

THE BT BRINJAL DEBATE - A FEW COMMENTS ON GM CROPS AND FARMERS' RIGHTS

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ABSTRACT

In India, currently, the crisis of biodiversity is also the crisis of democracy. It reflects a larger failure of the government to respond to the true interests of the people. This crisis is reflected in the massive public debate over the issue of Bt Brinjal, something that highlights the need for a new perspective on the laws governing farmers' rights, biodiversity and genetically modified organisms. The first part of this essay seeks to analyse the various scientific, ethical, economic and social problems associated with the spread of the cultivation of Bt Brinjal in particular, and of transgenic varieties in general. The second part focuses on two important issues that are inextricably linked- first, issue of farmers' rights, which include the right to traditional knowledge and plant varieties, storing of seeds, etc.; and second, the issue of ownership of food in India. This is of particular importance to a country where a majority of the population is still directly dependent on agriculture as a basis of their livelihood.

The issue also reflects an inherent conflict between the promotion of biotechnology, and the protection of farmers' interests. The authors disagree with the common perception that one has to choose between the two. A number of measures have been proposed to protect farmers' rights in a system which also promotes the development of biotechnology; which include, inter alia, subsidies, 'rewards' based on seed returns, and promotion of research in public institutions.

The authors have hypothesised a new precautionary principle in cases of genetically modified seeds, which imposes stricter liabilities and shifts the burden of proof upon the breeder. The final segment analyses India's apparent move towards the UPOV while examining the possible outcomes of the same, concluding that India's farming sector is not yet ready for such policy decisions and that the adoption of such a system will lead to a repetition of the Vidharbha Bt Cotton

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fiasco all over the country, opening channels for the transfer of wealth from farmers to breeders and loss in crucial biodiversity.

I. INTRODUCTION

Bt Brinjal is a transgenic species of the brinjal or eggplant family, created by artificial genome introduction or genetic engineering. It derives its name from the Bt gene (or the Cry1Ac toxin)¹ artificially introduced into the brinjal genome, which allegedly makes the plant resistant to certain pests like the Brinjal fruit and the shoot borer which is said to destroy over 40 percent of the crop every year. The creation of Bt Brinjal can be traced to the process of insertion of the Bt gene into a number of local varieties mainly from Karnataka, by introgressing.² It was adopted by Mahyco, a company based in Maharashtra; Monsanto, and the University of Agricultural Sciences, Dharwad.³ Some of the genetically modified varieties produced include the Malpur loca, Manjari gota, Kudachi local, Udupi local, Pabkavi local, and 112 GO.⁴ Mahyco had applied for the approval of two of its hybrid brinjal plants for commercialization, but the approval was stayed at the last moment by the Environment Ministry, and an indefinite moratorium declared, on mass protests by NGOs, citizens, and civil society over concerns regarding the safety of Bt Brinjal and its impacts on food security and farmers' rights.⁵

It is this issue and its wider implications which this essay endeavours to address. A few questions sought to be answered are: (a) Are genetically modified plants desirable from a social, economic and moral point of view? (b) What is the current legal position on genetically modified plants? (c) Are farmers' rights sufficiently protected by the current legal regime in India? and (d) What measures need be adopted to protect farmers' rights without stifling research and innovation in the field of plant varieties?

1 Also called the Cry1Ac protein. Arjula B. Reddy et. al, *Report of the Expert Committee (EC-II) on Bt Brinjal Event EE - 1*, Developed by Mahyco et. al, Submitted to the Genetic Engineering Approval Committee, October 8, 2009, at 11.

2 *Id.*

3 *Id.*, at 14, 39.

4 Bhagrath Chaudhary and Kadambini Gaur, *The Development and Regulation of Bt Brinjal in India*, ISAAA Brief No. 38. ISAAA: Ithaca, NY, 48.

5 See the submissions of the Environment Support Group in this matter, available at <http://www.esgindia.org/sites/default/files/campaigns/brinjal/press/esg-karbioboard-btbrinjal-petition-12021.pdf>. (Last visited April 21, 2013)

The first chapter introduces the essay topic. The second chapter gives details of the problems on hand and encapsulates the relevant laws, both Indian and International, used in our analysis. The third chapter is oriented towards understanding and dissecting the problem and analysing what remains. A few suggestions have been put forth towards the end. The fourth chapter concludes the essay, answering the research questions.

II. ISSUES AND PROBLEMS

2.1. The Current Situation

The advancement in biotechnology and the creation of the Bt Brinjal has brought to the forefront a host of issues related to biodiversity, protection of plant varieties and traditional knowledge, and farmers' rights. The debate over Bt Brinjal is, hence, in a way *not specifically* about Bt Brinjal alone anymore. The debate has now assumed larger dimensions and encompasses greater problems relating to the use of bio-engineered plants. There are, consequently, *two* primary concerns related to artificially developed varieties:

- (a) Technological and economic: whether such plants will be safe, economically viable and so on.
- (b) Socio-political⁶: this consists of a number of questions, which hinge on the crucial issue of - Who controls Indian agriculture and, food security in India?

The first concern is the more commonly highlighted concern relating to the various negative effects that GM crops have upon the health of consumers relating to the ingestion of the toxin that makes Bt Brinjal, for example, and the inability of studies to conclusively rule out long-term side effects of such toxins. Economically, the concern is that these crops might not actually be profitable to farmers in the country, and force more economically viable domestic crops out of the ecosystem.

This brings us to the second concern⁷: especially since most GM crops are developed by foreign companies with vested interests in continued profits, GM

6 The socio-political concerns are considered by many critics to be far more vital than the technological concerns. See Prabir Purkayastha & Satyajit Rath, *Bt Brinjal: Need to Refocus the Debate*, Economic & Political Weekly, May 15, 2010, at 42.

7 Something that has not received as much media attention as the first one largely because it relates more to farmers, as opposed to the middle class that forms the large majority of news consumers, who are concerned more with the health impacts of Bt Brinjal, for example.

crops can make the self-sustaining Indian farmer dependent upon foreign multinationals.⁸ This can have serious repercussions on the issue of people having control over the food they produce, and on food security and food sovereignty⁹ in the country. There is little point in food security at the cost of food sovereignty i.e. control over one's food resources, as the food security can be snatched away anytime without the support of strong mechanisms to ensure social control over food resources.¹⁰

2.2. The Laws

This part of the essay seeks to state and understand the current position in the law concerning Bt Brinjal. For this purpose, the issue has been split into two components: Biodiversity Laws (related to technological and economic concerns) and Farmers' Rights (related to socio-political concerns). In both parts, the position in international law has been analysed owing to the reason that many of the laws in India in this field are derived from, or drafted in accordance with international obligations.¹¹

2.2.1. Biodiversity Laws

2.2.1.1. *International Law*

International Law is by and large known to follow a rights-based approach when it comes to dealing with issues related to biodiversity. Given the far-reaching implications on a variety of rights- including but not limited to, the right to environment, right to health, right to equal share in profits, and the right to

8 This is especially problematic because of the tendency of GM crops to even contaminate the crops of farmers not using such crops. See Section 3.1. of this essay for more details on this.

9 Food sovereignty is the ability to *control* the food resources of the nation, as opposed to food security, which merely means that one *produces* enough food to feed the populace, irrespective of the mechanisms of control which might put all that food into the hands of a powerful interest group, for example. See Raj Patel, *What Does Food Sovereignty Look Like?*, The Journal of Peasant Studies, Vol. 36, No. 3, 663–706 (July 2009).

10 *Id.*, at 665.

11 The following laws are illustrative of this statement: Biodiversity Act, 2002 (in conformity with the Convention on Biological Diversity); the Indian Patents Act, 1970 and the Protection of Plant Varieties and Farmers' Rights Act, 2001 (in conformity with the Agreement on the Trade Related Aspects of Intellectual Property Rights).

information- that this subject involves, this article deliberates on the specific conventions dealing with the subject matter of this essay.

Biodiversity conventions deal with a spectrum of rights pertaining to the capacity of developing countries to have access to and control over biological resources and the finance, technology and markets etc. relating to these resources.¹² By far, the most important convention in this respect is the 1992 United Nations Convention on Biological Diversity (or CBD)¹³ that was negotiated at Rio de Janeiro at the United Nations Conference on Environment and Development (UNCED), and to which 193 nations are party.¹⁴ The CBD reiterates the sovereign rights of states on their biological resources.¹⁵ The purpose of the convention was to elaborate strategies and measures to halt and reverse the effects of environmental degradation and to promote sustainable development.¹⁶ What is notable, however, is the lack of an implementation mechanism, or even an overseeing authority. Implementation provisions are few and far between, being largely based on 'reciprocity',¹⁷ 'subject to mutual agreement',¹⁸ and so on. This is in high contrast to the strong implementation procedures and watchdog mechanisms in the World Trade Organization, highlighting the comparative non-importance associated with this particular convention. It is widely agreed upon that this is due to a number of factors, which include the interests of developed nations, corporate interests, and neo-capitalism.¹⁹

12 Shalini Bhutani & Ashish Kothari, *The Biodiversity Rights of Developing Nations: A Perspective from India*, 32 Golden Gate U.L.R 600 (2002).

13 Convention on Biological Diversity, June 5, 1992 [hereinafter CBD], 1760 U.N.T.S. 79, available at http://treaties.un.org/doc/Treaties/1992/06/19920605%2008-44%20PM/Ch_XXVII_08p.pdf (Last visited April 21, 2013).

14 CBD, National Information, *List of Parties*, <http://www.cbd.int/information/parties.shtml> (Last visited April 21, 2013).

15 See CBD, Preamble.

16 *Ibid.*

17 CBD, Article 14.

18 *Id.*, Article 18.

19 This arises from the normative conflict between the International Trade and Human Rights regimes, respectively. The relatively strict mechanisms of the WTO Dispute Settlement Mechanism, for example, contrast heavily with the mechanisms available for the enforcement of Human Rights Law. See Frank J. Garcia, *The Global Market and Human Rights: Trading Away the Human Rights Principle*, Brooklyn Journal of International Law, Vol. 51, No. 1, 51-56 (1999).

Apart from the United Nations CBD, Agenda 21 on *Recognizing and Strengthening the Role of Indigenous People and Their Communities*, adopted at the same conference (i.e., the UNCED), emphasises that indigenous peoples have a vital role to play in environmental management and development because of traditional knowledge and practices.²⁰ It recognizes such rights as inherent in the larger 'right to development.'²¹

Other than providing principles for adaptation and use by various courts and legislatures, these 'laws' have largely failed to make any substantial change. This failure is very aptly summarized in the words of former U.N. Secretary General, Mr. Kofi Annan: "*Ten years ago at the Earth Summit in Rio de Janeiro, Governments committed themselves to a transformation... But commitments alone have proved insufficient to the task. We have not yet fully integrated the economic, social and environmental pillars of development, nor have we made enough of a break with the unsustainable practices that have led to the current predicament.*"²²

2.2.1.2. India

India's current position in law on the Bt Brinjal issue stems from two primary sources- first, international treaties and obligations and second, the Constitution. There are a number of legislations relating to environmental matters like the Indian Forest Act, 1980, the Environment Protection Act, 1986, the Forest Dwellers' Act, and so on. But the most significant for the purpose of this article is the Biological Diversity Act, 2002.

The Biological Diversity Act in India very closely follows the provisions of the Convention on Biodiversity. The Preamble of the Act states that it is an '*act to provide for conservation of biological diversity, sustainable use of its components and fair and equitable sharing of the benefits arising out of the use of biological*

20 UNEP, Agenda 21, Article 26, available at <http://www.unep.org/Documents.Multilingual/Default.asp?documentid=52> (Last visited April 21, 2013).

21 The Right to Development is a compendium of many sub-rights relating to development and capacity-building. See Arjun Sengupta, *The Right to Development as a Human Right*, Economic and Political Weekly, July 7, 2001, Vol. XXXVI, No. 27, at 2527.

22 World Summit on Sustainable Development, Report 2002, <http://www.johannesburgsummit.org/html/brochure/brochure12.pdf> (Last visited December 26, 2012)

*resources, knowledge and for matters connected therewith or incidental thereto.*²³

The focal provision in issue in the current case is Section 3 which makes it compulsory for any non-Indian seeking to obtain any biological resource to get the approval of the National Biodiversity Authority (hereinafter the NBA) for the same.²⁴ Section 4 further lays down that no person shall transfer the results of any research relating to any biological resource in India ‘*for monetary consideration or otherwise*’,²⁵ to any non-Indian person or corporation. Section 5 provides an exemption to the application of Sections 3 and 4, stating that these provisions shall not apply to ‘*collaborative research projects involving transfer or exchange of biological resources or information relating thereto between institutions*’,²⁶ which conform to policy guidelines and are approved by the Central Government. Section 7 prohibits the obtaining of any biological resource for commercial utilization without informing the State Biodiversity Board.²⁷ Section 21 mandates the NBA to ensure the equitable sharing of benefits, joint ownership, and so on.²⁸ Section 24 gives the NBA the power to prohibit or restrict any activity if it thinks such activity to be detrimental to biodiversity or equitable sharing of benefits.²⁹

Keeping the Biodiversity Act aside, another noteworthy legal provision relates to the Panchayati Raj, introduced (or rather, recognized) via the Constitutional Amendment in 1992. It is important in as much as it has the potential to empower local village communities to make decisions regarding their natural resources, and consequentially, on issues such as biodiversity and Bt Brinjal. However, it is important to note here that mere consultation does not amount to participation. What is desired is a more wholesome democratic process, similar to Amartya Sen’s participatory democracy, to strengthen local communes.

2.2.2. Rights of Farmers and Breeders

There exists a major difficulty with understanding the position in international law owing to the vast number of agreements and conventions which

23 Biological Diversity Act, 2002 (No. 18 of 2003), Preamble.

24 *Ibid*, Section 3.

25 *Id.*, Section 4.

26 *Id.*, Section 5.

27 *Id.*, Section 7.

28 *Id.*, Section 21.

29 *Id.*, Section 24.

present themselves with *prima facie* inconsistencies if attempted to be understood as a whole. Therefore, for ease of understanding, a twin pronged approach may be adopted. This bifurcation focuses on identifying the issue in terms of two *regimes* or poles:

- (a) The pro-breeder regime spearheaded by the WTO and developed nations; and
- (b) The pro-farmer regime spearheaded by the developing nations.

A recognition of the position in International law as essentially a *conflict* between these two parties gives greater clarity as to what the position is both in India and in the broader international context.

The source of both these regimes is essentially the Agreement on Trade-Related Aspects of Intellectual Property Rights³⁰ and more specifically, Articles 27.3 (b) and 27.2 (b).³¹ Article 27.2 (b) of the TRIPS Agreement excludes “*plants and animals other than micro-organisms*” from patentability.³² However, member countries are required to provide “*for the protection of plant varieties by patents or by an effective sui generis system or by any combination thereof.*”³³ This divergence is what has essentially defined the conflict between the two opposing parties. Article 27.3 (b) of the TRIPS led to the formation of the *Union Internationale pour la Protection des Obtentions Végétales* (UPOV)³⁴ or the International Union for the Protection of New Varieties of Plants in 1961, which represented the consensus among five European countries³⁵ on how to introduce Plant Breeders’ Rights (PBRs).³⁶

30 Agreement on Trade-Related Aspects of Intellectual Property Rights, April 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, THE LEGAL TEXTS: THE RESULTS OF THE URUGUAY ROUND OF MULTILATERAL TRADE NEGOTIATIONS 320 (1999), 1869 U.N.T.S. 299, 33 I.L.M. 1197 (1994) [hereinafter TRIPS Agreement].

31 Cristoph Antons, *Sui Generis Protection For Plant Varieties And Traditional Knowledge In Biodiversity And Agriculture: The International Framework And National Approaches In The Philippines And India*, 6 Indian J. L. & Tech. 89 (2010).

32 M.S. Swaminathan, *Farmers’ Rights and Plant Genetic Resources*, Biotechnology and Development Monitor, No. 36, 7 (1998).

33 TRIPS Agreement, Article 27.3(b).

34 The International Union for the Protection of New Varieties of Plants Convention now has 71 members. See UPOV, Membership, <http://www.upov.int/members/en/> (Last visited April 21, 2013).

35 All developed countries and hence, pro-breeder.

36 Rachitta Priyanka, *UPOV and Rights of Farmers – An Indian Perspective*, National Law Institute University, Bhopal, (unpublished manuscript on record with authors).

India, at least initially, gave preference to the sui-generis system over the patent protection system.³⁷ In pursuance of this, India enacted the Protection of Plant Varieties and Farmers' Rights Act which sought to protect breeders' rights (but in a diluted form), recognizing parallel and competing farmers' rights at the same time.³⁸ However, this Act did not come into force as it was not notified by the Central Government as per Section 1(3) of the Act.³⁹ On the other hand, the Government has reportedly taken a decision⁴⁰ to join the UPOV, and a petition in the Delhi High Court challenging the same has been rejected.⁴¹ What becomes apparent from this situation is the hypocrisy within the government itself.

Moving on to an analysis of the provisions of the UPOV representing the pro-breeder party- There are two Acts of the UPOV; first, the Act of 1978, which was less breeder friendly and second, the Act of 1991, which took into account breeders' interests to a greater extent. We shall be analyzing the 1991 Act presently. The pro-breeder nature of the Act is evident from Article 2, which mandates that each state shall "*grant and protect breeders' rights.*"⁴² A breeder is defined as "*the person who bred, or discovered and developed, a variety.*"⁴³ Any new member to the Union is required to provide immediate protection to at least 15 varieties, and within ten years, to all varieties.⁴⁴

A new variety is defined as a variety that is new, distinct, uniform and stable.⁴⁵ Article 14 provides for an exhaustive list of breeders' rights which include, the requirement of his authorization in the cases of production or reproduction (multiplication), conditioning for the purpose of propagation, offering for sale, selling or other marketing, exporting, and importing of the plant variety.⁴⁶ It further

37 The Indian Patents Act, No. 39 of 1970, Section 3.

38 Vasudha J. Mehta, *UPOV, India and the World – Common Knowledge and Uncommon Wisdom*, ALG India Law Offices, www.algindia.com/publication/article2300.pdf (Last visited April 21, 2013).

39 *Ibid.*

40 *Government Decision to Join UPOV Criticised*, The Times of India, June 7, 2002, available at <http://timesofindia.indiatimes.com/india/Govt-decision-to-join-UPOV-criticised/articleshow/12203841.cms> (Last visited April 21, 2013).

41 Order dated 5.5.2004 in WP (C) 6428/2002.

42 International Convention for The Protection Of New Varieties Of Plants, March 19, 1991 [hereinafter UPOV, 1991], Article 2.

43 *Id.*, Article 1(iv).

44 *Id.*, Article 3.

45 *Id.*, Article 5.

46 *Id.*, Article 14(1).

specifies that even plants created from an *'unauthorized use'*⁴⁷ of the variety cannot be used except with the permission of the breeder.

Article 15 encompasses some exceptions to breeders' rights in the form of use of the variety for non-commercial or experimental purposes.⁴⁸ Article 15(2) permits farmers to *"use for propagating purposes, on their own holdings, the product of the harvest which they have obtained by planting, on their own holdings, the protected variety."*⁴⁹ Article 16 defines the limits of the breeders' rights by prohibiting the sale of propagating material *to any country not signatory* to the Convention. Other provisions include the time limit for protection,⁵⁰ restrictions and equal remuneration⁵¹ and so on.

On the same plain, in India we have the Protection of Plant Varieties and Farmers' Rights (PPVFR) Act, 2001. This Act (which has effectively been annulled by the Government's decision to join the UPOV) was designed to be in conformity with India's TRIPS obligations and also derived support from the general thrust and declaratory provisions of some international treaties and materials.⁵² It claims to be an Act *"to provide for the establishment of an effective system for protection of plant varieties, the rights of farmers and plant breeders and to encourage the development of new varieties of plants."*⁵³

In the area of rights granted to farmers and exceptions thereby made to the rights of plant-breeders, it has very few peers. It defines farmers⁵⁴ as:

- (i) self-cultivators or direct supervisors of cultivation; and
- (ii) someone who tends (conserves, preserves or adds value through selection and identification) of wild species and traditional varieties of plants.

47 *Id.*, Article 14(2).

48 *Id.*, Article 15.

49 *Id.*, Article 15(2).

50 *Id.*, Article 19.

51 *Id.*, Article 17.

52 Some of the international treaties and materials include The International Treaty on Plant Genetic Resources For Food and Agriculture (FAO), Convention on Biodiversity, The OAU (Organization for African Unity) Model Law for the Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources.

53 Protection of Plant Varieties and Farmers' Rights Act, No. 53 of 2001 [hereinafter PPVFR Act], Preamble.

54 *Id.*, Section 2(k).

If a variety has been traditionally cultivated by farmers or is a wild relative or land race of a variety about which farmers possess common knowledge, it is a farmers' variety.⁵⁵ This provision further calls for an authority to do the needful without active prosecution of a claim as by a business-motivated breeder. A breeder is defined as someone who has '*bred or evolved or developed any variety.*'⁵⁶ A discoverer of a natural variety is excluded from the purview of this definition. However, the definition of breeder is not restricted to a '*person*', but includes a *farmer, 'group of persons or farmers,'* or an *institution.*⁵⁷

The PPVFR Act provides for the registration of all farmers' varieties.⁵⁸ The most striking feature of the Act is the codification of farmers' rights.⁵⁹ These include the rights to save, use, sow, resow, exchange, share or sell produce including seed of a variety protected. Further, Section 39 (2) provides that a breeder shall give compensation to any farmer when the propagating material fails to provide the promised performance. The rights of communities are enlisted in Section 41. It allows any person or group of persons, including NGOs, to apply for a share of the benefits where such community has contributed to the evolution of the particular variety. The breeder is under an obligation to pay the appropriate compensation⁶⁰ to such local communities or farmers who have helped in the preservation or evolution of such varieties, and this amount is required to be deposited in the National Gene Fund constituted for this purpose, from whence it shall be distributed to the appropriate community/farmers.

In addition to these protections, The Seeds Bill, 2004 has been drafted for the purpose of regulation of seeds, and is similar to the Plant Varieties and Farmers' Rights Act in terms of protection to farmers.⁶¹

55 *Id.*, Section 2(l).

56 *Id.*, Section 2(c).

57 *Id.*

58 *Id.*, Section 39(1)(ii).

59 *Id.*, Section 39.

60 *Id.*, Sections 41, 43, 45, 26.

61 The Seeds Bill, 2004, Sections 25 & 43.

III. BREAK DOWN OF THE ISSUE

3.1. Understanding the Problem

More than two-thirds of the population of India is based on agriculture,⁶² and consequentially is directly dependent on natural resources and plants for livelihood and sustenance. The significance of the fact that the remaining one-third of the population is also dependant on these two-third for food and other services (like cheap labour, keeping inflation in check etc.), cannot be stressed enough.

Understanding the economics of a particular issue is crucial to deliberations on the same. For this purpose, what is required is a scrutiny of the overall macro and micro economic impact of the possible use of Bt Brinjal, and not just a mere simplistic cost-benefit analyses advocated by multinational corporations., Such an analysis would be impossible without a comparison between the use of traditional seeds versus the use of the proposed variety. Traditional seeds are particularly adapted to local conditions, and even though they may have a lower output, they need not rely on as intensive an application of pesticides and fertilizers as Bt crops. Further, despite the low produce, there are less chances that the farmers will take on debts because the seeds they use are nearly free. Noteworthy in this particular regard is the analysis made by students of a top national law university in India-NLSIU, Bangalore, on the causes of farmers' suicides in India.⁶³ In their report, a strange concurrence was noted between suicide rates and the use of Bt Cotton in the region. It was noticed that, whereas erstwhile produce was low, there was however, no reason for debts because of the availability of seeds. After Bt Cotton, farmers had to take out loans for the seeds, causing rural indebtedness. Time and evolution also saw new resistant pests introduced into the environment. The sum of all factors led to the Vidarbha tragedy,⁶⁴ the effects of which are still felt.

62 National Commission on Enterprises in the Unorganized Sector, *The Challenge of Employment in India: An Informal Economy Perspective*, Report No. 10, 2009 [hereinafter NCIOS Report], at 231, available at http://dcmsme.gov.in/The_Challenge_of_Employment_in_India.pdf (Last visited April 21, 2013).

63 Kamath, Nandan *et. al*, *The Plight of Farmers in Bidar*, National Law School University of India, Bangalore (1998) (unpublished manuscript on record with authors).

64 The Vidarbha crisis is probably one of the most documented and tragic examples of the havoc to farmers that GM-crops can cause. Farmers in Vidarbha were amongst the first to use Bt Cotton, a GM crop touted to revolutionise cotton farming, with claims of drastically increased yields and resistance to pesticides. However, a few years of use has left the region in the throes of a crisis, with over 250,000 farmers reported to have committed suicide due to a host of problems intrinsically related to Bt Cotton,

Another concern is that the wide use of transgenics in agriculture reduces the diversity of the species available in the gene pool.⁶⁵ This argument is simple. When one introduces a common, supposedly high-yielding variety of a plant into the market, all farmers switch to that and eventually this reduces the use of the region-specific plant. Even if most farmers do not switch to the new variety, the local variety gets corrupted and eventually destroyed due to cross-pollination with the alien species.

The green revolution has often been criticised due to this particular fallacy as well, because, though it led to increased produce, it also led to the loss of biodiversity and the replacement of local varieties with high-yielding, and high water and pesticide-consuming varieties. This is probably why it has been noticed that, in Kerala, many local varieties of rice have nearly gone extinct. For instance, a certain species of rice, called 'njavara' used to be grown in Kerala. This particular variety of rice is known to have numerous medicinal qualities and is even effective at combating carcinogens.⁶⁶ After the green revolution, with the introduction of transgenic varieties, this species has all but disappeared, causing a heavy loss to society and the local populace.

The perpetual problem of the current predicament is the imbalance between corporations who advocate transgenic crops and farmers, on the one hand; and non-cooperative governments, on the other hand. With the government either unwilling or unable to protect the farmers (as is apparent in the inaction of the NBA in the current Bt Brinjal fiasco),⁶⁷ the negotiations are doomed to lead to inequitable results. It is strange indeed that the government policy, i.e., the National Agriculture Policy of 2000, remarks that the situation for Indian farmers

especially the loss of control over seeds, and the high investment that Bt Cotton requires in terms of pesticide use and purchasing seeds on the market. See P. Sainath, *Men of Letters, Unmoved Readers*, The Hindu, May 5, 2010, available at <http://www.thehindu.com/opinion/columns/sainath/men-of-letters-unmoved-readers/article422651.ece> (Last visited April 21, 2013).

65 See generally, Maria Alice Garcia and Miguel A. Altieri, *Transgenic Crops: Implications for Biodiversity and Sustainable Agriculture*, Bulletin of Science, Technology & Society, Vol. 25, No. 4, 335-353 (August 2005).

66 *Njavara rice facing extinction*, The Hindu, December 21, 2007, <http://www.hindu.com/2007/12/21/stories/2007122152740300.htm> (Last visited April 21, 2013).

67 The probe against various agribusinesses and universities in this matter began in June 2010. No concrete steps have been taken in furtherance of prosecution as the NBA has only signalled its intent to begin proceedings. See Priscilla Jebaraj, *NBA to take action against Bt Brinjal biopiracy*, The Hindu, August 10, 2011, <http://www.thehindu.com/news/national/article2340768.ece> (Last visited April 21, 2013).

would deteriorate with globalization and the invasion of the Intellectual Property Regime, but at the same time advocates that agribusiness should be encouraged.

3.2. Farmers' Rights and UPOV

As noted above, it is interesting to analyze the laws regarding farmers' rights in terms of two camps i.e. pro-breeders and pro-farmers. India is a peculiar case-in-point, reflecting the influence of both camps-The Indian legislature appears to be on the side of the latter, passing pro-famer laws like the Protection of Plant Varieties and Farmers' Rights Act, 2004; while the executive seems to favour the former, by not only delaying the notification of the said Act but also taking a decision to join the UPOV.

From a look at the UPOV Act of 1991, several conclusions can be drawn. Firstly, the Act is pro-breeder in nature, which is obvious from Article 2 which mandates that each state shall “*grant and protect breeders' rights.*”⁶⁸ Secondly, even ‘*discoverers*’ are identified as breeders.⁶⁹ This essentially opens up the doors for many foreign corporations to ‘discover’ varieties in ecologically diverse countries (largely underdeveloped), and take advantage of a lack of registration of varieties in these countries. Third, it specifies that even plants created from ‘*unauthorized use*’⁷⁰ of the propagating material cannot be used without permission. Thus, if even a neighbour’s field gets accidentally contaminated with the pollen from a registered variety, he cannot use this product. This effectively forces all farmers of a region to buy the seeds of the registered variety.

Fourth, Article 15(2) provides an exception permitting farmers to “*use for propagating purposes, on their own holdings, the product of the harvest which they have obtained by planting, on their own holdings, the protected variety.*”⁷¹ This would ultimately result in the collapse of the farm economy, where farmers often exchange or buy seeds from each other. Such a provision makes farmers independent consumers of seeds instead of community consumers, forcing a farmer to buy new seeds at inflated prices from the breeder, rather than his neighbour in case of crop failure. This problem is exacerbated by the fact that over 75 percent of

68 UPOV, 1991, Article 2.

69 *Id.*, Article 1(iv).

70 *Id.*, Article 14(2).

71 *Id.*, Article 15(2).

the seeds planted in India are from saved seeds from earlier plantings.⁷² Fifthly, and significantly, the ban on selling propagating seeds to non-member countries⁷³ is probably the *only* inducement which a developing country such as ours has to join the UPOV. The UPOV through such a provision seeks to form a monopoly of seeds, and consequentially induce countries like India to become members for access to the seeds in the UPOV bank. If India does join, then within 10 years she will have to grant protection to all varieties registered with the UPOV⁷⁴ as a quid pro quo. Taking a different tangent is the Plant Varieties and Farmers' Rights Act, 2001. This act is diametrically opposed to the UPOV in as much as it gives priority to farmers' rights over those of the breeders. It envisages a nation-wide campaign for the registration of farmers' varieties, and other wild and naturally occurring varieties.⁷⁵ The scheme of the Act is that it expects a community based cooperative type movement in tandem with the government and participation from non-profit bodies in this endeavour. A Gene Fund corpus would support⁷⁶ tribals and indigenous peoples who tend to traditional varieties and wild races. The real cut to seed companies is the statutory preservation of a farmer's right to continue to deal in (save, use, sow, resow, exchange, share or sell) material produced on his farm (so long as it is not branded) of a variety, notwithstanding that it may become protected.⁷⁷ This measure has obviously been adopted to protect the interests of farmers in the rural agricultural economy who rely heavily upon such exchanges for their basic sustenance.

Consequently, what we are faced with is the present conundrum: Should we protect farmers' rights or should we conversely promote the development of biotechnology by ensuring breeders' rights? Can these two ends be met at the same time? And consequentially, what should be done? This is what the next section of this essay attempts to answer.

72 Priyanka, *supra* note 36, at 3.

73 UPOV, 1991, Article 16.

74 *Id.*, Article 3.

75 PPVFR Act, 2001, Chapter III.

76 *Id.*, Section 39(1)(iii).

77 PPVFR Act, 2001, Section 39(1)(iv).

3.3. Suggestions

3.3.1. Technological-Economic

The simple precautionary and polluter pays principles can and ought to be applied to the situation of Bt Brinjal and other genetically modified varieties. The precautionary principle, in simple terms, provides that when there are threats of serious and irreversible damage, lack of full scientific certainty shall not be used as a reason to allow these certain practices to continue, and that the burden of proving that the process or product is safe is upon the person who seeks to propagate it.⁷⁸

The polluter pays principle, lays down that once an activity carried on is hazardous or inherently dangerous, the person carrying on such activity is liable to make good the loss caused to any other person by his activity irrespective of the fact that he took reasonable care while carrying on his activity.⁷⁹ Hence, it can be seen that there is no scarcity of judicial precedent in the matter. All that is required is true implementation (and the slightest amount of judicial activism).

True implementation of these simple principles can go a long way in the prevention and protection of the community when it comes to the dangers of transgenic plants. The principle is simple— if you seek to introduce a potentially dangerous plant variety, you had better pay for *any* damage caused by it. Take the Bt Cotton issue, for instance. Imagine if the producers of the seeds were made liable for the huge losses to the farmers, consequent indebtedness, damage to livelihoods and even the suicides of thousands of farmers. Imagine further that the companies were made to pay to restore the environment to its pre-Bt Cotton state. Picture that the burden of proof is put on the person who introduces the crop to prove that his seed did not cause the particular damage. Imagine further that the lack of absolute scientific certainty as to the fact that the particular seed has caused the damage will not impede the awarding of compensation, based on a balance of probability.

The formulation of such a principle with regard to introduction of Bt Brinjal and other genetically modified plants in the market is extraordinary in its

78 Vellore Citizens' Welfare Forum v. Union of India, AIR 1996 SC 2715.

79 This principle has been recognised by the Indian Supreme Court in M.C. Mehta v. Kamal Nath, (1997) 1 SCC 388.

simplicity: *if anyone introduces a genetically modified seed into the market, or into the environment in general, he shall be absolutely liable for any damage to people and the environment, and on the establishment of a reasonable nexus between the introduction of the seed and the damage, the burden of proof is upon him to show that the particular damage has not been caused by his seed.* Such a principle, vigorously implemented, will completely alter the cost-benefit analyses of multinational corporations such as Monsanto. They will be forced to withdraw products of an uncertain nature by the sheer power of economics and the balance sheet.

It is amply clear that we cannot stop the development of technology just because there are chances of damage. Almost all technological progress is hinged on some risk, and a complete ban on risk will only deter technological progress. An example of this is the large hadron collider (LHC).⁸⁰ Doomsday theorists had argued that high energy particle bashing in the LHC could let loose forces which could unravel the space-time continuum and therefore even the universe. Since we do not know enough about high-energy particle physics (which is why the LHC has been built), a strict interpretation of the precautionary principle would have meant that such a project should not go ahead. A more reasoned application of the precautionary principle would say that such high energy particle collisions do take place in the stars and therefore the order of risks involved can be worked out from observing such phenomena. Therefore, it is safe to build such a device even though we do not know everything about high-energy particle physics. But, if damage ensues, there needs to be compensation.

Also, the trials must not be too stringent. This is because the more onerous the trials, the more difficult it is for the smaller companies to secure approvals. Only companies with deep pockets can then get the necessary approvals, making all GM crops a monopoly of large agribusinesses.⁸¹ It is clear therefore, that a balance needs to be drawn- one that the researchers feel will be satisfied by the extension or adaptation of the abovementioned principles in the case of GM crops as well.

80 Purkayastha *et. al.*, *supra* note 5, at 43.

81 *Id.*, at 45.

3.3.2. Farmers' Rights

Breeders' interests and farmers' rights might seem antithetical *prima facie*. After all, it is in the farmers' interests to stop being dependant on the breeder, and the breeder's only desire is to increase this dependence. India cannot ignore the fact that she is an agricultural economy. Though middle and upper class interests may control the government, it cannot deny justice to over two-thirds of her population dependant on agriculture.⁸² The introduction of termination genes, and ban on storing seeds is antithetical to every principle of social justice in the Indian Constitution and ethos, against every pro-poor law, and contrary to all policies to remove rural indebtedness and lift agricultural livelihoods.

So, it is clear that between the two conflicting interests, to favour the breeders' would be wrong and unjustifiable. Then what is the solution? There are four possible courses of action:

- i) Join the UPOV, and reject the PPVFR Act; *or*
- ii) Adopt the PPVFR Act, preferring a *sui generis* system to the UPOV; *or*
- iii) Implement the PPVFR Act for a certain period, and then, when ready, implement the UPOV; *or*
- iv) Reject the UPOV, but modify the PVFR Act to make it more conducive to breeders.

Solution (i) can only be adopted if the government provides huge subsidies to the breeders to offset the prices to farmers. But this is essentially putting money in the pockets of breeders, and will lead to huge problems. It is interesting to note the comparison between India and China in this regard. China reduced the cost price of genetically modified seeds by huge subsidies.⁸³ In India, however, farmers tended to buy these seeds at a high price. Now once such huge capital has been invested, they would naturally want to protect their investment. This they did by increasing their use of pesticides conveniently provided by the seed companies. Hence, farmers using Bt Cotton actually *increased* pesticide use even though the

82 57 per cent of the total employment and 73 per cent of rural employment is generated in the agricultural sector. See NCIOS Report, *supra* note 62.

83 Joshua Emmanuel Lagos & Zhang Lei, *People's Republic of China Planting Seeds Annual, 2010*, Global Agricultural Information Network (GAIN) Report No. CH11003, published by the US Department of Agriculture, Foreign Agriculture Service.

plant was supposed to be pest resistant,⁸⁴ which among other reasons, lead to huge losses. Whereas in China pesticide use dropped and profits increased.

Let us analyse (ii), (iii) and (iv). If we adopt the PPVFR Act as it stands, then we continue to protect farmers in our economy, but forego forever access to the 100,000 varieties in the UPOV seed bank. But does this necessarily preclude development and research in this sector? No. Firstly, there is no reason as to why the state cannot develop such varieties on its own, in public institutions. This was, after all, what led to the green revolution. Further, in actual practice, unlike particle physics, biotechnology is far less capital-intensive. In any case a continent-sized economy like India's has no excuse regarding costs when it comes to food security.⁸⁵ Secondly, there is nothing that precludes the government from providing appropriate 'rewards' or 'grants' to breeders who have developed seeds, based on an assessment of the impact the breeders' seeds have had on the economy. And thirdly, even private breeders have no reason to stop development—the large agricultural economy in India makes even a one-time sale a huge profit.

When it comes to solution (iii) it seems like a very plausible solution at the first glance. After all, if the PPVFR Act is implemented for a period of, say 10 years, and then India signs up for the UPOV, this provides India a good 20 years (keeping in mind Article 3 of the UPOV Act of 1991) to register all varieties and sufficiently develop biotechnology to prevent the takeover by foreign companies. However appealing this may seem, it is clear that it is close to impossible to register all varieties of plants in India for protection even in 10 years. Further, the Indian agricultural economy hasn't changed much since independence, and to envisage such a drastic change in 20 years is plain foolish. Farmers will, in all probability, still be as susceptible to exploitation in 20 years as they are now, and there is no need to open the gates for this to happen.

Solution (iv) seems mildly plausible. The certain changes being 'rewards' to breeders and boosts to biotechnology development in public institutions, as already discussed above.

84 Kamath *et. al.*, *supra* note 63, at 45.

85 *Id.*

VI. CONCLUSION

Today the battle for Bt brinjal reflects many larger issues of governance and participation. In India today, the crisis of biodiversity is also the crisis of democracy. It reflects a larger failure of the government to respond to the true interests of the people. The government tends to tailor-make laws to conform to international treaty obligations dominated by corporate interests, hence putting the onus of upholding equity and democracy on a host of NGOs like ESG, civil society organizations and on citizens.

Hence, answering the questions this essay sought out to answer, it can be said that: First, genetically modified plants are desirable from a general social, economic, and moral point of view, but *only* with appropriate and stringent regulatory mechanisms. Second, answering the question of whether farmers' rights are adequately protected by the Indian legal regime, it can be said that the answer to this question is not straightforward. The PPVFR Act does sufficiently protect the interests of farmers, if one includes a subsidy system,⁸⁶ but the same has been effectively nullified by the decision to join the UPOV. And lastly, a number of measures in the form of subsidies, 'rewards' based on seed returns, and promotion of research in public institutions can be adopted in order to protect farmers' interests. We are also of the opinion that the government should immediately change its decision to join the UPOV and implement the PPVFR Act.

86 Discussed in Chapter III of this paper.