would otherwise be unthinkable that the same government would also begin to promote genetically modified Bt brinjal. The policy for organic farming is antagonistic and opposite to the nascent policy for promotion of genetically modified crops. It is advisable for the government of India to stop and reconsider this internal contradiction and to promote only organic farming.

Bt Brinjal is a genetic modification of existing varieties of brinjal. The only addition to the genetic component of the known varieties is the Cry1Ac gene which produces a set of amino acids which are toxic to the fruit and shoot borer. The Bt brinjal is not claimed to produce higher yields than the variety from which it has been developed. The only difference between the normal plant and its Bt version is the presence of the gene that produces the poison in every cell of the modified brinjal plant. In fact, the Bt brinjal is the same as a normal brinjal sprayed with a formulation of the Bt bacteria. The difference between the two is that the farmer has the choice to spray the Bt formulation or not on a normal plant. Once he plants the Bt version, this choice is forever lost. The plant itself produces the poison which would otherwise have been optional for the farmers to spray or not. The external application of Bt is replaced by internal production by the genetically modified plant. The entire claim of reduction in pesticide use on the crop stands exposed except for the fact that no physical spraying is seen to be done and it is this internal

pesticide and its effect on human and animal health that is the cause of immediate concern.

The Agriculture Biotechnology Support Project–II is a USAID funded consortium that works in developing countries to promote GM crops under the guise of assisting these countries to make "informed" decisions. The agency appointed by ABSP-II in India as the regional coordinator for entire South Asia is Sathguru Management Consultants. This is a private company that liaises with the various departments of biotechnology in the state agriculture universities and the Indian Institute of Vegetable Research. The private interest in these government-aided institutions to promote genetically modified crops like Bt brinjal is obvious. It is a well known fact that private interests always have a profit motive even in philanthropy. This appears to be one such example in apparently making available information in these materials and funds to make "informed" choices. The ABSP-II project is actually promoting the adoption of Bt brinjal and hence, the choice of the people of India is being exercised by a consortium which is funded by a foreign country known to promote the causes of its corporate business houses. This is incompatible with the social objectives of a developing nation such as India, which is looked up to by other countries in the South Asian subcontinent. That the ABSP-II has set up its regional coordination office in India is an acknowledgment of India's preeminence in the region. The responsibility of the government of India is therefore greater.

We wish to submit that these are our principal objections to the commercial cultivation of Bt brinjal. We intend to make more submissions during the consultations being held by you in various cities of India.

Yours faithfully,

(Dr Claude Alvares)
Director
Central Secretariat