

product being developed by that very company. It also generates data on the basis of which RCGM and GEAC base their evaluation, as stated previously in this Report. This mechanism does not inspire confidence for obvious reasons. The Department of Biotechnology which is mandated with the promotion of bio-technology in the Country, funds various transgenics research projects and activities both in public, as well as, private sector companies. This funding is of a significant order. The transgenic products created through these projects and activities are then assessed and evaluated by an adjunct of DBT viz. RCGM. On top of it, the final approval for environmental/commercial release is granted by GEAC which is co-chaired by a DBT nominee. With the Chairman of GEAC as well as the Vice Chairman being civil servants, it is not very difficult to appreciate the primacy of DBT nominated co-Chair in GEAC in the decision making process. The Committee, inspite of DBT's protestations to the contrary, have strong reasons to agree with the opinion of several stakeholders that in a regulatory set-up where the promoter has an overwhelming say and presence in the regulatory mechanism, an element of subjectivity in assessment and evaluation is unavoidable. The entire system, therefore, reflects a pro-DBT/pro-industry tilt which is best avoided. Apart from this major shortcoming, the Committee's examination has revealed that the extant system is grossly inadequate and antiquated to face the typical challenges a population intensive,

agrarian economy like India poses when the question of introduction of such modern technologies in agriculture sector crops up.

8.120 The Government have been for some years now toying with the idea of a Biotechnology Regulatory Authority. The Committee feel that regulating biotechnology is too small a focus in the vast canvas of biodiversity, environment, human and livestock health, etc. and a multitude of other such related issues. They have, therefore, already recommended in a previous Chapter setting up of an all encompassing Bio-safety Authority through an act of Parliament, which is extensively discussed and debated amongst all stakeholders, before acquiring shape of the law. Unless and until such an authority is in place, any further movement in regard to transgenics in agriculture crops will obviously be fraught with unknown consequences. While there is a lot of apprehension about the safety of the technology, what is more worrying is the absence of any liability clause or mechanism in the system which could compensate the poor farmers and the consumers in the eventuality of crop loss and harm to bio-diversity health, environment, etc. With the various crop insurance schemes also not being of much help to a majority of farmers any prospective losses to the farmers due to cultivation of transgenic agricultural crops would have a crippling effects on their fortunes, reeling is they already are under severe agrarian crisis for years together now.

8.121 In such a situation the various players in the system of governance, who have some role or the other in the regulation, management, handling, oversight, distribution, consumer affairs, human health, livestock health, etc. have to shoulder the responsibility of ensuring that any potential harm or damages to the system are eliminated/controlled. However, as has been very clearly brought out in a previous Chapter most of the Ministries, Departments and other agencies of the Government who have to shoulder major responsibility, when the transgenic agricultural crops come into the system, are not at all ready to optimally perform their designated roles. In fact some of the Ministries/Departments have been revved into action only after the Committee took this subject for examination and interacted with them. FSSAI, which has to play the most important role in the scheme of things alongwith NBA is still grappling with teething troubles and is not in a position to deliver atleast for coming years. NBA and PPV & FRA, as has been brought out previously in the Report, are virtually non-existent. In such a scenario how the Government intends to deal with the effects of cultivation of transgenic crops outside containment defies logic.

8.122 On another plane, long term environment impact assessment and chronic toxicology studies of the effects of transgenic agriculture crops have not even been attempted till now. The Government are yet to take a final call on labeling. There is a

2. Creation of independent, neutral and credible public-sector research facilities that will undertake all safety related assessments related to genetic modifications.
3. Establishing agreed methodologies and assessment procedures to undertake socio-economic and communication analysis with regard to genetically modified crops and
4. Ensuring appropriate networking of relevant agencies working on various aspects of biotechnology with suitable re-mix of mandates and responsibilities supported by both flexible frameworks to operate and accountability to be responsible for decisions.

8.113 The Committee note that Biotechnology has made salutary contributions to the agriculture sector for decades together. Plant breeding, tissue culture, cropping practices, etc. are all practiced worldwide by farmers. Most of these biotechnologies are locally developed with local research support and have significantly contributed to the farmers well being. The Committee further note that in last two decades or so transgenics in agriculture crops is being propagated as the panacea for several ills besetting the agriculture sector. Several Ministries/ Departments/Agencies in their submissions before the Committee have expounded the virtues of this comparatively new technology. The Industry has also been very supportive of transgenics in agricultural crops. According to ICAR transgenic crops by nature are eco-friendly, sustainable and protective to environment and biodiversity; increase productivity,

complete lack of post market surveillance, as has been pointed out in one particular example of lacs of tons of Bt. cotton seed oil having gone into the food chain during last ten years without anybody in the Government being aware or concerned about it.

8.123 A major issue that has escaped the attention of the Government during all these years is question of ethics. In the extant social-cultural milieu, a serious thought requires to be given to the ethical dimensions of transgenics in agricultural crops. Even a miniscule degree of insensitivity on this matter can lead to avoidable discontent which apart from causing societal tensions would also have grave socio economic repercussions.

8.124 During their extensive interactions with farmers in the course of their Study Visits, the Committee have found there have been no significant socio-economic benefits to the farmers because of introduction of Bt. cotton. On the contrary, being a capital intensive agriculture practice, investments of the farmers have increased manifolds thus, exposing them to far greater risks due to massive indebtedness, which a vast majority of them can ill afford. Resultantly, after the euphoria of a few initial years, Bt. cotton cultivation has only added to the miseries of the small and marginal farmers who constitute more than 70% of the tillers in India.

8.125 The Rashtrapati in his maiden address in the Central Hall of Parliament on 25 July, 2012 observed 'trickle down theory do not

address the legitimate aspirations of the poor. We must lift those at the bottom so that poverty is erased from the dictionary of India'. In case of transgenics in agriculture crops in India, the experience of last decade has conclusively shown that while it has extensively benefitted the industry, as far as the lot of poor farmers is concerned, even the trickle down is not visible. The Committee, therefore, unanimously recommend that till all the concerns voiced in this Report are fully addressed and decisive action is taken by the Government with utmost promptitude, to put in place all regulatory, monitoring, oversight, surveillance and other structures, further research and development on transgenics in agricultural crops should only be done in strict containment and field trials under any garb should be discontinued forthwith.

NEW DELHI;
7 August, 2012
16 Shravana, 1934 (Saka)

BASUDEB ACHARIA
Chairman,
Committee on Agriculture

thereby, contributing to national food, feed and fibre-security, lower production costs, conserve bio-diversity as a land saving technology capable of higher productivity on a per unit land basis; efficiently utilize inputs such as fertilizers and water; increasing stability of production to lessen suffering during famines due to abiotic and biotic stresses, improving economic and social benefits, ensuring safer human health through reduction of chemical inputs in agriculture alongwith safer soil, water and food. The Department of Science and Technology have also recommended recombinant DNA technology as one of the breakthrough technologies like nuclear energy, super computers, etc. and have stated that such breakthrough technologies have revolutionary potential to bring paradigm shifts in the existing systems. Ministry of Environment and Forests, DBT, DHR/ICMR, GEAC have all supported transgenics/genetical engineering in agricultural crops, including the food crops more or less for the same reasons. All of these Ministries/Departments/Agencies have also assured the Committee that the assessment and evaluation protocols and regulatory mechanism in place are adequately robust albeit, they will need to be upgraded as the technology acquires more finesse. The Government have also cited the success of transgenics crops cultivation in countries like USA, Argentina, China, etc. as a justification for introducing transgenics in India. Locally, the substantial increase in the cultivation of Bt. Cotton during the last

decade or so has been showcased before the Committee as the measure of success. It is being said that the area under Bt. cotton cultivation has gone up from 24000 ha. in 2001 to 8 million ha. plus now. The Committee have also been informed by the Government that apart from production, productivity has also increased due to cultivation of Bt. cotton. The drop in usage of pesticide due to Bt. cotton cultivation is also being quoted as a plus point of the transgenics technology. The Government have also informed the Committee that Bt. cotton has not affected bio-diversity, is a sustainable crop and has improved the income of the farmers.

8.114 About the safety concerns, which are aplenty, transgenics being a comparatively new technology, the Government have told the Committee that no approval is granted to the transgenic crops unless these has been a thorough analysis of its effects on the environment, bio-diversity, bio-safety, human health and health of livestock and animals. The Government have also informed the Committee that safety and efficacy is evaluated by science based experimentation and analysis on a case by case basis and, therefore, cannot be generalized as these are product specific. Simultaneously, some of the Departments/Ministries/Agencies of the Government viz. DSIR/CSIR, Department of AYUSH, Department of Commerce, Department of Consumer Affairs, Department of Food and Public Distribution, National Biodiversity Authority and Food Safety Standards Authority of India have expressed their serious

concerns on various aspects relating to transgenics in agriculture crops. These pertain to effect on bio-diversity, safety and efficacy of the technology, sustainability, chronic toxicity, cost benefits analysis, human and livestock health, environment impact assessment, safety of GM food and food products, exports of food grains, etc.

8.115 The Committee also have had the benefit of well considered views of several other stakeholders from outside the Government. These views based on science, field experience, first hand observation, evaluation and assessment totally go against the views of the Government and build a strong case against transgenics in agriculture crops more particularly in food crops.

8.116 The Committee have critically analysed the evidence placed before them both for and against the transgenic agriculture crops. And pure science, within its restrictive realm, has not been the only benchmark of this analysis. Some of the most compelling concerns factored in by the Committee include India being one of the richest centres of bio-diversity, agriculture providing sustenance to almost 70% of rural populace, more than 70% of India's farmers being small and marginal farmers for whom agriculture is not a commercial venture but a way of life and a means of survival; food security and safety; manpower intensive nature of agriculture in India; the severe agrarian crisis afflicting the Country for years

now; 60 per cent of cultivated area still being rainfed; the irretrievability of transgenic crops once released in the environment; effects on environment, human health and livestock and animal health, to quote a few.

8.117 The experience of the Country with Bt. cotton shows that with the advent of the transgenic variants and the initial hype surrounding it, the traditional cotton varieties have just been wiped out. The Committee could very well sense the desperation of farmers of Vidharbha with whom they interacted during their Study Visit in March 2012, due to non-availability of traditional varieties of cotton. In spite of their best efforts, they are now not able to shift from transgenic cotton cultivation to cultivation of traditional and more farmer friendly varieties due to total non-availability of seeds. The Committee witnessed with their own eyes these serious disadvantages caused by the practice of monoculture. The National Bio-diversity Authority has further proved with concrete instances that transgenics affect bio-diversity in a big way. Several other stakeholders including eminent scientists, farmer's organization, etc. have also informed the Committee about the adverse and lasting impact of transgenic crops on bio-diversity. The Government's assertions that our bio-diversity will be safely stored in gene banks may be a museologist's delight but do not comfort the Committee a bit, as bio-diversity can only evolve further in nature and not in gene banks. It has also to be borne in mind that

India has a substantial stake in Nagoya Protocol on Access and Benefit sharing which will be affected adversely with any tinkering with our rich bio-diversity.

8.118 Coming to the aspect of food security, the Committee are more than convinced that there are better options available for increasing food production and productivity than transgenics technology about whose safety, sustainability and a host of issues of concern, the last word is still long long away. Most importantly, India today is not in the situation of desperation that was obtaining before the first Green Revolution. Hence any short cuts or desperate measures are not required to be experimented with. Integrated Pest Management, organic farming, bio-fertilisers, molecular breeding, increasing irrigation potential, minimizing post harvest crop losses, efficient and leak proof distribution system, etc. in the opinion of the Committee, are far more simpler, easy to do, sustainable, bio-diversity friendly options which also do not have any ill effects on human health and livestock and animal health.

8.119 While summing-up, the Committee would also like to comment further on the regulatory mechanism although it has already been dealt with in a separate Chapter in this Report. The Internal Bio-Safety Committee functions in the promoter company and performs all basic assessments and evaluations of a transgenic